

The Guidelines for Diabetic Foot Ulcer Prevention

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Abstract

Background: The Stetler Model of Research Utilization (2001) was applied for implementing the evidence based practice related diabetic foot problem prevention. Data collection was carried out from March to April 2019. Target population were 20 nurses who work at IPD of provincial hospital and 20 nurses who worked at IPD of city hospital in Pontianak, West Borneo, Indonesia. **Purpose:** This study aimed to implement the guidelines for diabetic foot ulcer (DFU) prevention in DM patients **Methods:** The study instruments included: 1) guidelines for DFU prevention, 2) nursing competency for DFU prevention, 3) nurse opinion questionnaire, and 4) nurse agreement on guideline. The content validity of the Nurse Opinion Questionnaire was 1.0 and Nursing Competency for DFU prevention was 1.0. The internal consistency of Nurse Agreement on Guideline using Cronbach's alpha was 0.89. Data analysis was performed using descriptive statistics. **Results:** The study findings showed that: the guidelines of DFU prevention in DM patients who admitted into the hospital has been implemented, and most nurses agreed with all of the guideline statements. The agreement levels ranged from agree to strongly agree. Similar result of nurse opinion on guideline implementation, all nurses agreed with all of the statements. The agreement levels ranged from agree to strongly agree. **Conclusions:** the guidelines of DFU prevention are useful for nursing practice. Nurses who work with DM patients in in-patient units can use the guidelines for DFU prevention which include assess of diabetic risk, categorize diabetic of risk, and provide the foot care intervention.

Keywords: Diabetik foot ulcer; diabetik foot ulcer prevention; diabetic foot ulcer; diabetes mellitus

Abstrak

Latar Belakang: Penelitian ini menggunakan Stetler Model sebagai model penerapan hasil-hasil penelitian berbasis bukti dalam mencegah komplikasi ulkus kaki diabetik. Pengumpulan data dilakukan pada bulan Maret hingga April 2019. Populasi sasaran adalah 20 perawat yang bekerja di IPD RSUD provinsi dan 20 perawat yang bekerja di IPD RSUD Kota Pontianak, Kalimantan Barat, Indonesia. **Tujuan:** Penelitian deskriptif ini bertujuan untuk menerapkan pedoman pencegahan ulkus kaki diabetik (DFU) berbasis bukti penelitian pada pasien DM. **Metode:** Instrumen penelitian meliputi: 1) pedoman pencegahan DFU, 2) kompetensi keperawatan pencegahan DFU, 3) kuesioner pendapat perawat, dan 4) kesepakatan perawat tentang pedoman. Validitas isi Kuesioner Opini Perawat adalah 1.0 dan Kompetensi Keperawatan untuk pencegahan DFU adalah 1.0. Konsistensi internal Nurse

Agreement on Guideline menggunakan Cronbach's alpha adalah 0,89. Analisis data dilakukan dengan menggunakan statistik deskriptif. **Hasil:** Temuan penelitian menunjukkan bahwa: 1) pedoman pencegahan DFU pada pasien DM yang dirawat di rumah sakit telah dilaksanakan, dan 2) sebagian besar perawat setuju terkait isi dari pedoman pencegahan resiko UKD. Hasil yang sama dari pendapat perawat tentang implementasi pedoman, semua perawat setuju dengan langkah-langkah dalam pencegahan resiko UKD yang tertera dipedoman. **Kesimpulan:** pedoman pencegahan DFU bermanfaat dan penting untuk praktik keperawatan. Perawat yang menangani pasien DM di unit rawat inap dapat menggunakan pedoman pencegahan DFU yang meliputi penilaian risiko diabetes, pengkategorian risiko diabetes, dan memberikan intervensi perawatan kaki.

INTRODUCTION

Diabetic Foot Ulcer (DFU) is one of microvascular complications and likely the significant segment of the diabetic foot (Pratama & Phuttikhamin, 2017). DFU affects quality of life, and it increases morbidity and mortality, also incurs a substantial economic burden for society, patients and their families (Assaad-Khalil et al., 2015). DFU increases from year by year (Aalaa, Malazy, Sanjari, Peimani, & Mohajeri-Tehrani, 2012). There were 15% of DM patients who had DFU during their lifetime (Yazdanpanah, Nasiri, & Adarvishi, 2015). The prevalence of DFU in Indonesia is approximately 15% and the incidents among DM patients are 29 times (Pratama & Phuttikhamin, 2017).

The ideal treatment of DFU prevention includes regular foot inspection, risk foot assessment, transfers knowledge related risk for DFU and early detect risk of DFU, appropriate DFU intervention (Aalaa et al., 2012). The DM patients suffering from DFU need a long treatment period for the wound healing process and it would expend the wound cost. The patients need to spend approximately 15 - 23 USD per visit. Additionally, the routine care is perceived as a lack of addressing the occurrence of DFU among DM patients. Nurses use diabetic foot risk category at DM clinic, but the guidelines for DFU prevention was not available. This study aimed to implement the guidelines for DFU prevention in DM patients from the evidence based practice. The guidelines for DFU prevention is very important because it would help nurses to early detect DFU in DM patients and it would save cost for DM patients if DFU can be prevented.

METHOD

This study design was based on the conceptualization of the Stetler model of research utilization to facilitate evidence-based practice. The Stetler model consists of preparation phase, validation phase, comparative evaluation/decision making phase, translation/application phase, and evaluation phase. Each phase guided the implementation of guidelines for DFU prevention. This study was conducted in an IPD of Province and city hospital Pontianak, West Borneo, Indonesia. Subsequently, 40 nurses were considered as

target population for implemented the guideline. The study instruments consist of guidelines for DFU prevention, nursing competency for DFU prevention, nurse opinion questionnaire, and nurse agreement on guideline.

RESULT AND DISCUSSION

RESULT

Demographic data of the nurses

The average age of the nurses who worked in IPD of provincial hospital was 30.4 (SD=5.5) years old and ranged from 24 to 43 years old. The average age of the nurses who worked in IPD of city hospital was 28.3 (SD=3.2) years old and ranged from 25 to 40 years old. 85% the nurses who worked in IPD of provincial were dominantly female whereas 60% nurses in IPD of city hospital were male. Most nurses from provincial hospital earned diploma degree (90%) whereas most nurses from city hospital earned bachelor degree (60%). In Provincial hospital, the average years of working experience with DM patients was 6.3 (SD=2.6). In city hospital, the average years of working experience with DM patients was 4.6 (SD=1.6). Only two nurses from provincial hospital had wound care certificate (10%) while eight nurses from city hospital had wound care certificate (40%).

Implementation of the guidelines for DFU prevention

Preparation phase. During preparation phase, goal of study had been determined. The goal was implementation of the guidelines for DFU prevention. The sufficiency findings of research articles supported to reach of the goal. The articles were found in multiple sources including Cochrane, Pubmed, Cinahl, and Ovid by keywords such as diabetic foot ulcer/DFU, DFU prevention, risk assessment, diabetic risk category, and diabetic foot care.

Validation phase. 19 research articles had been recruited, there were four research articles excluded. Using the guideline for research critique adapted from Melnyk and Fineout-Overholt (Melnyk & Fineout-Overholt, 2011), the level evidence of articles had been analyzed and critiqued. Nine articles were level 1, and 10 articles were level 4.

Comparative evaluation/ decision making phase. In this phase the research findings were drafted into guidelines for DFU prevention. Five nurses who expert in DM and DFU had analyzed and considered that the guidelines were practical.

Translation/ application phase. All of the nurses involved in training how to apply the guideline. All nurses had ability in implementing the guidelines for DFU prevention in DM patients. There were 11 nurses (27.5%) who had good performance, they were four nurses from provincial hospital and seven nurses from city hospital. There were 23 nurses (57.5%) who had satisfaction performance; they were 12 nurses from provincial hospital and 11 nurses from city hospital. Unfortunately, there were six nurses (15%) who had poor performance; they were four nurses from provincial hospital and two nurses from city

hospital. The nurses with poor performance were retrained until they passed and met the satisfaction level.

Evaluation phase. Nurses agreement and opinion on the guideline were assessed by questionnaire. The content validity of the Nurse Opinion Questionnaire was 1.0 and the internal consistency of Nurse Agreement on Guideline using Cronbach's alpha was 0.89. The agreement levels ranged from agree to strongly agree. There was only one nurse who disagreed on the statement number 11, which is advice on buying shoes for all categorized patients. Overall, most nurses agreed with all of the statements. The opinion levels ranged from agree to strongly agree.

Overall, all nurses agreed with all of the statements. Nurses considered for applying the guideline as routine care for preventing DM patient from DFU.

DISCUSSION

19 research articles were recruited and four research articles were excluded. Four research articles was excluded due to the year of published were very old. In previous chapter, the researcher has explained related criteria of literature study. Melnyk and Fineout-Overholt views that valid articles for EBP should not use reference more than five years (Melnyk & Fineout-Overholt, 2011). However, previous study argues that there is no definite about optimum range year of references (Boland, Ritze, Eckert, & Mathiak, 2012). In this study, the researchers decided to choose references within 10 years with the reason that the content of the research articles are still applicable and relevant to current practice.

The result from evaluation of nurse agreement on the guidelines showed that most of the nurses agreed and strongly agreed with the guideline statements. Only one statement was rated disagreed by one nurse. Similarly, all nurses agreed with the guideline implementation. Nurses agree to decisions and actions for applying research findings when it provide especially strong evidence (Suresh, 2018). In the other hand, the statement "advice on buying shoes for all of categorized patients" was rated disagreed by one nurse. One possible explanation is that shoes provided for DM patients is not much available in Pontianak and its price is considerably expensive. Based on the experience of researchers, the store which sells shoes for DM in Pontianak is only in one store. According to another study, nurses will consider and accept nursing intervention which is cost-effective and beneficial for patients (Suresh, 2018).

1. CONCLUSION

The guidelines for DFU prevention have been implemented. The guideline is useful and significant for nursing practice. Nurse agree with all the guideline statements and guideline implementation. The researcher has not evaluated the DM patients after implementation of the guidelines for DFU prevention. Therefore, further study should evaluate the result of implementation of the guidelines for DFU prevention in DM patients.

ACKNOWLEDGEMENT

We thank all the staff of the Institute Nursing of Muhammadiyah Pontianak, West Borneo Indonesia, and province and city hospital of Pontianak, West Borneo, Indonesia.

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>
- Assaad-Khalil, S. H., Zaki, A., Rehim, A. A., Megallaa, M. H., Gaber, N., Gamal, H., & Rohoma, K. H. (2015). Prevalence of diabetic foot disorders and related risk factors among Egyptian subjects with diabetes. *Primary Care Diabetes*, *9*(4), 297–303.
- Boland, K., Ritze, D., Eckert, K., & Mathiak, B. (2012). Identifying references to datasets in publications. In *International Conference on Theory and Practice of Digital Libraries* (pp. 150–161). Springer.
- Melnyk, B. M., & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing & healthcare: A guide to best practice*. Lippincott Williams & Wilkins.
- Pratama, K., & Phuttikhamin, N. (2017). Diabetic Foot Ulcer Prevention: An Evidence Based Practice. *Jurnal Keperawatan Dan Kesehatan*, *8*(2), 79–84.
- Suresh, S. (2018). *Nursing research and statistics*. Elsevier Health Sciences.
- Yazdanpanah, L., Nasiri, M., & Adarvishi, S. (2015). Literature review on the management of diabetic foot ulcer. *World Journal of Diabetes*, *6*(1), 37.