International Journal of Nursing Information (IJNI)
ISSN: 2964-4585 (Online)
Vol. 1, No. 2, pp. 20-26

Knowledge about Diabetic Foot Care is Related to the Ability to Care for Feet in People with Diabetes Mellitus

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Article Info

Article history:
Received: Nov 18, 2022
Revised: Dec 20, 2022
Accepted: De 30, 2022

DOI: 10.58418/ijni.v1i2.24

How to cite this article:

Nurhayani, Y., Supriatin, T., Dwi, H. R., Ruswati , R. ., & Marwati, M. (2022). Knowledge about Diabetic Foot Care is Related to the Ability to Care for Feet in People with Diabetes Mellitus. *International Journal of Nursing Information*, *1*(2), 20–26.

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ABSTRACT

The most common complication in people with diabetes mellitus is diabetic foot problems. Efforts to prevent diabetic foot problems can be prevented with proper foot care. Checking the foot every day, whether there are wounds or bleeding, cleaning the foot every day, cutting nails, using comfortable shoes or slippers, and immediately contacting a doctor if the foot is injured. The purpose of this study identified the relationship between knowledge about diabetic foot care and the ability to care for the feet in people with diabetes mellitus. This study used a type of correlation research with a cross-sectional design. The subjects of this study were people with diabetes mellitus, who totaled 26 respondents. Data collection using questionnaires that are distributed to respondents. Univariate data analysis using frequency distribution and bivariate using chi-square. The result shows a relationship between knowledge about diabetic foot care and the ability to care for feet in people with diabetes mellitus. This research contributes to providing knowledge to people with diabetes mellitus. This knowledge contributes to motivating foot care activities to prevent diabetic foot injuries.

Keywords: Knowledge, Diabetic Foot Care, Diabetes mellitus

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1. INTRODUCTION

Diabetes mellitus (DM) is a chronic disease that affects the global population (Das et al., 2020). In 2019 DM caused 4.2 million deaths globally (Nuniek Tri Wahyuni et al., 2022; Silva et al., 2022). In Saudi Arabia, DM is growing frighteningly (Robert & Al Dawish, 2020). Muhammad et al. (2020) stated that DM is expected to rise to 592 million by 2035. Diabetes mellitus is a chronic disease caused by the body's inability to produce the hormone insulin or the ineffective use of insulin production characterized by increased blood sugar levels (Harris-Hayes et al., 2020; Kasmad et al., 2022).

Sun et al., (2022) also added that the prevalence of diabetes mellitus in the age range of 20-79 years is 537 million people (10.5%) in the world in 2021. It is expected to increase by 2030 by 643 million people (11.3%) and by 2045 as many as 783 million people (12.2%). The highest prevalence of diabetes mellitus in the world in 2021 is China (140.9) million people and the 10th lowest country is Egypt (10.9) million people. Indonesia is ranked 5th out of the 10 highest countries, with the number (19.5) million people with diabetes mellitus (Sun et al., 2022).

People with diabetes mellitus who have been diagnosed must be appropriately managed to control blood sugar levels (Artasensi et al., 2020; Fekadu et al., 2019). This diabetes mellitus disease cannot be cured but blood sugar levels can be controlled (Sudirman et al., 2020). People with diabetes

mellitus need lifelong diabetes mellitus management to control their blood sugar levels so that patients quality of life can improve (Celik et al., 2022; Cho & Kim, 2021; Wei et al., 2019).

Diabetes mellitus can be sweetened with clinical symptoms such as eating a lot (poly pagina), drinking a lot (polydipsia), frequent urination (polyuria), wounds that are difficult to heal, weakness, fatigue, weight loss, body itching, tingling, blurry vision, to decreased consciousness (Groffils, 2020; Saftarina, 2021). Diabetes mellitus has many complications or causes many other diseases to occur (Halim & Halim, 2019; Zakiudin et al., 2022).

The most common complication in people with diabetes mellitus is diabetic foot complications with a percentage of about 15%. In addition, abnormalities and changes in the shape of the legs, lack of blood circulation will also affect the movement of the leg joints. Problems in the legs of people with diabetes mellitus in the form of atherosclerosis are caused by thickening of the basal membranes of large and small blood vessels. About 50%-75% of the complications that occur will be amputated. Amputation cases are estimated to be as much as 50% avoidable through preventive measures (Arif et al., 2022; Sari, 2021).

Efforts to prevent the occurrence of diabetic foot problems need to be done because this diabetic foot problem requires treatment and treatment over a long period of time (Abbott et al., 2019; Schaper et al., 2020). People with diabetes mellitus have the possibility of developing diabetic legs. This condition can be prevented with proper foot care, namely by checking the foot every day with glass, whether there is cracked skin, blistering, swelling, wounds or bleeding, cleaning the foot every day, cutting nails, using comfortable shoes or slippers, and contacting a doctor immediately if the foot is injured (Crocker et al., 2022).

People with diabetes mellitus can independently carry out diabetic foot treatment. Good foot care and adequate knowledge of foot care can prevent the occurrence of diabetic foot complications early (Abrar et al., 2020). Diabetes management is still focused on diabetes treatment and diet, while efforts to increase knowledge about foot care for people with diabetes mellitus have not been carried out optimally. By looking at the existing phenomenon or reality, it shows a lack of knowledge about foot care and there are still many patients with diabetes who do not do foot care. The purpose of this study identified the relationship between knowledge about diabetic foot care and the ability to care for the feet in people with diabetes mellitus. This research contributes to providing knowledge to people with diabetes mellitus. Education about diabetes mellitus in big cities is not strange, the novelty of this research is trying to educate diabetes mellitus patients in villages seen from the educational level gap. This knowledge contributes to motivating foot care activities to prevent diabetic foot injuries.

2. METHOD

This study used a type of correlation research with a cross-sectional design (Amaliah et al., 2022). The research location is in a rural area with a minority of university education levels, namely in Kalideres village, Kaliwedi sub-district, Cirebon district. The population is 26 people with diabetes mellitus. The sample of this study was people with diabetes mellitus, which a total sampling of 26 respondents.. Data collection using questionnaires that are distributed to respondents. Univariate data analysis using frequency distribution and bivariate using chi-square. The independent variable includes knowledge regarding foot care. Dependent variables include the ability to care for the feet in people with diabetes mellitus.

3. RESULTS AND DISCUSSION

3.1 Results

Table 1
Distribution of Respondents Based on Gender, Age, Education and Length of Suffering

Variable	Respondents	
	N	%
Gender		
Man	10	38.5
Woman	16	61.5
Age		
0-39 Years	4	15.4
40-60 Years	19	73.1
61 Years and above	3	11.5
Education		
No School	2	7.7
Elementary school	4	15.4
Junior school	9	34.6

High school	7	26.9
University	4	15.4
Long Suffering from DM		
<5 years	15	57.7
5-10 years	8	30.8
>10 years	3	11.5
Foot Care Information		
Ever	10	38.5
Never	16	61.5
Knowledge Level		
Low	7	26.9
Keep	9	34.6
Tall	10	38.5
Ability to Take Care of Feet		
Less	8	30.8
Enough	10	38.5
Good	8	30.8

Based on Table 1 above, it illustrates that the respondents who are male are 10 people (38.5%) and 16 people (61.5%) female gender. It can be concluded that respondents are more female than male. Respondents who had an age in the range of 0-39 years were 4 people (15.4%), the age in the range of 40-60 years was 19 people (73.1%) and the age in the range of 61 years and above was 3 people (11.5%). It can be concluded that respondents are more aged in the range of 40-60 years. Most of the respondents who had junior high school education were 9 people (34.6%), while for non-school, elementary, high school and pt education, namely 2 people (7.7%), 4 people (15.4%), 7 people (26.9%) and 4 people (15.4%). It can be concluded that most of the respondents were junior high school educated. Most of the respondents who suffered from diabetes mellitus for less than 5 years were 15 people (57.7%), while for 5-10 years and more than 10 years, 8 people (30.8%) and 3 people (11.5%), respectively. It can be concluded that most respondents suffer from diabetes mellitus for less than 5 years. Most of the respondents who received foot care information were never informed of foot care 16 people (61.5%), while those who had received foot care information were 10 people (38.5%). It can be concluded that most respondents have never been informed of foot care.

Most of the respondents had high knowledge, namely 10 people (38.5%), while for low and medium knowledge, namely 7 people (26.9%) and 9 people (34.6%), respectively. It can be concluded that most of the respondents have high knowledge. Most of the respondents had sufficient foot care ability, namely 10 people (38.5%), while for the ability to take care of the feet that were lacking and the ability to take good care of the feet, namely 8 people (30.8%) and 8 people (30.8%), respectively. It can be concluded that most of the respondents with the ability to take care of the legs are sufficient.

Table 2
The Relationship of Knowledge about Diabetic Foot Care with The Ability to Care for the Feet in People with Diabetes Mellitus

Knowledge Level	Ability to Take Care of Feet						Total		P-value
	Less		Enough		Good				
	N	%	N	%	N	%	N	%	
Low	7	100	0	0	0	0	7	100	0.000
Keep	1	11.1	8	88.9	0	0	9	100	
Tall	0	0	2	20.0	8	80.0	10	100	
Total	8	30.8	10	38.5	8	30.8	26	100	

Based on table 2, it illustrates that 8 (80.0%) respondents who have high knowledge will be able to take good care of their feet. Based on table 2, the results of the chi square test, the p value of < α was rejected. This suggests that there is a significant relationship between knowledge of foot care and the ability to care for the feet (p value = 0.000, α = 0.05).

3.2 Discussion

3.2.1. Respondent Demographic Data

Based on the results of research that has been carried out by researchers on people with diabetes mellitus in Kalideres Village, Kaliwedi District, that some respondents were female 16 people (61.5%). This research is in line with research conducted by Nurhayani and Supriatin (2021), most of the female respondents were 21 people (65.6%) and male respondents were 11 people (34.4%). The prevalence of diabetes mellitus in women is more than in men. Risk factors for diabetes mellitus such as obesity, lack of

exercise, age and history of diabetes mellitus during pregnancy or gestational diabetes cause a high number of people with diabetes mellitus in women (Muche et al., 2020).

The research results that researchers have carried out are that most of the respondents aged 40-60 years are 19 people (73.1%). In line with research conducted by Mesinovic et al. (2019), diabetes mellitus is mostly suffered by adults over 40 years old. The increasing age also affects the body's homeostasis, including changes in the function of pancreatic beta cells that produce insulin and cause disruption of hormone secretion or inadequate use of glucose at the cellular level that causes blood sugar levels to rise. At age 50 years and above, there will be an increase in blood sugar levels (Khan et al., 2019).

The research results show that most respondents have a junior high school education, namely nine people (34.6%). This study shows that lower education levels have less understanding of diabetes mellitus, so they have a higher percentage. That follows Putri et al., (2022) that the level of education dramatically influences their knowledge of diabetes mellitus.

The results of the research that has been carried out by researchers are that most respondents have never received information on foot care, namely 16 people (61.5%). Information about health can be obtained from various sources, including health education or education, print or electronic media, social media, leaflets or brochures, billboards, television, internet, social environment and so on, so as to increase knowledge (Nurhayani & Supriatin, 2021).

The results of the research that has been carried out by researchers are that most of the respondents have high knowledge, namely 10 people (38.5%). This research is in line with research conducted by Nurhayani and Supriatin (2021), that most of the respondents' knowledge is good as many as 19 people (59.4%) and not good as many as 13 people (40.6%). Knowledge is the result of human sensing, as well as the result of knowing a person to objects through the senses of sight, smell, hearing and so on, by itself producing knowledge, it is strongly influenced by the intensity of attention and perception of objects (Martias et al., 2022).

The results of the research that has been carried out by researchers are that most respondents have the ability to take care of their feet, namely 10 people (38.5%). This research is in line with research conducted by Srimiyati (2018), that most of the respondents who have done diabetic foot care are 60.4%. According to Kusumaningrum and Ashari (2020), foot treatment will prevent or reduce the occurrence of chronic complications in the legs. Foot care is an action that the individual performs either in a state of normal blood sugar levels or rising, which is carried out regularly to maintain personal hygiene, especially on the part of the foot. Diabetic foot care is an activity carried out by diabetics for foot care management in reducing the risk of foot ulcers.

3.2.2. The Relationship of Knowledge about Diabetic Foot Care with the Ability to Care For the Feet In People With Diabetes Mellitus

Based on the results of the chi square test, the p value of < α was obtained, then Ho was rejected. This suggests that there is a significant relationship between knowledge of foot care and the ability to care for the feet (p value = 0.000, α = 0.05).

The results of this study are in line with other studies with different variables, namely the research of Srimiyati (2018), entitled Knowledge of Diabetic Foot Prevention in Patients with Diabetes Mellitus Affects Foot Care, showing that there is a significant relationship between knowledge and foot care in diabetic patients (p-value 0.024 > 0.05).

Knowledge of diabetes mellitus is very important because not only to understand the disease, but the patient can determine the next steps that need to be taken in order to reduce the severity of the disease. The knowledge possessed by humans can develop what is known and can overcome all survival problems (Wadja et al., 2019). A health behavior is influenced by three aspects, namely knowledge, attitudes and practices or actions. Knowledge or cognitive is a very important domain for the formation of one's actions (Fatimah et al., 2022; Peer et al., 2021; Supriatin et al., 2022)

People with diabetes mellitus who have knowledge and are serious about maintaining and caring for their feet regularly can prevent amputations. Good foot care can prevent the incidence of amputations (Fayfman et al., 2020). According to the researcher's analysis, with adequate knowledge about diabetic foot care, people with diabetes mellitus can do diabetic foot care independently at home, to prevent the occurrence of wounds on the legs and be able to treat the wound appropriately.

Diabetic foot care is done by applying moisturizer, wearing appropriate slippers or shoes, immediately seeking help if a feeling of numbness begins to arise on the foot or a wound on the foot. Routine foot care can also be done by washing the feet using warm water, drying the feet between the toes, conducting daily examinations and paying attention to the changes that occur in the feet (Srimiyati, 2018).

4. CONCLUSION

This study concludes that a picture of respondents' characteristics was identified, which included: most of the respondents have a female gender, most of the respondents are aged in the range of 40-60 years, most of the respondents are junior high school educated, most of the respondents suffer from diabetes mellitus less than five years, most respondents have never received information on foot care, most respondents have high knowledge, Most of the respondents with the ability to take care of the legs are sufficient. A significant relationship exists between foot care knowledge and the ability to care for the feet. This research contributes to providing knowledge to people with diabetes mellitus. This knowledge contributes to motivating foot care activities to prevent diabetic foot injuries. In addition, this research can be used as the primary data for future research by applying other interventions to improve knowledge about foot care in people with diabetes mellitus.

ACKNOWLEDGEMENTS

The authors would like to thank the chairman of Ahmad Dahlan College of Health Science Cirebon and Setih Setio Muara Bungo Academy of Nursing for supporting this research.

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