


The Effect of Aloe Vera Extract on Wound Healing In Post Hospitalization Diabetes Mellitus Patients

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Article Info	ABSTRACT
Keywords: Aloe Vera Extract, Wound Healing, Diabetes Mellitus	The number of people with diabetes increases from year to year, accompanied by an increase in complications of diabetic ulcers. Various kinds of interventions are carried out to accelerate the healing of diabetic foot wounds, one of which is the use of aloe vera extract. To determine the effect of aloe vera extract on wound healing in patients with post-hospitalization diabetes mellitus. This study used a Pre-Experiment research design with a group Pretest post-test design. The population was all patients with diabetes mellitus and diabetic ulcers, and the sample was taken using the accidental sampling technique, totalling 37 people. Data analysis using the Wilcoxon Sign Rank Test Most of the wound healing before being given aloe vera extract was quite good. Namely, 26 people, or 70.3%, most wound healing after being given aloe vera extract was good; 28 people or 75.7%, there was an effect of providing aloe vera extract to wound healing in Diabetes Mellitus patients with a value of $p = 0.000$. Nurses should apply wound care using aloe vera as a non-pharmacological independent nursing action.
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INTRODUCTION

The development of Indonesian public health is influenced by mortality and morbidity rates. One of the highest morbidities in Indonesia is the incidence of diabetes mellitus, which has increased from year to year. Diabetes Mellitus (DM) is a chronic disease characterized by increased blood glucose levels and impaired carbohydrate, fat, and protein metabolism caused by a lack of insulin hormone. Diabetes mellitus is one of the groups of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion, insulin function, or both that are associated with long-term damage, dysfunction, or failure of several body organs if not treated properly (Talalu, 2017).

Diabetic ulcers, also known as diabetic wounds, are necrosis of the extremities of DM sufferers caused by impaired blood flow. There are several triggers for diabetic wounds, including endogenous factors such as neuropathy and angiopathy and exogenous factors such as trauma and infection. Sensory neuropathy, namely loss of sensation in the feet, causes patients to be unable to know and feel if there is a wound on the foot. This wound that is discovered too late causes diabetic ulcers. Diabetic ulcers are serious complications of diabetes caused by peripheral neuropathy, peripheral arterial disease, and

immunosuppressants. Treatment of diabetic ulcers has so far been carried out using wound care (Ali, 2016).

The process of healing diabetic wounds requires proper wound care and treatment. Wound care must be done carefully and adequately from the first time the patient comes (Waspadji, 2016). The main goal of managing Diabetic Ulcers (DFU) is to access the process towards wound healing as quickly as possible because improvement of foot ulcers can reduce the possibility of amputation and death of diabetic patients. In general, management of diabetic foot ulcers includes ischemia management, debridement, wound care, reducing medical plantar pressure (offloading), surgical treatment, comorbidity management and reducing the risk of recurrence and infection management (Enikmawati & Hafiduddin, 2019).

One of the wound treatments used in modern wound care techniques is aloe vera extract. Aloe vera is one of the medicinal plants that has many benefits. Aloe vera contains several substances, such as auxin, gibber-relin, anthraquinone, vitamin A, vitamin C, and vitamin E, which have been proven to be effective as anti-inflammatory, antipyretic, antioxidant, antiseptic, antimicrobial, and antiviral. Aloe vera can penetrate, absorb, and diffuse well so that it can withstand the loss of body fluids from the surface of the skin so that its moisture is maintained; a moist surface makes the epithelium from the edge of the wound easier to migrate to the wound so that the epithelial migration process increases along with myofibroblast contractions that will close the wound so that the speed of wound healing increases. The principle of this modern wound care product is to maintain and keep the wound environment moist to facilitate the wound healing process and maintain tissue fluid loss and cell death (Enikmawati & Hafiduddin, 2019).

Aloe vera is one of the ten best-selling plants in the world that has the potential to be developed as a medicinal plant and industrial raw material; aloe vera can increase the expression of type I procollagen intra and extracellularly in the human dermis and is rich in substances such as enzymes, amino acids, minerals, vitamins, polysaccharides, and other components that are very beneficial for health. The aloe vera used can be aloe vera extract, which can be gel/jelly. Aloe vera extract is aloe vera that has been processed in such a way by the factory with various brands or packaging. The packaging size ranges from 50 mg to 150 mg (Zakariya, 2021).

According to the International Diabetes Federation, in 2019, it stated that there were 463 million people in the world suffering from diabetes mellitus, with China being in first place with the number of diabetes mellitus sufferers totalling 116.4 million sufferers and increasing by 5% in 2020. China remains in first place with the number of sufferers of 140.87 million sufferers. At the same time, in Indonesia according to the Data and Information Center of the Ministry of Health in 2019, Indonesia was ranked seventh in the world for diabetes mellitus sufferers, totalling 10.7 million sufferers, while in 2020, Indonesia's ranking rose to number five in the world with the number of diabetes mellitus sufferers totalling 19.47 million sufferers (Pusdatin, 2021).

The increasing number of people with diabetes mellitus has led to an increase in the incidence of diabetes complications. Diabetes Mellitus causes several complications, one of which is neuropathy (nerve damage) in the feet, which can increase the incidence of foot

ulcers. Ulcers are serious complications of diabetes caused by peripheral neuropathy. Wounds that are relatively small and like in general, but if the wounds in DM sufferers are handled and treated, they will become infected and lead to amputation (Yoyoh et al., 2017).

Based on the results of a preliminary study conducted by researchers, patients with diabetes mellitus who were treated with diabetic wounds in 2019 numbered 56 patients, and this increased in 2020 to 52 patients and, in 2021, as many as 23 people. Until December 2022, it was recorded 40 people. Researchers interviewed 5 DM patients about the actions that had been taken to treat wounds, all of whom stated that wound care was carried out by nurses using materials and medicines that had been given. The researcher also asked about alternative wound care performed by nurses while treating patient wounds, all of whom answered that alternative wound care was never performed.

Based on the above phenomenon, it can be concluded that alternative wound care, such as aloe vera extract, was never performed while treating diabetic wound patients. Based on the above, the researcher is interested in further researching the "effect of giving aloe vera extract on wound healing in post-hospitalized Diabetes Mellitus patients at the Hospital".

METHOD

The research design used was a Pre-Experiment with one group pretest and post-test design. The population was made up of hypertensive patients who were treated at the health centre, all diabetes mellitus patients with diabetic ulcers who were treated in the hospital treatment room, and the research sample was taken using the accidental sampling technique, totalling 37 respondents. Data analysis was carried out using the Wilcoxon signed rank test.

RESULT AND DISCUSSION

Results

Respondent's Characteristics

Table 3.1 Frequency Distribution of Respondent Characteristics Based on Age

Based on gender, the research subjects are grouped into two, namely male and female with a description of the distribution of subjects as seen in the following table.

No	Respondents Age	Σ
1.	20-30 years	2
2.	>30-50 years	12
3.	>50-60 years	23

The largest number was junior high school, namely 19 respondents or 51.4%.

Table 3.2 Frequency Distribution of Respondent Characteristics Based on Education

No.	Education	Σ	%
1.	No school / not finished school	2	5,4
2.	Elementary school or equivalent	7	18,9
3.	Junior high school or equivalent	19	51,4

No.	Education	Σ	%
4.	Senior high school or equivalent	9	24,3
	Numbers	37	100

The largest number was junior high school, namely 19 respondents or 51.4%.

Table 3.3 Frequency Distribution of Respondent Characteristics Based on Employment Status

No.	Employment Status	Σ	%
1.	Unemployed / Retired	4	10,8
2.	Laborer	25	67,6
3.	Trader / Self-employed	7	18,9
4.	Private employee	1	2,7
	Numbers	37	100

The majority were laborers, namely 25 respondents or 67.6%.

Tabel 3.4 Frequency Distribution of Respondent Characteristics Based on Gender

No.	Gender	Σ	%
1.	Man	17	45,9
2.	Woman	20	54,1
	Numbers	37	100

Analysis Univariate

Table 3.5 Healing of wounds in Diabetes Mellitus patients before being given aloe vera extract

No.	Wound Healing	Numbers	
		f	%
1	Poor	11	29,7
2	Quiet Good	26	70,3
	Numbers	37	100

Based on the table above, wound healing of Diabetes Mellitus patients before being given aloe vera extract after hospitalization was quite good, namely 26 people or 70.3%.

Table 3.6 Healing of wounds in patients with Diabetes Mellitus after being given aloe vera extract

No.	Wound Healing	Numbers	
		f	%
1	Quiet Good	9	24,3
2	Good	28	75,7
	Numbers	37	100

Based on the table above, the healing of wounds in Diabetes Mellitus patients after being given aloe vera extract after being hospitalized was good, namely 28 people or 75.7%.

Analysis Bivariate

Table 3.6 The Effect Of Giving Aloe Vera Extract On Wound Healing In Patients With Diabetes Mellitus.

No	Variabel	Mean	SD	Min	Max	P Value
1	Wound healing Before	1,70	0,463	1	2	0,000
2	Wound healing After	2,76	0,435	2	3	

Negative ranks = 0
Positive Ranks =37
Ties = 0

Discussion

Wound healing of Diabetes Mellitus patients before being given aloe vera extract Post-Hospitalization

Researchers argue that most of the poor healing of diabetic foot wounds is caused by the lack of implementation of the principles of diabetes treatment, namely maintaining diet, exercise and controlling blood sugar levels with anti-glycemic drug therapy; in addition, wound care that is not by the principles of modern wound care, namely moisture, also slows down the wound healing period, plus the implementation of wound care that does not pay attention to the principles of sterilization and cleanliness when dressing.

Wound healing of Diabetes Mellitus patients after being given aloe vera extract Post-Hospitalization in Hospital

Wound healing of Diabetes Mellitus patients after being given aloe vera extract Post-Hospitalization in Hospital is good, namely 28 people or 75.7%. Researchers argue that wound healing of Diabetes Mellitus patients after being given aloe vera extract is good because aloe vera extract can maintain skin moisture and has antimicrobial substances that can stimulate tissue and skin growth and kill bacteria that can cause infection.

The effect of giving aloe vera extract on wound healing in post-hospitalized Diabetes Mellitus patients at the Hospital

Aloe vera extract affects wound healing in post-hospitalized Diabetes Mellitus patients at the Banjarmasin Islamic Hospital with a p-value = 0.000. This effect can be seen in the respondents who, before the intervention of giving aloe vera extract during wound care, were mostly quite good. Still, the healing was good after giving aloe vera extract during wound care.

The researcher concluded that aloe vera affects the healing of diabetic wounds because it is moist and can maintain the skin in its actual condition. The principle of moisture caused by aloe vera is normal skin moisture, which helps stimulate skin epithelialization; aloe vera also contains anti-bacteria that can inhibit the growth of bacteria that can worsen skin damage.

CONCLUSION

Wound healing of Diabetes Mellitus patients before being given aloe vera extract Post-Hospitalization in the Hospital was quite good, namely 26 people or 70.3%. Wound healing of Diabetes Mellitus patients after being given aloe vera extract Post-Hospitalization in the Hospital was good, namely 28 people or 75.7%. Aloe vera extract affects wound healing in

Diabetes Mellitus patients Post-Hospitalization in the Hospital with a p-value = 0.000. Nurses should apply wound care using aloe vera as a non-pharmacological independent nursing action. According to recommendations, nurses should also provide health education on eating or diet patterns and regularly take anti-diabetic drugs.

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