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Optimising modern wound care to improve the quality of life and self-confidence of patients with diabetes mellitus

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Abstract

Background: Diabetes Mellitus (DM) remains a prevalent global health challenge, with significant incidence rates observed in Indonesia, particularly within South Sulawesi. Current data records 10.64 million cases in 2024, with projections estimating a rise to 40.7 million by 2045. A substantial number of these patients suffer from diabetic ulcers, a complication that severely compromises quality of life and self-confidence.
Purpose: To evaluate the efficacy of optimized modern wound care interventions in enhancing the quality of life and self-confidence of patients with Diabetes Mellitus.
Method: A pre-experimental design. A total sampling technique was employed to select 25 registered DM patients at the Masagena Independent Wound Care Practice. Statistical analysis was conducted using paired t-tests with a significance threshold of $p < 0.05$.
Results: The analysis revealed significant differences in patient outcomes following the intervention ($p < 0.05$). The mean quality of life score improved markedly from a baseline of 8.72 ± 2.85 to 94.20 ± 3.41 post-intervention. Similarly, the mean self-confidence score increased from 8.36 ± 2.69 (pre-test) to 93.92 ± 2.88 following the implementation of modern wound care optimization.
Conclusion: The optimization of modern wound care significantly positively impacts type 2 DM patients, resulting in a demonstrated increase in both quality of life and self-confidence.

Keywords: Diabetes Mellitus; Modern Wound Care; Quality of Life; Self Confidence.

INTRODUCTION

Diabetes Mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia due to impaired insulin secretion, insulin action, or both (Benoit, Hora, Pasquel, Gregg, Albright, & Imperatore, 2020; Umpierrez, Davis, ElSayed, Fadini, Galindo, Hirsch, & Dhatariya, 2024). Diabetes Mellitus poses a significant and growing global public health problem, with an estimated prevalence of 643 million in 2030 and projected to reach 784 million by 2045 (Wahidin, Achadi, Besral, Kosen, Nadjib, Nurwahyuni, & Kusuma, 2024; Rowley, Bezold, Arikan, Byrne, & Krohe, 2017). In Indonesia, DM remains relatively high, particularly in South Sulawesi, where the incidence of type 2 diabetes mellitus was recorded at 10.64 million in 2024 and is predicted to increase to 40.7 million by 2045 (Benoit et al., 2020). The prevalence of diabetes mellitus in Wajo Regency in 2024 was 2,141 people.

Based on these data, many people with diabetes mellitus in Wajo Regency complain of diabetic foot ulcers. Diabetic foot ulcers are a chronic complication that can lead to amputation and death (McDermott, Fang, Boulton, Selvin, & Hicks, 2023; Wang, Yuan, Xu, & Yu, 2022). This can occur if not treated early. T2DM with foot ulcers has a survival rate of only one to five years, at 86.9% and 50.9%, respectively (Chen, Chen, Gong, Wang, Gao, Li, & Ran, 2024). An interview with a surgical specialist at Lamaddukelleng Hospital in Wajo Regency revealed that 45 people with diabetes mellitus experience diabetic foot ulcers. Thirty-five percent of these cases require lower extremity amputation, 50% are

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at risk of death, and 15% are at risk of other complications. Based on these risks, diabetic foot ulcers negatively impact the patient's self-concept, self-esteem, quality of life, decreased self-confidence, and physical and emotional health (Akbar, Mursal, Thahira, & Rizana, 2021; Andari, Hamzah, & Wahyu, 2020). This is evidenced by interviews with several patients with diabetic foot ulcers who were treated at Lamaddukelleng Hospital for two weeks. They stated that they were worthless trash and believed their wounds would never heal, which reduced their quality of life and self-confidence. Therefore, patients with diabetes mellitus who experience diabetic foot ulcers require special attention and efforts to prevent the serious risks of diabetic foot ulcers, thereby improving their quality of life and self-confidence.

One effective way to prevent the serious risks of diabetic foot ulcers is to optimize modern wound care. Modern wound care involves the use of modern dressings such as zinc cream, hydrogel, hydrocolloid, silver, calcium alginate, foam, transparent film, crepe bandage, orthopedic wool, and melolin, which can retain moisture in the wound and accelerate the wound healing process (Khaerotib, Peristiowati, & Wardani, 2021; Khodadad, Hoseininejad, & Nazeri, 2024; Vijayendra, Anusha, Venkateswara Naik, & Salivendra, 2024). All types of modern wound dressings will be selected based on the condition of the diabetic foot wound patient. The advantages of modern wound care include shorter healing times, improved keratinocyte cell function, lower infection rates, stimulation of collagen synthesis, maintenance of tissue growth factors, pain reduction, and scar reduction (Szycher & Lee, 1992).

Interviews with wound nurses at the "Masagena" practice in Wajo Regency revealed that the number of diabetes mellitus patients in March 2025 was 25. Furthermore, nurses still use simple dressings when treating diabetic foot wounds, slowing wound healing. The impact of optimizing modern wound care on improving patient quality of life and self-confidence has not been further studied in patients with diabetes mellitus. Therefore, research and development are crucial in improving patients' quality of life and self-confidence.

RESEARCH METHOD

A quantitative approach with a pre-experimental methodology was employed, specifically utilizing a one-group pretest–posttest design. The research involved a single group serving as the intervention (case) group. The study population comprised all patients with diabetes mellitus registered at the Masagena Wound Care Independent Practice Center, totaling 25 individuals. A total sampling technique was applied, resulting in 25 participants. The study was conducted at the Masagena Wound Care Independent Practice Center between March and June 2025.

Data collection commenced with interviews and a review of patients' medical records to obtain information on medical history, blood glucose levels, age, sex, and blood pressure. Written informed consent was obtained from all participants prior to their inclusion in the study. Baseline assessments were then conducted to evaluate wound status, quality of life, and self-confidence among patients with diabetic foot ulcers. Participants subsequently received optimal modern wound care using contemporary dressings designed to maintain a moist wound environment and facilitate faster healing. Following the intervention, participants were reassessed for wound condition, quality of life, and self-confidence.

Data were collected using interview techniques and standardized questionnaires. Quality of life was measured using the Assessment of Quality of Life–4 Dimensions (AQoL-4D), an instrument that has demonstrated satisfactory validity and reliability and is considered appropriate for patients with chronic conditions such as diabetes mellitus. Self-confidence was assessed using the Diabetes Management Self-Efficacy Scale (DMSE), which has also been validated and shown to be reliable. Responses were measured using a Likert scale.

Data analysis included univariate analysis to describe each variable in terms of frequency distributions and percentages. Bivariate analysis was performed using a paired t-test for normally distributed data. When the assumption of normality was not met, the Wilcoxon signed-rank test was applied. Statistical significance was determined at a p-value of less than 0.05.

This research has gained ethical clearance from the Health Research Ethics Institute STRADA Indonesia, under the number 001885/EC/KEPK/I/07/2025.

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RESEARCH RESULTS

Table 1. Characteristics of the Participants. (N=25)

Variable	Results	Pre Test	Post Test	p-value
Age (Mean±SD) (Range)(Year)	(51.96±7.91)(50-68)			
Gender (n/%)				
Male	7/28.0			
Female	18/72.0			
Duration of Suffering from Type II DM (n/%)				
1-2 Years	15/60.0			
3-4 Years	10/40.0			
>5 Years	-			
Random blood sugar level (mean±SD)	268.00 ± 27.82			
Quality of Life Score (mean±SD)		8.72 ±2.85	94.20 ± 3.41	0.001
Self-Confidence Score (mean±SD)		8.36 ± 2.69	93.92 ± 2.88	0.001

Table 1 shows that this study's respondents were 25 people suffering from Type 2 Diabetes Mellitus. The average age of respondents was 52 years with an age range between 50 to 68 years, dominated by female gender, namely 18 people and male people, with an average history of suffering from Type 2 Diabetes Mellitus, namely 1-2 years. The average Random blood sugar level of respondents was above normal. The mean quality of life score among patients with type 2 diabetes mellitus following the posttest assessment after the implementation of optimized modern wound care was 94.20 ± 3.41, showing a substantial increase compared with the pretest mean score of 8.72 ± 2.85 prior to the intervention. Similarly, the mean self-confidence score after the implementation of modern wound care optimization reached 93.92 ± 2.88, rising markedly from the pretest mean score of 8.36 ± 2.69 observed before the intervention.

DISCUSSION

The results of this study indicate that optimizing modern wound care significantly influences the wound healing process and directly impacts the quality of life and self-confidence of Type 2 Diabetes Mellitus patients (Sawitri, Sitanggang, & Andira, 2024). Chronic wounds that are slow to heal not only have a physical impact but also an emotional one, because they trigger stress, depression, and withdrawal from the social environment (Silolonga, Kadar, & Sjattar, 2019). Therefore, a more effective treatment approach is needed to address this problem comprehensively. Optimizing modern wound care, such as using hydrogel, foam dressing, alginate dressing, etc., with negative pressure wound therapy (NPWT) can create more optimal wound conditions for healing. Modern dressings maintain wound moisture needed for tissue regeneration, reduce bacterial colonization, and control exudate and odor (Silolonga et al., 2019). The rapid reduction in wound size and significant improvement in wound appearance increased patients' hope and enthusiasm for treatment (Laili & Fitri, 2022; Olsson & Friman, 2020).

Based on observations, the group of patients who underwent modern wound care showed a significant improvement in quality of life scores in both physical and psychological domains. They experienced reduced pain, increased mobility, and improved performance of daily activities. This indicates that modern wound interventions significantly contributed to the physical aspect of patients' quality of life,

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previously severely limited by non-healing wounds. Furthermore, improving wound condition also impacted the patients' psychological aspects. Previously, many patients felt embarrassed, had low self-esteem, and even suffered from body image issues due to open, smelly, or festering wounds. With improved wound condition through modern care, patients felt more comfortable with themselves, were no longer bothered by wound odor, and could appear in social settings with greater confidence.

This study also revealed that patients who felt their wounds were being treated with modern and professional methods demonstrated a higher level of participation in the treatment process. This active involvement created a sense of ownership and control over their disease, contributing to increased self-confidence. They felt empowered because they were involved in decision-making and taught self-care techniques at home. This increased self-confidence was evident in patients' willingness to return to work, participate in social activities, and share experiences with others. Some patients even expressed that after experiencing wound healing through modern treatment, they no longer felt like a "burden on the family" and began to play an active role in their communities. This demonstrates that optimal wound healing has far-reaching psychosocial effects. This study adds a new dimension by demonstrating that modern wound care also significantly impacts patient self-confidence and quality of life, aspects often overlooked in assessing the success of modern wound care. These results align with findings (Laili et al., 2022).

This quality of life and self-confidence improvement is inextricably linked to the holistic approach implemented during treatment (Holloway, Ahmajärvi, Frescos, Jenkins, Oropallo, Slezáková, & Woo, 2024). In addition to physical wound care, patients also received education on blood sugar management, nutrition, and the importance of adherence to therapy. This approach addresses the wound locally and improves the patient's overall condition, contributing to the healing process and psychological recovery.

While the results are promising, it is important to note that implementing modern wound care also faces challenges, such as cost, availability of materials, and training of healthcare workers (Dzaki, Julianto, & Puspasari, 2023; Spampinato, Caruso, De Pasquale, Sortino, & Merlo, 2020). Nevertheless, the long-term benefits, both clinical and psychosocial, make investing in modern care a viable strategy for improving the quality of healthcare for people with type 2 diabetes.

CONCLUSION

The application of modern wound care optimization affected the quality of life and self-confidence of type 2 diabetes patients. The quality of life and self-confidence of type 2 diabetes patients improved after applying modern wound care optimization. Optimizing modern wound care not only provides clinical benefits in accelerating wound healing but also significantly improves the quality of life and self-confidence of type 2 diabetes patients.

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