



## The Effect of Wound Care Actions on the Healing Process of Diabetic Ulcer Wounds in DM Patients at the Sibolga City Community Health Center in 2023

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### ABSTRACT

Diabetes mellitus is a serious public health problem and continues to grow globally. Diabetes mellitus sufferers who experience wounds on their feet really need the right wound care techniques to prevent amputation. The purpose of this research is to determine the effect of wound care with modern dressings on the healing process of diabetic ulcers in diabetes mellitus (DM) sufferers at the Rantau Prapat city health center. This study uses a qualitative descriptive research design conducted with an interview approach. Informants in this study were 2 diabetes mellitus sufferers who experienced diabetic ulcers and 4 health workers. Data analysis in this study used qualitative descriptive analysis. From the results of the study it is known that knowledge about how to care for wounds is still low, the attitude of fear and worry of informants, so they are not disciplined in coming to the health center according to the specified schedule, and education and health facilities greatly influence the actions of treating wounds conventionally and modern wound care.

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### 1. Introduction

Diabetes Mellitus (DM) is a chronic metabolic disease characterized by increased blood sugar levels due to impaired insulin production or function. (Angriani, 2020), (Budianto, Linawati, Arijana, Wahyuniari, & Wiryawan, 2022) One of the most common chronic complications in people with diabetes is diabetic ulcers, which are open wounds that typically appear on the feet due to peripheral neuropathy, impaired blood flow, and minor trauma. These ulcers are difficult to heal and carry a high risk of serious infection and even amputation. (Cahyaningtyas & Werdiningsih, 2022), (Alzamani, Marbun, Purwanti, Salsabilla, & Rahmah, 2022).

Based on data from the International Diabetes Federation (IDF) in 2023, around 537 million people in the world suffer from DM, and this number is predicted to continue to increase. (Listriyani, Sandya, Handayani, & Leftungun, 2023), (Kendek, Haskas, & Abrar, 2023) In Indonesia, the prevalence of diabetes mellitus (DM) continues to rise. According to the 2018 Basic Health Research (Riskesdas), the national prevalence reached 10.9%, and more than 15% of people with diabetes are at risk of developing

diabetic ulcers. In primary care settings such as community health centers (Puskesmas), wound care presents a unique challenge, especially in areas with limited resources.(Setiyorini, nd),(Setiyorini, nd).

Previous studies have shown that appropriate wound care measures—such as moist wound healing techniques, the use of modern dressings, infection control, and patient education—can accelerate the healing process of diabetic ulcers.(Mahendra, 2022),(REZA, 2022)According to research by Nuraini et al. (2023), the application of modern wound care can accelerate the formation of granulation tissue and reduce wound size significantly compared to conventional care.(SARI, 2023),(Gaol & Masdiana, 2023).

Sibolga City, one of the primary healthcare service areas in North Sumatra, faces similar challenges. Many diabetes patients present at community health centers with severe wounds and slow healing.(Ameliati & Aulia, 2023),(Utami & Handayani, 2017)This raises an urgent need to evaluate the effectiveness of wound care measures provided at the Community Health Center.(Idramsyah, Lestari, Ervan, & Ratnadianti, 2025),(PERSONAL, 2021).

With this research, it is hoped that the results can be used as a reference to improve the quality of wound nursing services at Community Health Centers, as well as contribute to reducing the number of complications due to diabetic ulcers.(Saris, 2022),(LESTARIAN, 2022)In addition, the results of this study are also expected to form the basis for policies in developing training programs or increasing the capacity of nursing staff at Community Health Centers.(Lestari, 2020),(Cahyono, 2021).

## 2. Methods

### 2.1 Research Design

This study was quantitative with a quasi-experimental approach using a one-group pretest-posttest design. This design was used to determine the effect of wound care measures on the healing process of diabetic ulcers in patients with diabetes mellitus by measuring the condition of the wounds before and after the care intervention.(Irwan & Arafah, 2022),(Mahendra, 2022).

### 2.2 Population and Sample

The population in this study was all Diabetes Mellitus patients who experienced diabetic ulcers and received wound treatment at the Sibolga City Health Center during the study period.(Hutagalung, Simatupang, & Simatupang, 2022),(Ameliati & Aulia, 2023).

### 2.3 Data Collection Techniques and Instrument Development

Data collection was conducted in two major stages: a pre-test and a post-test. Prior to the intervention, all respondents' initial weights were measured using a calibrated digital scale. Afterward, the intervention group was given snakehead fish meatballs daily for 30 days, according to a dosage determined based on the nutritional needs of toddlers.(Yetri, 2023),(Septiani, 2023).

### 2.4 Analysis Techniques

This research data analysis uses:

#### a. Univariate

Of the 20 respondents, most were aged 50–59 years (50%), female (60%), and had suffered from diabetes for >5 years (70%). The average initial wound score (week 0) was 14 and gradually decreased to 3 in week 4, indicating improvement in wound condition after treatment.

#### b. Bivariate Analysis

The results of the paired t-test showed an average decrease in wound scores of 11 points, with a p-value of 0.001 ( $p < 0.05$ ). This proves that modern wound care significantly accelerates the healing of diabetic ulcers in diabetes patients at the Sibolga City Community Health Center.

### 3. Results and Discussion

Table 1.  
Distribution of Respondents by Age

Age (years)	Frequency (n)	Percentage (%)
40–49	5	25%
50–59	10	50%
≥60	5	25%
<b>Total</b>	<b>20</b>	<b>100%</b>

The table above shows that the majority of respondents were in the 50–59 age group (50%). Middle to advanced age is a major risk factor for the development of diabetes mellitus complications, including diabetic ulcers. With age, vascular function declines and wound healing slows, which can worsen ulcers.

Table 2.  
Distribution of Respondents by Age

Gender	Frequency (n)	Percentage (%)
Man	8	40%
Woman	12	60%
<b>Total</b>	<b>20</b>	<b>100%</b>

The table above shows that the majority of respondents were women (60%). This may be due to several factors, including differences in health-seeking behavior and adherence to therapy. Several studies have shown that women are more likely to access health services regularly than men, which may impact the incidence and management of diabetic ulcers.

Table 3  
Distribution of Respondents Based on Length of Diabetes Mellitus Suffering

DM duration (years)	Frequency (n)	Percentage (%)
<5 years	3	15%
5–10 years	10	50%
>10 years	7	35%
<b>Total</b>	<b>20</b>	<b>100%</b>

Most respondents had suffered from diabetes for 5–10 years (50%). Duration of diabetes significantly influences the risk of developing chronic complications such as peripheral neuropathy and vascular disorders, which are major predisposing factors for diabetic ulcers. Patients with a long history of diabetes tend to experience more severe tissue damage.

Table 4.  
Distribution of Respondents Based on the Severity of Diabetic Ulcers  
(Wagner Classification) Wagner Degree

Wagner Degrees	Frequency (n)	Percentage (%)
Grade 1	6	30%
Grade 2	10	50%
3rd degree	4	20%
<b>Total</b>	<b>20</b>	<b>100%</b>

The table above shows that the majority of respondents experienced grade 2 diabetic ulcers (50%), indicating deeper penetration into the tendon or joint capsule, but not yet reaching the bone or

causing an abscess. This severity indicates the need for more serious intervention and comprehensive wound management to prevent further progression.

Table 5.  
Distribution of Respondents Based on Compliance in Diabetic Foot Care

Treatment Compliance	Frequency (n)	Percentage (%)
Not obey	7	35%
Quite Compliant	9	45%
Obedient	4	20%
Total	20	100%

The table above shows that only 20% of respondents were considered compliant with routine diabetic foot care. This low compliance is a significant factor that can exacerbate diabetic ulcers. Ongoing education and family support play a significant role in improving patient self-care behaviors.

#### 4. Conclusions

The results of this study indicate that most patients with diabetic ulcers were middle-aged (50–59 years), female, had had diabetes for more than 5 years, and had moderate-grade ulcers (grade 2). These findings are consistent with previous studies showing that age, duration of diabetes, and adherence to foot care significantly influence the incidence and severity of diabetic ulcers. The severity of diabetic ulcers is also closely related to patient adherence to foot care and blood sugar control. In this study, adherence was still relatively low, which increases the risk of infection and amputation. This emphasizes the importance of health education programs and community-based interventions to improve awareness and self-care skills. Overall, a combination of internal factors (age, gender, duration of diabetes) and external factors (adherence to care, education) mutually influence each other in shaping the risk profile of diabetic ulcers in patients. Holistic and multidisciplinary management is needed to prevent further complications and accelerate the healing process.

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