



# The Effect of Wound Care Using Modern Dressing Methods on the Quality of Life of Diabetic Ulcer Patients at the Asri Wound Care Center Clinic in Medan

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## ABSTRACT

Quality of life is a feeling of satisfaction and happiness so that patients with diabetes mellitus can carry out their daily lives properly. The purpose of this study was to determine the effect of wound care using modern dressing methods on the quality of life of diabetic ulcer patients at the Asri Wound Care Center Clinic. The research design used was quasi-experimental with pretest-posttest with control group design. The population in this study was 195 people and the total sample was 36 people obtained by purposive sampling technique. Data collection was carried out by distributing questionnaires and observing the pre-test and post-test. The data analysis method uses the Wilcoxon Signed Rank Test statistical test. The results showed that there were differences in the quality of life in the intervention group and the control group after wound care using the modern dressing method, namely the physical domain ( $p=0.033$ ), the psychological domain ( $p=0.013$ ), the social domain ( $p=0.020$ ), the environmental domain ( $p = 0.046$ ). It is hoped that respondents and their families can understand wound care with modern dressings to improve the quality of life of diabetic ulcer patients.

**Keywords :** Diabetic Ulcer; Quality of Life; Modern Dressings

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## INTRODUCTION

Diabetes Mellitus (DM) is a disease caused by a lack of insulin production by the pancreas or the body cannot use the insulin that has been produced by the pancreas effectively. The number of DM sufferers from year to year continues to increase and lifestyle changes are one of the causes of the high number of

DM sufferers in developing countries. Diabetes mellitus affects more than 300 million patients worldwide. The worldwide prevalence of diabetes (8.5%) has increased beyond the level it was predicted in 1980[1]. Basic Health Research[2] conducted by the Ministry of Health of the Republic of Indonesia, the prevalence of diabetes mellitus



in people aged  $\geq 15$  years in Indonesia with a population of 265 million people with the provinces that have the first largest diabetes mellitus disease is DKI as much as 3.4% of the total population, the second place is East Kalimantan with 3.2% of the total population, the third place is the Special Region of Yogyakarta with 3.1% of the total population, the fourth place is North Sulawesi with 3.0% of the total population, and the fifth place is Java East as much as 2.8% of the total population. The prevalence of diabetes mellitus in North Sumatra is 2.0% of the total population in 2018. Diabetic foot ulcers are a chronic complication of diabetes mellitus which is often encountered and feared because its management is often disappointing and ends in amputation and even death [3]. Diabetic ulcer is a condition of finding infection, ulcers and/or destruction to the deepest skin tissue on the feet in patients with Diabetes Mellitus (DM) due to nerve abnormalities and peripheral arterial disorders. Currently, wound care techniques have undergone many developments, where wound care has used more modern dressings. The principle of modern wound care management is to maintain and maintain a moist wound environment to improve the wound healing process, maintain tissue fluid loss and cell death [4]. In wound care topical materials are the main ingredients or drugs used to accelerate wound healing by helping to create and maintain conditions that can support wound healing [5]. Topical therapy or topical (outer) dressing materials or also known as dressings are materials that are used topically or attached to the surface of the skin or body and are not used systemically (enter the body through digestion and blood vessels). The goal of DM treatment is to reduce the risk of complications of microvascular and macrovascular disease, improve symptoms of complications, and reduce the number of deaths, as well as improve the quality of life of DM sufferers. A study on the quality of life of patients with

diabetic injuries stated that 50% of patients with diabetic injuries no longer work due to their injuries. In addition, people with diabetic wounds also experience decreased mobility and changes in daily activities [3]. The risk of developing complications as a result of managing medication and diet, as well as efforts to prevent DM complications that are not quite right can potentially affect the quality of life of DM sufferers. WHO defines quality of life (QOL) as an individual's perception of life in society in the context of existing culture and norms, and relates to goals, expectations, standards and concerns throughout his life. Several factors determine the quality of life, namely physical, psychological, social, and environmental [6]. The quality of life of DM patients is important to be studied more specifically because it has a broad impact on life.

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#### METHOD

This research is a quantitative study using a quasi-experimental design, namely providing treatment or intervention to research subjects and then the effect of the treatment is measured and analyzed. The type of quasi-experiment design used is the Pretest-Posttest Design with Control Group. The pretest-posttest design with the control group is the choice in situations where the researcher expects a credible quasi-experimental design because there is a comparison group as the control group for an intervention so that the results of the posttest are more convincing.

#### RESULTS

1. Univariate analysis
2. Univariate analysis was used to see the frequency distribution of each variable from the effect of modern dressing methods on the quality of life of diabetic ulcer patients. So, the data obtained, then processed and presented in the form of a frequency distribution table as follows:

#### Characteristics of Respondents

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Table 1.1 Frequency Distribution of Respondent Characteristics by Gender, Age, and Education at Asri Wound Care Center Medan Clinic

No	Characteristics Respondents	of Intervention Group (n=18)		Controle group (n=18)	
		F	%	F	%
1	Gender				
	Male	10	55,6	8	44,4
	Female	8	44,4	10	55,6
	Total	18	100,0	18	100,0
2	Age				
	30-65	18	100,0	18	100
	>65	0	0,0	0	0,0
	Total	18	100,0	18	100,0
3	Education				
	Elementary School	2	11,1	4	22,2
	Junior High school	3	16,7	9	50,0
	Senior High school	8	44,4	5	27,8
	College	5	27,8	0	0,0
	Total	18	100,0	18	100,0

In table 1.1 above, in the intervention group the majority of respondents were male, namely 10 people (55.6%), with the majority age 30-65 years, namely 18 people (100.0%), and the majority had high school education, namely as many as 8 people (44.4%). In the control group the majority of respondents were female, namely as many as 10 people (55.6%), with a majority age of 30-65 years, namely as many as 18 people (100.0%), and the majority had junior high school education, namely as many as 9 people (50,0%).

Table 1.2 Frequency Distribution of Pre Test Quality of Life Values to Respondents at the Asri Wound Care Center Medan Clinic

Quality of Life	Mean	Median	SD	Minimum	Maximum
Intervention Group					
Physique	1,56	1,50	0,616	1	3
Psychological	1,67	2,00	0,594	1	3
Social	1,83	2,00	0,514	1	3
Environment	1,89	2,00	0,676	1	3

Based on table 1.2 above, it shows the quality of life of the intervention group in the pre-test period. The average quality of life score based on the physical domain is 1.56 with a standard deviation of 0.616, the psychological domain

is 1.67 with a standard deviation of 0.594, the social domain is 1.83 with a standard deviation of 0.514, the environmental domain is 1.89 with a standard deviation of 0.676 and a range of 1 until 3.

Table 1.3 Frequency Distribution of Pre-Test Quality of Life Values to Respondents at the Deli Serdang Regional General Hospital

Quality of Life	Mean	Median	SD	Minimum	Maximum
<b>Controle Group</b>					
Physique	1,61	2,00	0,502	1	2
Psychological	1,61	2,00	0,502	1	2
Social	1,61	2,00	0,502	1	2
Environment	1,67	2,00	0,485	1	2

Based on table 1.3 above, it shows the quality of life of the control group in the pre-test period. The average quality of life score based on the physical domain is 1.61 with a standard deviation of 0.502, the psychological domain is 1.61 with a standard deviation of 0.502, the social domain is 1.61 with a standard deviation of 0.502, the environmental domain is 1.67 with a standard deviation of 0.485 and a range of 1 until 2.

Table 1. 4 Frequency Distribution of Post Test Quality of Life Values to Respondents at the Asri Wound Care Center Medan Clinic

Quality of Life	Mean	Median	SD	Minimum	Maximum
<b>Group Intervention</b>					
Psychological	2,28	2,00	0,461	2	3
Social	2,50	2,50	0,514	2	3
Environment	2,44	2,00	0,511	2	3
Psychological	2,33	2,00	0,485	2	3

In table 1.4 above, it shows the quality of life in the post-test intervention group. The average quality of life score based on the physical domain is 2.28 with a standard deviation of 0.461, the psychological domain is 2.50 with a standard deviation of 0.514, the social domain is 2.44 with a standard deviation of 0.511, the environmental domain is 2.33 with a standard deviation of 0.485 and a range of 2 until 3.

Table 4.5 Frequency Distribution of Post Test Quality of Life Values to Respondents at the Deli Serdang Regional General Hospital

Quality of Life	Mean	Median	SD	Minimum	Maximum
<b>Controle Group</b>					
Physique	1,83	2,00	0,707	1	3
Psychological	1,94	2,00	0,639	1	3
Social	1,89	2,00	0,471	1	3
Environment	1,89	2,00	0,676	1	3

Based on table 4.5 above, it shows the quality of life in the control group in the post-test period. The average quality of life score based on the physical domain was 1.83 with a standard deviation of 0.707, the psychological domain was 1.94 with a standard deviation of 0.639,



the social domain was 1.89 with a standard deviation of 0.471, the environmental domain was 1.89 with a standard deviation of 0.676, and the range 1 to 3.

## 2. Bivariate analysis

To find out the effect of wound care using the modern dressing method on the quality of life of diabetic ulcer patients, a data normality test was first performed using the Shapiro Wilk Test because the number of respondents was <50 people.

### Data Normality Test Results

Table 1.6 Results of Respondents' Quality of Life Normality Test at the Asri Wound Care Center Medan Clinic

Quality of Life	Intervention Group				Controle group			
	Pre p-value	Data	Post p-value	Data	Pre p-value	Data	Post p-value	Data
Physique	0,000	NN	0,000	NN	0,000	NN	0,002	NN
Psychological	0,000	NN	0,000	NN	0,000	NN	0,001	NN
Social	0,000	NN	0,000	NN	0,000	NN	0,000	NN
Environment	0,002	NN	0,000	NN	0,000	NN	0,002	NN

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NN: Not Normally

In table 1.6 above, it shows the Normality Test with the Shapiro Wilk Test, it can be seen that the quality of life of the intervention group and the control group is not normally distributed ( $p < 0.05$ ), so it is analyzed using the Willcoxon Test to test differences in

quality of life before and after wound care with the modern dressings. The Influence of Respondents' Quality of Life Before and After Modern Dressing Wound Care at the Asri Wound Care Center Medan Clinic in the Intervention Group.

Table 1.7 Willcoxon test results. Quality of Life Pre Test and Post Test in the Intervention Group at the Asri Wound Care Center Clinic in Medan

Statistical Test Results							
No	Quality of Life Hidup	Mean		SD			p-value
		Pre	Post	Difference	Pre	Post	
1.	Physique	1,56	2,28	-0,72	0,616	0,461	0,000
2.	Psychological	1,67	2,50	-0,83	0,594	0,514	0,001
3.	Social	1,83	2,44	-0,61	0,514	0,511	0,002
4.	Environment	1,89	2,33	-0,44	0,676	0,485	0,033

In table 1.7, it can be seen that the physical domain in the intervention group before and after being given modern dressing treatment obtained an average difference of -0.72,

meaning that between before and after there was an average increase of 0.72. The psychological domain in the intervention group before and after being given modern dressing treatment obtained an average



difference of -0.83 meaning that between before and after there was an average increase of 0.83. The social domain in the intervention group before and after being given modern dressing treatment obtained an average difference of -0.61 meaning that between before and after there was an average increase of 0.61. The environmental domain in the intervention group before and after being given modern dressing treatment obtained an average difference of -0.44 meaning that between before and after there was an average increase of 0.44.

From the results of statistical tests using Willcoxon, obtained the physical domain (p=0.000), psychological domain (p=0.001),

social domain (p=0.002), environmental domain (p=0.033) or p value <0.05, indicating that in In all domains of quality of life in the intervention group, there were differences in the quality of life of respondents before and after wound care was carried out with modern dressing methods. This means that there is an effect of wound care using modern dressing methods on the quality of life of diabetic ulcer patients in the intervention group.

The Influence of Respondents' Quality of Life Before and After Conventional Wound Care Treatment at the Deli Serdang Regional General Hospital in the Control Group.

Table 1.8 Willcoxon test results for Pre and Post Quality of Life in the Control Group at the Deli Serdang Regional General Hospital

No	Quality of Life Hidup Controle Group	Statistical Test Results					
		Mean		Difference SD		p-value	
		Pre	Post	Pre	Post		
1.	Physique	1,61	1,83	-0,22	0,502	0,707	0,102
2.	Psychological	1,61	1,94	-0,33	0,502	0,639	0,084
3.	Social	1,61	1,89	-0,28	0,502	0,471	0,096
4.	Environment	1,67	1,89	-0,22	0,485	0,676	0,157

Based on table 1.8 above, it can be seen that the physical domain in the control group before and after being given conventional wound care obtained an average difference of -0.22, meaning that between before and after there was an average increase of 0.22. The psychological domain in the control group before and after being given conventional wound care obtained an average difference of -0.33 meaning that between before and after there was an average increase of 0.33. The social domain in the control group before and after being given conventional wound care obtained an average difference of -0.28 meaning that between before and after there

was an average increase of 0.28. The environmental domain in the control group before and after being given conventional wound care obtained an average difference of -0.22, meaning that between before and after there was an average increase of 0.22.

From the results of statistical tests using Willcoxon, obtained the physical domain (p=0.102), psychological domain (p=0.084), social domain (p=0.096), environmental domain (p=0.157) or p value > 0.05, indicating that in In all domains of quality of life in the control group, there was no difference in the quality of life of the respondents before and after wound care with conventional methods.



This means that there is no effect of wound care with conventional methods on the quality of life of diabetic ulcer patients in the control group.

Analysis of Differences in Respondents' Quality of Life in the Intervention Group After Modern Dressing Wound Treatment and the Control Group After Conventional Wound Treatment.

Table 1.9 Results of the Willcoxon Test Quality of Life Post Test in the Intervention Group and the Control Group at the Asri Wound Care Center Medan Clinic

No	Quality of Life Hidup After Treatment Wound	Mean Rank		Difference	P Value
		The Control Group	the Intervention Group		
1.	Physique	1,83	2,28	-0,45	0,033
2.	Psychological	1,94	2,50	-0,56	0,013
3.	Social	1,89	2,44	-0,55	0,020
4.	Environment	1,89	2,33	-0,44	0,046

Based on table 1.9 above, it can be seen that the physical domain in the intervention group after being given modern dressings and the control group after being given conventional wound care obtained an average difference of -0.45 meaning there is an average difference of 0.45. The psychological domain in the intervention group after being treated with modern dressings and the control group after being given conventional wound care obtained an average difference of -0.56 meaning that there is an average difference of 0.56. The social domain in the intervention group after being given modern dressing treatment and the control group after being given conventional wound care obtained an average difference of -0.55 meaning that there is an average difference of 0.55. The environmental domain in the intervention group after being given modern dressing treatment and the control group after being given conventional wound care obtained an average difference of -0.44, meaning there is an average difference of 0.44.

From the results of statistical tests using Willcoxon, it shows that there are differences in the quality of life of respondents in all domains of quality of life in the intervention group and the control group after wound

care, namely the physical domain ( $p=0.033$ ), the psychological domain ( $p=0.013$ ), the social domain ( $p =0.020$ ), environmental domain ( $p=0.046$ ) or  $p$ -value  $<0.05$ . This means that there is an effect of wound care with modern dressing methods on the quality of life of diabetic ulcer patients.

#### DISCUSSION

##### 1. The Effect of Respondents' Quality of Life Before and After Modern Dressing Wound Care at the Medan Asri Wound Care Center Clinic in the Intervention Group

Based on the results of the research that has been done, the quality of life of respondents in the intervention group before and after wound care with modern dressing methods showed an average quality of life increased 0.72 in the physical domain, 0.83 in the psychological domain, 0.61 in the social domain , and 0.44 in the environmental domain. This shows that the actions taken in the intervention group had an impact on changes in the quality of life of the intervention group, namely in the form of an increase in the average quality of life score in all quality of life domains which was also



statistically proven using Willcoxon, showing that in all domains of quality of life in the intervention group there were differences in the quality of life of the respondents before and after the wound care was carried out using the modern dressing method, namely the physical domain ( $p=0.000$ ), the psychological domain ( $p=0.001$ ), the social domain ( $p=0.002$ ), the environmental domain ( $p=0.033$ ) or  $p$ -value  $< 0.05$ .

According to the researchers' assumptions, the average value of quality of life before wound care has increased after wound care. Improvements in the average quality of life in diabetic ulcer patients mostly occur in the domain of physical and psychological health. Physical health is the main factor influencing pain and anxiety [7]. Diabetic ulcers are chronic wounds that are difficult to heal. Physical health that begins to decline due to these ulcers can result in increased pain and medical needs, reduced ability to carry out activities and cause anxiety about the health they experience. The anxiety and fear that is experienced is closely related to the decline in the psychological domain. So that the improvement in the degree of wound and the characteristics of the wound after wound care is what gives a change in perception and hope with reduced pain and medical needs.

The results of this study are in line with Ismail's theory [4] that the principle of modern wound care management is to maintain and keep the wound environment moist to improve the wound healing process. The results of this study are also in line with Theddeus theory that the goal of DM treatment is to reduce the risk of complications of microvascular and macrovascular disease, improve symptoms of complications, and reduce the number of cases of death, as well as improve the quality of life of DM sufferers. Improving the quality of life is in line with the hope and certainty of improving the characteristics of the condition of the wound, where the quality of life itself is an individual's perception of their position in

life regarding problems and the value system in which they live and is related to their goals, expectations, standards and concerns. 7].

## 2. The Effect of Respondents' Quality of Life Before and After Conventional Wound Care Treatment at Deli Serdang General Hospital in the Control Group.

Based on the results of the research that has been done, the quality of life of the control group respondents before and after wound care with conventional methods showed an average quality of life increased 0.22 in the physical domain, 0.33 in the psychological domain, 0.28 in the social domain, 0.22 in the environmental domain. However, the results of statistical tests using Willcoxon showed that in all domains of quality of life in the control group there was no difference in the quality of life of respondents before and after wound care was carried out using conventional methods, namely the physical domain ( $p=0.102$ ), the psychological domain ( $p=0.084$ ), social domain ( $p=0.096$ ), environmental domain ( $p=0.157$ ) or  $p$  value  $> 0.05$ .

According to the researchers' assumptions, the physical health of patients with diabetic ulcers is in the poor category due to the illness they experience and fatigue causing difficulties in carrying out daily activities. In addition, ulcer pain also disrupts their sleep patterns, so they often complain of dissatisfaction with sleep quality. All of these things cause respondents to be dissatisfied with their current health. Psychological health affects the quality of life of diabetic ulcer sufferers. Diabetic ulcer sufferers often feel worried about the disease, thus preventing them from doing activities.

Anxiety greatly affects the psychological health of a person suffering from a diabetic ulcer, anxiety increases due to fear of a wound that will not heal, feelings of loss of motivation to get up and even to wash and dress, loss of freedom, frustration because they are a burden to the family, and fear of be



amputated. The psychological condition of the respondents was in the good category because they were able to accept the physical changes they were currently experiencing. Great hope for healing causes them to be motivated to keep getting up. In addition, family support for them causes them not to feel lonely, hopeless, anxious, and depressed. This is also in line with theory [8], quality of life is a feeling of satisfaction and happiness so that patients with diabetes mellitus can carry out their daily lives properly. There are several aspects that can affect quality of life, these aspects are the ongoing special needs in DM care, what symptoms might appear when blood sugar levels are unstable, complications that can arise as a result of diabetes and sexual dysfunction. These aspects can be prevented if the patient can carry out good and regular control through regular, appropriate and permanent lifestyle changes so that complications do not occur which can reduce the quality of life of patients with diabetes mellitus and can carry out daily life properly [9].

Quality of life is a person's perception of his health condition which affects health in general in carrying out roles and physical functions and body condition [9]. Diabetes Mellitus with diabetic ulcers is a chronic disease that requires continuous management so that complications do not occur which can result in a decrease in the patient's quality of life [9]. The decline in the quality of life of diabetes mellitus patients with diabetic ulcers can be due to the chronic nature of the disease so that it can have an impact on the treatment and therapy being undertaken.

### 3. Differences in the Quality of Life of Respondents in the Intervention Group After Modern Dressing Wound Care and the Control Group After Conventional Wound Treatment

Based on the results of the research that has been done, the quality of life of respondents in the intervention group after wound care with modern dressing methods and the control group after wound care with

conventional methods showed an average quality of life increased 0.45 in the physical domain, 0.56 in the psychological, 0.55 in the social domain, and 0.44 in the environmental domain. The results of statistical tests using Willcoxon showed that there were differences in the quality of life of respondents in all domains of quality of life in the intervention group and the control group after wound care, namely the physical domain ( $p=0.033$ ), the psychological domain ( $p=0.013$ ), the social domain ( $p=0.033$ ), environmental domain ( $p=0.046$ ) or  $p$  value  $< 0.05$ .

According to the researchers' assumptions, wound care in a humid atmosphere is very helpful in the wound healing process. Moist conditions on the wound surface can enhance the process of developing wound repair, preventing tissue dehydration and cell death. This condition can also increase the interaction between cells and growth factors. Therefore, the dressing must be moisture-holding. The results of this study are also in line with Theddeus theory that the goal of DM treatment is to reduce the risk of complications of microvascular and macrovascular disease, improve symptoms of complications, and reduce the number of cases of death, as well as improve the quality of life of DM sufferers.

### CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research conducted by researchers on respondents at the Asri Wound Care Center Medan Clinic regarding the Effect of Wound Care with Modern Dressing Methods on the Quality of Life of Diabetic Ulcer Patients, it can be concluded as follows:

1. From the results of the research that has been done, there is an effect of wound care using modern dressing methods on the quality of life of diabetic ulcer patients in the intervention group at the Asri Wound Care Center Medan Clinic



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