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Original Research

Caring-Based Supportive Educative Enhance Prevention Ability Of Diabetic Ulcers In Patients With Type II Diabetes

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ABSTRACT

Background*: Patients with diabetes mellitus are at risk for complications of diabetic foot ulcers. This complication can avoid if people with diabetes mellitus have the proper knowledge of self-care management. This study aimed to determine the effect of self-care management education on preventing foot ulcers in patients with type II diabetes mellitus.*

Methods: *The design of this study is quasi-experiment. The number of samples was 86 with a simple randomized sample divided into two groups, 43 in the treatment group caring base supportive educative activities, and 43 in the control group distributing leaflets on diabetes. Results from studies were analyzed using the paired t-test and the independent t- test.*

Results: *These study results are based on independent t-test scores of self-care management in the treatment and control groups after the intervention, namely p = 0.002. The difference in the delta score of self-care management scores in the treatment and control groups after the intervention was p=0.000.*

Conclusion: *The results showed that self-care management education interventions effectively increased the ability of self-care patients with type II diabetes mellitus to prevent complications of diabetic ulcers. This intervention can be a promotive effort to increase self-care independence in patients with type II diabetes mellitus to avoid complications of diabetic wounds.*

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INTRODUCTION

One of the health problems is a non-communicable disease, namely the incidence of diabetes mellitus in Indonesia. According to the Indonesian Endocrinology Association, non-communicable diseases are the highest cause of death in Indonesia (Rahman et al., 2020). Diabetes mellitus is a serious and complex metabolic disease that attacks almost all vital organs in the body and is usually has hyperglycemia symptom

due to decreased insulin secretion and impaired insulin activity or even both (Yusnaeni & Fajriansih, 2021).

Currently, the prevalence of diabetes mellitus is increasing; especially type II diabetes mellitus, which amounts to more than 90% to 95% of all diabetes populations. In patients with DM type II, it is more difficult to monitor blood glucose levels because they are not dependent on insulin and are more often caused by unhealthy lifestyle management (Fatmawati et al., 2020). If the person or patient does not control or maintain blood glucose levels properly, it can cause various complications or other diseases such as chronic kidney failure, stroke, heart attack, leg ulcers to amputation of part of the body, blindness, and impotence (Dewi & Hinchliffe, 2020).

There are 425 million people with diabetes mellitus and 82 million people in the world and Southeast Asia (Septiani et al., 2020). Indonesia is the highest number of people with diabetes mellitus in the world and is in the top 10 in 2019 according to the International Diabetes Federation, which is 10.7 million people, of which Indonesia is ranked seventh based on these data (Dewi & Hinchliffe, 2020). Doctor's diagnosis in the population aged 15 in the East Java province is 2.6%. doctor's diagnosis in residents of all ages and the prevalence of routinely checking blood sugar levels (KGD) in the West Java province is 2.0% (Rumaiza & Khairani, 2019).

Based on data obtained from the Health Service, Sumenep Regency, in 2019 there were 15,497 people diagnosed with diabetes mellitus and an increase in 2020 as many as 43,567 people were recorded, and based on data from the Kalianget Health Center in 2020 as many as 10,486 people were diagnosed with diabetes mellitus. Most of the respondents have also experienced diabetic wounds and do not know for sure how to prevent complications.

Diabetes Mellitus is a disease that cannot be cured but what can be done is to control blood sugar levels which require lifelong management to improve the life's quality of sufferers. Lack awareness of self-control and an unhealthy lifestyle or wrong self-management in people with diabetes mellitus can ultimately lead to an increase in health problems that cause patients to suffer complications and lead to an increased mortality rate every year (Khansa, 2020).

The lack of public knowledge about diabetes mellitus in preventing and how to treat this disease is still poor, marked by an increase in the number of its complications. Where people only know the causes and signs of the symptoms, but do not practice a good lifestyle to prevent the occurrence of Type II diabetes mellitus, so that until now the number of people with diabetes mellitus has not decreased. Diabetes mellitus does not directly cause death, but poor lifestyle management can lead to complications and cause a decrease in the life's quality of patients (Rahman et al., 2020).

The environment is one of the factors that greatly affect a person's diabetes mellitus, as caused by poor eating patterns or diets and lifestyles. Eating patterns or diets that are accustomed to foods that contain lots of fat, high carbohydrates, and high calories are very influential in increasing a person's risk of developing diabetes mellitus, while poor lifestyles such as irregular lifestyles, prolonged stress, feelings of worry, excessive fear, and far from spiritual values which are believed to be factors that greatly influence a person's susceptibility to diseases such as diabetes or other diseases (Dolongseda et al., 2017).

Lack of physical activity or exercise can also cause a person to be susceptible to diabetes mellitus. Diabetes mellitus is a disease that has complications and is easy to cause most other diseases which are caused by blood sugar levels that continue to increase, resulting in damage to blood vessels, nerves and internal structures in the body (Priyono et al., 2021)

People with diabetes mellitus are susceptible to various kinds of chronic complications if blood glucose levels are not controlled properly. Diabetes mellitus complications that is easily experienced by people with diabetes mellitus is diabetic foot ulcers that are one of the main complications of diabetes mellitus with a fairly high prevalence in several countries. Health promotion is in accordance with the 2006 DM Management Consensus, namely the promotion of healthy behavior is an important factor in health service activities. Patients need to be given health education to be able to perform regular self-examinations of the feet, with particular attention to callus growths, loss of sensation in the skin, infections and blisters on the feet (Wijaya, 2021).

The prevalence in Indonesia is around 15% of the occurrence of diabetic foot ulcers during their lifetime and the risk of recurrence in 5 years is 70%, the risk of amputation is 30%, the mortality rate is 32%, and in Indonesia complications of diabetic foot ulcers are the biggest cause, namely 80% for hospital treatment (Verdoia et al., 2019). Complications of diabetes mellitus are more easily experienced by people with diabetes mellitus who cannot control their blood glucose. Complications of diabetes mellitus are divided into two, namely acute and chronic complications. Acute complications include hypoglycemia and hyperglycemia, while chronic complications include heart attack, chronic kidney failure, stroke, and retinopathy of the eye and diabetic foot ulcers (Pranata et al., 2020).

Health education to change the behavior of a person or individual, group or community in a planned manner so that they can be more independent to achieve their health goals And prevention is the main thing in diabetic foot ulcers that are indispensable (Sumarlan, 2020). One of the prevention strategies is health education provided by nurses to patients who are deemed necessary and can increase patient knowledge about diabetes-related problems and complications (Valk et al., 2002). Self-care management is one of the efforts that can be applied to to prevent complications in people with diabetes mellitus.

The aim of self-care management is to maintain blood glucose levels within normal limits. The components of self-care management are diet, blood glucose control, physical activity or exercise, routine examinations and pharmacological therapy. People with diabetes mellitus in implementing self-care management are influenced by several factors, namely, health education, support, communication and personal factors (Septiani et al., 2020). This aim of this study was to determine the effect of caring-based supportive education on the ability to prevent diabetic ulcers.

MATERIALS AND METHOD

This research is quantitative with a quasi-experimental design. The populations in this study were all patients with type II diabetes mellitus in the Kertasada Kalianget village with simple random sampling. The population of this study was some type 2 diabetes mellitus patients as many as 109 patients with the criteria of suffering from diabetes mellitus for more than a year, there are no complications, can read, write and are willing to be respondents.

The number of samples was 86 people divided into two groups. Many as 43 people were given a supportive educative intervention once a week for one month, and the control group as many as 43 people were only assigned leaflets about diabetes ulcer prevention. The instrument used in this study was a diabetic ulcer prevention questionnaire with significance criterion r in the range r = 0.2000.742, table r = 0.362 and confidence value Cronbach's alpha = 0.813. Data analysis used the paired t-test and the independent t- test.

RESULTS

The following is general data

Tabel 1. Respondents Characteristic Based on Age, Gender, Last Education and Occupation

Characteristic	Frequency	Percentage
Age		
32-38 Years	18	20.9
39-45 Years	10	11.6
46-52 Years	18	20.9
53-59 Years	20	23.3
60-66 Years	14	16.3
67-76 Years	6	7.0
Gender		
Man	14	16.3
Woman	72	83.7
Last Education		
Uneducated	20	23.3
Elementary School	50	58.1
Senior High School	14	16.3
College	2	2.3
Occupation		
Civil Servant	0	0
Teacher	0	0
Entrepreneur	12	14.0
Farmer	2	2.3
Unemployed	72	83.7
Total	**86**	**100.0**

Based on table 1 of the frequency distribution by age, it is known that most of the respondents who suffer from type II diabetes mellitus are aged 53-59 years, as many as 20 respondents (23.3%). The frequency distribution by gender, it is known that the majority of respondents who suffer from type II diabetes mellitus are women as many as 36 respondents (83.7%).

The frequency distribution based on the last education, it is known that most of the respondents who suffer from type II diabetes mellitus, most of them are elementary school as many as 50 respondents (58.1%). The frequency distribution based on

occupation, it is known that the majority of respondents who suffer from type II diabetes mellitus are unemployed as many as 72 respondents (83.7%).
The following is special data

Table 2. Differences In The Mean Self-Care Scores Before and After –Caring-Based Supportive Educative Interventions Group and In The Control Group.

Selfcare	Score	Mean	SD	P-value
Control group	Pre	28.02	4.77	0.160
	Post	28.25	4.74	
Variable	Score	mean	SD	P-value
Intervention group	Pre	27.90	5.02	0.000
	Post	31.74	5.21	

Based on table 1, the average self-care score of the control group before the caring-based supportive educative intervention was 28.02 ± 4.77 and the average self-care score after the caring-based supportive educative intervention was 28.25 ± 4.74. The results of the paired t-test self-care score, p=0.160, means that there is no significant difference in self-care scores in the control group before and after caring-based supportive educative intervention in the control group.

Based on table 2, the average self-care score in the intervention group before the caring -based supportive educative intervention was 27.90 ± 5.02 and the average self-care score after the caring-based supportive educative intervention was 31.74 ± 5.21. The results of the paired test-test self-care score that is p = 0.000 means that there is a significant difference in self-care scores in the intervention group before and after caring-based supportive educative intervention in the intervention group.

Table 3. The Difference In Mean Self-Care Scores Before Caring-Based Supportive Educative Intervention In The Control Group and The Intervention Group

Variable	Group	Mean	SD	P-value
Self-care	Intervention	27.90	5.02	0.896
	Control	28.02	4.77	

Based on table 3 the average value of the self-care score for the treatment group before the caring-based supportive educative intervention was 27.90 ± 5.02 and the control group was 28.02 ± 4.77. The independent t-test attitude score results, p=0.896, meant there is no a significant difference in self-care scores in the treatment group and the control group with caring-based supportive educative intervention.

Table 4. Differences In Mean Self-Care Scores After Caring-Based Supportive Educative Intervention In The Intervention Group and The Control Group

Variable	Group	mean	SD	P-value
Self-care	Intervention	31.74	5.21	0.002
	Control	28.25	4.74	

Based on table 4, the average self-care score in the treatment group after caring-based supportive educative intervention was 31.74 ± 5.21 and the control group was

28.25 ± 4.74. The independent t-test attitude score results that is p = 0.002 means that there is a significant difference in self-care scores in the treatment group and the control group with caring-based supportive educative intervention.

Table 5. The Difference In The Delta Mean Difference In Self-Care Scores Before and After Caring-Based Supportive Educative Intervention In The Control Group and The Intervention Group

Variable	Group	Mean	SD	P-value
Attitude	Treatment	3.83	3.42	0.000
	Control	0.23	1.06	

Based on table 5 the difference between the delta values of the self-care score in the intervention group before and after the –caring-based supportive educative intervention was 3.83±3.42 and the control group was 0.23±1.06. The independent t-test attitude score results that is p = 0.000 means that there is a significant difference in the delta difference in attitude scores in the treatment group and the control group after caring-based supportive educative intervention.

DISCUSSION

Based on the statistical test analysis results using the paired sample t-test, it is known that the significant value or sig (2-tailed) is 0.000 <0.05, meaning that there is a significant effect of giving before and after self care management education treatment to ulcer prevention foot in patients with type II diabetes mellitus. According to research by kalsum, 2020 stated that diabetic foot ulcers are largely preventable by the patients themselves. One of the prevention strategies is health education provided by nurses to patients who are deemed necessary and can increase patient knowledge about foot problems related to diabetes, foot care behavior and reduce foot problems such as neuropathy, foot disability, lesions, ulcers, tinea pedis, and callus (Kalsum et al., 2020).

One way that can be done in prevention is with self-care management. Self-care management is an independent behavior in self-care that is carried out to prevent complications in people with diabetes mellitus. Self care management aimed in controlling glucose levels in the blood so that they are in a normal state. The components of self care management itself consist of physical activity (exercise), monitoring blood glucose levels, nutritional therapy (diet), pharmacological therapy, and routine check-ups with health workers (Septiani et al., 2020).

Supportive educative is the way of education support provided by groups that are expected to improve self-care through the use of a variety of ways includes teaching (hurtful were able to increase understanding of the disease), guiding (guidance and counseling to include solutions and how to solve a problem on the patient to have good confidence and self-efficacy in efforts to overcome disease), providing an environment (an environment that can support and provide sufferers' skills to improve self-care abilities (Darmansyah et al., 2013).

Dorothea Orem argued that self-care is an individual's self-care activity to maintain his/her own health independently. Orem's self-care theoretical framework focuses on increasing the patient's ability to improve behaviors that affect their health (Sari, 2017). A research conducted by Nurul & Ayudiah stated that the prevention of amputation is actually very simple, but is often neglected. Diabetes self-care management education significantly improves the ability of diabetes mellitus

patients to perform independent foot care and can reduce the incidence of non-diabetic foot ulcers.

Foot care is part of health management in reducing the incidence of diabetic foot ulcers (Jannah & Uprianingsih, 2020). According to Mainak, Soumen, and Rimesh (2020), Diabetes self-care management education refers to an ongoing process to facilitate the knowledge, skills, and abilities needed to manage their disease successfully. It is an essential element of care for all people with diabetes and improves patient outcomes.

The American Association of Diabetes Educators (AADE) has described seven patient self-care behaviors as reliable outcomes of diabetes self-care education, namely, being active, eating healthy, taking medication, monitoring, problem-solving, risk reduction, and healthy coping (Banerjee et al., 2020). Masomeh et al's research (2017) It was found that nursing theory as a standard nursing language has an influential role in promoting self-care in patients with type II diabetes mellitus. Thus, dedicated self-care behaviors to prevent diabetes-related morbidity and mortality are urgently needed.

This study results influence the application of the Orem self-care model, which has proven to help patients with diabetes mellitus in preventing complications of diabetic foot ulcers and reducing the risk of amputation and treatment costs (Seyed et al., 2017). The research of Helen Jebakumari (2021), stated that there is a significant difference between pre and post knowledge scores proving that education and regular attendance in diabetes mellitus patients can prevent disability and reduce future medical care expenses (Yesurathinam & Jebakumar, 2021).

In addition, special training programs can bring a bright future for diabetes mellitus patients to reduce foot complications. The study found that there was an effect of foot care education and regular foot examinations as a strategy to prevent foot ulcers. Patients without foot ulcers will never experience foot complications through preventive practices with their knowledge of foot care. This study emphasizes that knowledge of foot care is a must for all diabetes mellitus patients to avoid complications (Yesurathinam & Jebakumar, 2021).

CONCLUSION

Caring-based supportive educative is effective in increasing the ability of type 2 diabetics in preventing diabetic ulcers, this intervention can be used as a recommendation in carrying out treatment for type 2 diabetes mellitus patients so that ulcer complications do not occur.

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