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The Impact of Offering Cutting-Edge Wound Care Dressings on the Rate of Glandular Growth in Patients with Diabetes Mellitus at the Tulungagung District Wound Treatment Hospital

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ABSTRACT

A type of chronic consequence of diabetes mellitus, diabetic ulcers are brought on by infection as a result of elevated blood glucose levels, which prolongs the inflammatory process in the lesion. Modern dressing therapies are one intervention that can be used to treat the diabetic ulcer condition. The purpose of this study was to ascertain how the use of contemporary wound care dressings affected the rate at which diabetic ulcer. The pre-experimental design method is being used in this quantitative study, which consists of a single group pretest-posttest. Using the simple random sampling procedure, 23 respondents made up the research sample. An observation sheet with a BWAT assessment was the tool utilized, and it was thereafter.

Keywords: Diabetic Ulcers, Modern Dressing, Wound Care

BACKGROUND

As of right now, 463 million individuals worldwide suffer with diabetes; by 2019 that figure is expected to nearly double to 4 million (Ministry of Health, 2020). Over the past ten years, there has been a rise in the number of people with diabetes mellitus (DM) experiencing chronic complications, with diabetic ulcers being the most common (PERKENI 2015). 40 to 60 million diabetics worldwide suffer from diabetic ulcers as well as serious and persistent problems with their lower limbs (IDF 2022).

Patients with diabetes mellitus have a 15% prevalence of diabetic ulcers, a 30% amputation rate, a 32% mortality rate, and diabetic ulcers are the leading cause of hospitalization for these patients.

With appropriate wound care, it is possible to stop a wound from getting worse. In order to promote natural tissue growth and wound healing, wound care is now being developed employing contemporary dressing techniques that preserve wound moisture through the use of moisture-retaining coverings. Considering that, in general, cells may survive in a moist, humid environment (Maharani E 2015). Innovation in wound care products is prioritized in modern wound care management, and these products are chosen with cost, comfort, and safety in mind (Fata UH 2016). Patients who received wound treatment using contemporary dressings reported a decrease in wound grade scores of 7.5, per Tiara's (2012) research (Tiara S 2013).

According to a study conducted at the Tulungagung Regency Wound Care Home, thirty people had diabetes mellitus.

METHODS

With a single group pretest-posttest, this study is quantitative in nature and employs the pre-experimental design technique. Thirty diabetes mellitus patients receiving treatment at the Wound Care Home with diabetic ulcers comprised the study's population. There were 26 responders in the sample. by applying the approach of simple random sampling. Then, the Paired Sample T-examine was used to examine it. If the results of the Shapiro-Wilk normality test showed that the significant values for the data in both groups were less than 0.05, it was determined that the distribution of the data in the two groups was not normal, and the Wilcoxon Signed Rank Test was used. Using modern dressings to treat wounds was the study's independent variable. In the meantime, the degree of granulation expansion in ulcers caused by diabetes is the dependent variable.

RESULTS

Table 1. Frequency Distribution of Respondent Characteristics

Respondent Characteristics		Frequency	
		N	**(%)**
Age (Year)	26-35	2	8,7
	36-45	7	30,4
	>45	14	60,9
	Total	**23**	**100**
Gender	Man	10	43,5
	Woman	13	56,5
	Total	**23**	**100**
Education	Elementary School	11	47,8
	Junior High School	4	17,4
	Senior High School	8	34,8
	Total	**23**	**100**

Source: Data analysis results, 2022.

Table 1 demonstrates that, out of the 23 respondents, 14 respondents (60.9%) were above 45 years old. When it came to gender and education, the majority of respondents were female (13 respondents, or 56.5%) and had completed at least elementary school (11 respondents, or 47.8%).

Table 2. Descriptive Distribution of Granulation Levels in Diabetic Ulcers Before Wound Treatment Intervention with Modern Dressing

	N	**Min.**	**Max.**	**Mean**	**Std. Deviation**
Pre Intervensi	23	10	30	21,52	7,6

Source: Data analysis results, 2022.

Table 2 illustrates that, prior to receiving wound care intervention with contemporary dressings, the average granulation level in diabetic ulcers among patients with diabetes mellitus was 21.5%, with a minimum score of 10% and a maximum score of 30%.

Table 3. Descriptive Distribution of Granulation Levels in Diabetic Ulcers After Wound Care Intervention with Modern Dressing

	N	**Min.**	**Max.**	**Mean**	**Std. Deviation**
Post Intervensi	23	43	78	59,74	10,78

Source: Data analysis results, 2022.

Table 3 illustrates that the average granulation value of 59.74%, with a minimum score of 43% and a maximum score of 78%, was seen in the diabetic ulcers of patients with diabetes mellitus following wound care intervention with contemporary dressings.

Table 4. Normality test results for granulation level data before and after intervention

Degree of Granulation	Shapiro-Wilk		
	Statistic	df	Sig.
Pre Intervention	.829	23	.001
Post Intervention	.939	23	.175

Source: Data analysis results, 2022.

Table 4's normality test indicates that, prior to receiving wound care using the modern dressing method, the granulation level results yielded a p value of 0.001, and that, following wound care using the modern dressing method, the p value was obtained at 0.175. This indicates that the data is not normally distributed (p>0.05), so it is based on The Wilcoxon Signed Rank Test, which was employed in this study, produced these findings.

Table 5. Cross Tabulation and Data Analysis Results of the Effect of Providing Wound Care Using Modern Dressing Methods on Granulation Growth Rates in Diabetic Ulcers

Degree of Granulation	N	Min	Max	Mean	Std. Deviation	P-Value
Pre	23	10	30	21,52	7,6	0,000
Post	23	43	78	59,74	10,78	

Source: Data analysis results, 2022.

According to table 4.5's results, the average respondent's granulation growth rate was 21.52% prior to receiving wound care using the modern dressing method; however, following wound care using the modern dressing method, the average respondent's granulation growth rate increased to 59. 74%. The Wilcoxon Signed Rank Test statistical test results show that the Pvalue (Sig. 2 tailed) is 0.008, and since Pvalue ≤ α (α = 0.05), H1 is accepted and H0 is rejected. This indicates that the use of contemporary wound care dressings has an impact on the rates of granulation in diabetic ulcers in patients with diabetes mellitus.

DISCUSSION

Examining Tingkat Granulasi in Ulkus with Diabetes Before Using Modern Clothes to Help Luka

According to study results, the rata-rata granulasi for diabetic ketoacidos before undergoing the present dressing procedures was 21.5%, with a minimum skor of 10% and a maximum skor of 30%.

According to Waspadji (2009) in Syahputra 2018, a kronik complexity known as neuropati would arise in patients with diabetes mellitus if the glukosa darah is not well regulated. As a result of sorbitol and fruktosa degradation, the syaraf jaringan will alter, resulting in akson contraction, a reduction in the rate of parastesia and induksia, menurunnya reflek otot, atrofi otot, keringat berlebihan, kulit kering, and hilang rasa. Patients with diabetes mellitus may sustain trauma if they do not take precautions.

According to the results of Hastuti's research, which were published in Purwanti & Maghfirah (2016), ketidakpatuhan pasien pertaining to diabetes mellitus diet, kurangnya fisik activities, perawatan kaki yang tidak teratur, serta penggunaan alas kaki yang tepat. Purwanti LE and Maghfirah S. (2016). An effective and optimal light management system can be used

to address light leakage. According to Damsir et al. (2018), perawatan luka has the potential to alleviate the infection that exacerbates diabetic eye disease.

The results of the study support the hypothesis and statistics below; the average wound granulation rate in diabetic ulcers was found to be 21.5%, and at least 30% of the individuals' wounds were in the

Assessment of Granulation Levels in Diabetic Ulcers Following Modern Dressing-Assisted Wound Care Intervention

The study's findings indicate that, following wound care management using contemporary dressings, patients with diabetes mellitus had an average granulation level of 59.74%, with a minimum score of 43% and a maximum score of 78% in their diabetic ulcers. In Maharani (2015), Briant (2007) states that wound care consists of a number of procedures such as cleaning the wound, bandaging it, changing the dressing, filling (packing) the wound, securing the dressing, and providing comfort, which entails cleaning the drainage area and the skin as well as irrigation and drainage. Using moisture-retaining dressings, wounds can be kept moist with contemporary dressing techniques, allowing for natural tissue growth and wound healing. Considering that cells can essentially survive.

The average score for the degree of wound granulation in diabetic ulcers after receiving current wound dressing treatment was 59.74%, with a maximum score of 78%. The study's results are consistent with the theory and viewpoints mentioned above. Based on the observations made by the researchers, the wound started to exhibit changes on the 12th day, including the regeneration of granulation tissue and epithelium. The researchers came to the conclusion that administering curse tablets and DM milk, if done on a regular basis to achieve the best outcomes, was extremely beneficial in the wound healing process after wound care utilizing contemporary dressing techniques and a high protein diet.

The impact of using contemporary dressing techniques for wound care on the rate of granulation growth in diabetic ulcers among patients with diabetes mellitus at Tulungagung Regency Wound Care Homes

The study findings indicate that the average respondent's granulation growth rate was 21.52% prior to receiving wound care using the modern dressing method; however, following wound care using the modern dressing method, the average respondent's granulation growth rate increased to 59.74%. The Wilcoxon Signed Rank Test statistical test results show that the Pvalue (Sig. 2 tailed) is 0.000. Since Pvalue $\leq \alpha$ ($\alpha = 0.05$), H1 is accepted and H0 is rejected, indicating that the use of contemporary wound care dressings has an impact on the rates of granulation in diabetic ulcers in patients with diabetes mellitus.

Maharani (2015) states that the mechanism of the healing process for wounds caused by diabetes mellitus employing contemporary dressing techniques attempts.

The results of this study, which show that utilizing contemporary dressing techniques to treat wounds can raise respondents' average granulation growth, are consistent with the theory and research mentioned above. The average respondent's granulation growth rate was 21.52% before to providing wound care utilizing the current dressing approach; on the twelfth day, this rate jumped to 59.74% on average. This is demonstrated by the results of the average granulation growth score. Thus, it can be said that during the course of the two weeks of treatment, there was an average rise in the granulation growth score of 38.22%. Based on the study findings, the researchers deduced that the application of contemporary dressing techniques in wound care had an impact on the development.

The research's findings indicate that 60.9% of all respondents were over 45 years old, making up the bulk of the sample. Diabetic ulcers are more common in those 45 years of age and older. This is consistent with studies by Rukmi and Hidayat (2018), who found that as people age, their bodies' physiological capacities decline and they develop diabetic ulcers. Due to diminished pancreatic gland function, there is less than ideal blood glucose control. This can

lead to macroangiopathy, which can lower blood circulation to the extremities and increase the risk of diabetic ulcers (Rukmi DK. 2018).

The majority of respondents—56.5% of all respondents—were female, according to the research's findings.

The majority of respondents, or 47.8% of all respondents, were at the educational level, according to research findings at the educational level. Health status and education are strongly associated social factors. This is consistent with the claim made by Maryunani (2015) that education has a significant influence on how people learn and behave. A person's knowledge will rise in proportion to his or her level of education, enabling them to learn more about the illness they are afflicted with and its prevention, treatment, and aftercare, which lowers the likelihood of complications.

CONCLUSION

Prior to receiving wound care intervention with contemporary dressings, patients with diabetes mellitus had an average granulation level of 21.5% in their diabetic ulcers. After receiving contemporary dressings as part of a wound care intervention, individuals with diabetes mellitus demonstrated an average granulation value of 59.74% in their diabetic ulcers. The pace of granulation growth in diabetic ulcers in people with diabetes mellitus is impacted by the use of contemporary wound care dressings.

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