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Comparison Of Conventional And Modern Wound Care Methods In Diabetes Mellitus Patients

Abdurrahman[1*], Bustami[2], Cut Mutiah[3], Rezqiqah Aulia Rahmat[4] , Asrianto[5]
[*1]Nursing Study Program, Poltekkes Kemenkes Aceh, Indonesia
[2]Nursing Study Program, Poltekkes Kemenkes Aceh, Indonesia
[3]Midwifery Study Program, Poltekkes Kemenkes Aceh, Indonesia
[4]Medical Study Program, Bosowa University
[5]Nursing Study Programs, Yapika College of Health Sciences, Indonesia

***Correspondent Author** : Abdurrahman, Email: abdurrahman@poltekkesaceh.ac.id

ABSTRACT

Wounds in patients with diabetes mellitus are a common complication and carry the risk of infection and even amputation. Proper wound care is crucial to accelerate healing. Wound care methods include conventional and modern methods, each with distinct characteristics. This study aims to compare the effectiveness of conventional and modern wound care methods in patients with diabetes mellitus.

This study used a quasi -experimental design with a comparative study approach . A sample of 60 patients was divided into two groups: the conventional wound care group and the modern wound care group. Data were collected through observation of wound development using a wound assessment sheet. Data were analyzed using an independent t- test .

The results of the study showed that the modern wound care group had a faster average healing time compared to the conventional method with a *p*-value = 0.001 (<0.05) .

The conclusion of this study is that modern wound care methods are more effective than conventional methods in accelerating wound healing in diabetes mellitus patients.

Keywords: Diabetes Mellitus, Wounds, Modern Wound Care, Conventional Wound Care

1. INTRODUCTION

Diabetes mellitus is a non-communicable disease whose prevalence continues to increase worldwide. This disease is characterized by impaired glucose metabolism due to insulin deficiency or insulin resistance, which causes chronically elevated blood sugar

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levels. Prolonged hyperglycemia can lead to various complications, both microangiopathy and macroangiopathy , affecting various organs of the body.

One of the most common complications in patients with diabetes mellitus is chronic wounds, particularly diabetic foot ulcers . These wounds are generally caused by a combination of peripheral neuropathy , impaired blood circulation, and infection. Neuropathy causes decreased sensation in the feet, making the patient unaware of the wound, while vascular disorders restrict the supply of oxygen and nutrients to the tissues. This condition makes wounds difficult to heal and puts them at risk of developing serious infections and even amputation.

Wound problems in patients with diabetes mellitus not only impact their physical condition but also their quality of life, including psychological and social aspects. Non-healing wounds can cause prolonged pain, activity limitations, and an economic burden due to high medical costs. Therefore, effective wound management is crucial in the management of patients with diabetes mellitus.

Wound care is a key component of the wound healing process. Generally, there are two commonly used wound care methods: conventional and modern. Conventional methods typically involve cleaning the wound with an antiseptic solution and covering it with dry gauze. This method has been used for a long time, but it has limitations, such as its inability to maintain wound moisture and the potential for drying, which can slow the healing process.

Modern wound care methods use the moist principle wound Healing , which maintains wound moisture to optimize tissue regeneration. This method uses various types of modern dressings that can retain moisture, protect wounds from contamination, and accelerate the healing process. Furthermore, modern methods can reduce pain and the frequency of dressing changes, making them more comfortable for patients.

In practice, many healthcare workers still use conventional methods due to habit, equipment availability, and cost. This leads to differences in wound healing outcomes in patients with diabetes mellitus.

Several studies have shown that modern wound care is more effective in accelerating healing than conventional methods. However, these findings need to be supported by more specific data in specific populations.

Based on this description, research is needed to compare the effectiveness of conventional and modern wound care methods in patients with diabetes mellitus. This research is expected to provide scientific information that can be used as a basis for selecting more effective wound care methods, thereby improving the quality of healthcare and reducing the risk of complications in patients with diabetes mellitus.

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2. RESEARCH METHODS

a. Types and Design of Research

This research is a quantitative study with a quasi- experimental design using a comparative study approach . This design was used to compare the effectiveness of two wound care methods, namely the conventional method and the modern method, on the wound healing process in patients with diabetes mellitus.

Quasi- experimental approach was chosen because the researchers did not conduct full randomization , but still provided interventions to two different groups to see the differences in the results obtained.

b. Location and Time of Research

This research was conducted at a healthcare facility with a high number of diabetes mellitus patients and offering wound care services. The study location was chosen because of the diverse characteristics of patients with diabetic wounds and the use of different wound care methods.

The research was conducted in the period February to April 2026 , which included:

1) Preparation and preparation stage of instruments
2) Intervention implementation stage
3) Data collection stage
4) Data processing and analysis stage

c. Population and Sample

1) Population

The population in this study was all diabetes mellitus patients who had wounds and were undergoing treatment at the health facility where the study was conducted.

2) Sample

The research sample consisted of 60 respondents , who were divided into two groups:

a) 30 patients with conventional wound care methods
b) 30 patients with modern wound care methods

3) Sampling Techniques

The sampling technique used purposive sampling , namely selecting respondents based on certain criteria determined by the researcher.

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4) Inclusion and Exclusion Criteria

Inclusion criteria:

a) Patients with a diagnosis of diabetes mellitus
b) Having diabetic wounds
c) Willing to be a respondent
d) In stable condition

Exclusion criteria :

a) Wounds with severe complications (e.g. severe gangrene)
b) Patients who do not follow routine treatment
c) Incomplete data

5) Research Variables

The variables in this study consist of:

a) Independent (free) variables:
Wound care methods (conventional and modern)
b) Dependent variable (bound):
Wound healing process (healing time, wound condition)

6) Operational Definition

Variables	Operational Definition	Measuring instrument	Scale
Wound care	Methods used in treating wounds	Observation	Nominal
Wound healing	Time and condition of the wound improves	Wound observation sheet	Interval

7) Research Instruments

The instruments used in this study include:

a) Wound observation sheet
Used to assess wound conditions, such as wound size, tissue, exudate, and signs of infection.
b) Wound measuring tool
Used to measure the area and depth of wounds
c) Medical documentation
Used to view patient history
The instrument has been tested for validity and reliability before use.

8) Data collection technique

Data collection is carried out through several stages:

a) Grouping of respondents

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Respondents were divided into two groups (conventional and modern)

b) Initial observation (baseline)
Assessment of wound condition before treatment

c) Intervention
   - Group 1: conventional wound care
   - Group 2: modern wound care

d) Regular monitoring
Observation of wound development is carried out routinely.

e) Final evaluation
Assessment of wound healing results

9) Data analysis

a) Univariate Analysis
Used to determine the frequency distribution and average of each variable.

b) Bivariate Analysis

c) Used to compare the two methods using:
- Independent t- test → to compare the average healing time
- square test → to see the relationship between healing categories
- Odds Ratio (OR) → to determine the magnitude of the risk

Decision Making Criteria
- $p < 0.05$ → significant
- $p \geq 0.05$ → not significant

This research method is designed to provide an objective picture regarding the comparison of the effectiveness of conventional and modern wound care, so that it can be a basis for improving the quality of health services for diabetes mellitus patients.

3. RESEARCH RESULTS AND DISCUSSION

a. RESEARCH RESULT

1) Univariate Analysis

Table 1. Distribution of Wound Care Methods

Treatment Method	Frequency (n)	Percentage (%)
Conventional	30	50%
Modern	30	50%
Total	**60**	**100%**

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Table 2. Distribution of Wound Healing Status

Healing Status	Frequency (n)	Percentage (%)
Not Healing Quickly	28	46.7%
Get Well Soon	32	53.3%
Total	**60**	**100%**

2) Bivariate Analysis (Chi- Square + OR)

Table 3. Comparison of Wound Care Methods on Wound Healing

Treatment Method	Not Healing Quickly	Get Well Soon	Total
Conventional	20	10	30
Modern	8	22	30
Total	28	32	60

Statistical Test Results

- *p*- value = 0.002
- Odds Ratio (OR) = 5.50

Interpretation

- $p < 0.05$ → there is a significant difference
- OR = 5.50 → patients with conventional methods have a 5.5 times greater risk of experiencing slow healing compared to modern methods.

3) Additional Analysis (Mean Length of Healing)

Table 4. Average Wound Healing Time

Treatment Method	Mean (Day)	Elementary School	p- value
Conventional	21	4.5	
Modern	14	3.2	0.001

Interpretation

Modern methods accelerate wound healing by about 7 days faster than conventional methods.

b. Discussion

1) Comparison of Effectiveness of Wound Care Methods

The results of the study showed a significant difference between conventional and modern wound care methods in wound healing in patients with diabetes mellitus. A *p*-value of 0.002 indicates that the difference is statistically significant.

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Modern wound care methods have been proven to be more effective in accelerating wound healing than conventional methods. This is demonstrated by the greater number of patients who experienced faster healing in the modern method group.

2) Risk Analysis (Odds) Ratio)

value = 5.50 indicates that patients who receive conventional wound care have a risk of approximately 5.5 times greater of experiencing slow wound healing compared to patients who receive modern wound care.

This shows that conventional methods are a risk factor for slow wound healing, while modern methods are protective.

3) Moist Principle Wound Healing

The advantage of the modern method lies in the application of the moist principle. wound Healing , namely maintaining optimal wound moisture. A moist wound environment :

a) Accelerate the formation of new networks
b) Increases epithelial cell activity
c) Reduces the risk of dead tissue
d) Accelerate the granulation process

In contrast, conventional methods tend to dry out wounds, thus inhibiting cell migration and slowing healing.

4) Difference in Healing Time

The results of the study showed that the average healing time using the modern method was faster than the conventional method.

This is caused by:

a) Modern dressings maintain wound stability
b) Reduce the frequency of dressing changes
c) Reduce the risk of infection
d) Improve patient comfort

5) Risk of Infection

Modern methods are also more effective in reducing the risk of infection because:

a) More sterile dressing
b) Optimal wound closure
c) Reduce exposure to bacteria

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While conventional methods are more susceptible to contamination because the wounds are often open.

6) **Clinical Implications**

The results of this study show that:

a) Modern wound care should be the standard of care
b) Health workers need to be trained in modern methods
c) Patient education is very important

7) **Relation to Theory**

These results are in line with the wound healing theory which states that an optimal wound environment (moist , clean, protected) will accelerate the healing process compared to dry and open wounds.

Modern wound care methods have been proven to be more effective than conventional methods in accelerating wound healing in diabetes mellitus patients, with a much higher risk of slow healing with conventional methods.

4. CONCLUSION AND SUGGESTIONS

a. Conclusion

Based on the results of research on the comparison of conventional and modern wound care methods in Diabetes Mellitus patients, the following conclusions can be drawn:

1) **There is a significant difference between conventional and modern wound care methods in the wound healing process**

As evidenced by statistical test results showing a *p*- value <0.05 . This indicates that wound care methods influence the speed of wound healing.

2) **Modern wound care methods have been proven to be more effective in accelerating wound healing than conventional methods.**

This is evident in the number of patients who experienced faster healing in the modern wound care group and a shorter average healing time.

3) **Patients who receive conventional wound care have a greater risk of experiencing slow wound healing** , with an **Odds value of Ratio (OR = 5.50)**

This means that conventional methods increase the risk of delayed wound healing compared to modern methods.

4) **The advantage of the modern method lies in the application of the moist principle. wound healing**

Namely maintaining wound moisture so as to accelerate the tissue regeneration process, reduce the risk of infection, and increase patient comfort.

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5) **Proper wound care is an important factor in preventing complications in patients with diabetes mellitus**

Including severe infections and amputations, so the choice of wound care method is very crucial in clinical practice.

Overall, this study shows that the use of modern wound care methods provides better results in the wound healing process in patients with diabetes mellitus.

b. Suggestion

1) For Health Workers

It is expected that health workers, especially nurses and midwives:

- Prioritize the use of modern wound care methods in clinical practice.
- Improving competence through modern wound care training
- Conduct regular and systematic wound monitoring
- Provide education to patients regarding proper wound care

2) For Health Service Facilities

Health care facilities are expected to:

- Providing modern wound care facilities and infrastructure
- evidence-based standard operating procedures (SOPs) practice
- Supporting the training of healthcare workers in modern wound care
- Improving the quality of chronic wound care in diabetes patients

3) For Patients and Families

Patients and families are expected to:

- Follow the recommendations of health workers in wound care
- Keep the wound and surrounding environment clean
- Control blood sugar levels regularly
- Seek medical attention immediately if there are signs of infection or complications.

4) For Further Researchers

Further researchers are advised to:

- Using a research design with a larger sample
- Adding other variables such as blood sugar control, nutrition, and infection
- Using multivariate analysis for more comprehensive results
- Assessing the cost -effectiveness of wound care methods

Selecting the right wound care method is a crucial step in improving the quality of life for patients with diabetes mellitus. An evidence-based approach is essential to ensure that the interventions provided are truly effective, safe, and efficient in accelerating the wound healing process.

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