

Relationship of Self Efficacy with Foot Care Behavior in Diabetes Mellitus Patients

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Abstract - One of the main steps in saving the feet of diabetics is to take preventive measures in the form of foot care. Self-efficacy is one of the factors that can support the success of foot care in diabetics. This study aims to determine the relationship between self-efficacy and foot care behavior in patients with diabetes mellitus. The research method is quantitative with a cross-sectional approach. The sampling technique in this study is purposive sampling with a sample of 110 respondents. Data was collected using the Foot Care Confident Scale (FCCS) and Nottingham Assessment of Functional Footcare (NAFF) questionnaires. Data analysis in this study using the chi-square test. The results showed that 67 respondents (60.9%) had high self-efficacy and 43 respondents (39.1%) had low self-efficacy, 59 respondents (53.6%) had good foot care behavior, and 51 respondents (46.4%) had poor foot care behavior. The results of the chi-square test obtained a P-value of $0.000 < \alpha = 0.05$, which means that there is a relationship between self-efficacy and foot care behavior in patients with diabetes mellitus. It can be concluded that there is a positive relationship between self-efficacy and foot care behavior in diabetes mellitus patients at the Gandapura Public Health Center, Bireuen Regency. It is recommended that health workers can provide health education about foot care regularly in order to increase self-efficacy in people with diabetes mellitus.

Keywords: Self Efficacy, Foot Care Behavior, Diabetes Mellitus

I. Introduction

Diabetes mellitus is a metabolic disease with characteristics of hyperglycemia that occurs due to abnormalities in insulin secretion, insulin action, or both. (PERKENI, 2021). Diabetes mellitus is a chronic disease that is not contagious, and this disease is also referred to as the "silent killer disease" because it is often not realized until complications occur (Sari et al., 2022).

Diabetes melitus, as a global disease, has been increasing in prevalence from year to year, both globally and in Indonesia (Nurdin, 2021). According to the International Diabetes Federation (IDF), 537 million people aged 20 to 79 in the world will have diabetes by 2021, accounting for 10% of the global population at the time. Diabetes prevalence is expected to rise to 11.3%, or 643 million people, by 2030, and to 12.2%, or 783 million people, by 2045 (IDF, 2021).

Indonesia is in the 5th position among the top 5 countries with the highest diabetes cases in the world, which amounts to 19.5 million people and is predicted to be 28.6 million in 2045 (IDF, 2021). Riskesdas 2018 data shows that the prevalence of diabetes mellitus in Indonesia-based on doctors' diagnoses at the age of 15 years is 2%; the prevalence shows an increase compared to 2013 of 1.5%. However, the prevalence of diabetes mellitus based on blood sugar examination increased from 6.9% in 2013 to 8.5% in 2018 (KEMENKES RI, 2020). In Aceh province, 121,160 people were diagnosed with diabetes mellitus in 2020, with 75,518 (or 62% of those) receiving standard services. (Dinas Kesehatan Aceh, 2020). According to data from RISKESDAS, the prevalence of diabetes diagnosed by doctors in Bireuen Regency is 3,636 people, or 2.63%. While the number of people with diabetes mellitus in the Gandapura Health Center's working area in Bireuen Regency from January to December 2021 was 161 people (RISKESDAS, 2018).

The high prevalence of diabetes mellitus will indirectly increase the complications caused by the disease and will be even higher if the individual does not try to take good care of themselves (Sasombo et al., 2021). Diabetic foot ulcers are a frequent complication of diabetes mellitus. A diabetic foot ulcer is a chronic injury to the lower region of the ankle that increases morbidity and mortality and reduces the patient's quality of life. (PERKENI, 2021). Complications of diabetic foot injuries cause 90% more lower limb amputations in diabetics (ADA, 2018 in Mambang Sari et al., 2021). The mortality rate due to leg amputation that occurs after a year is 11–41%, then death increases after 3 years after leg amputation to 20–50%, then increases to 39–80% deaths after 5 years post-amputation. This event is accompanied by other dangerous diseases. In Indonesia, approximately 13% of foot injuries are hospitalized, while 26% are outpatient.

One of the main steps in saving the feet of diabetics is prevention in the form of foot care. Foot care is one part of the practice of diabetic self-care. Foot care behaviors need to be carried out regularly to prevent and delay potential complications (Sharoni et

al., 2018). Foot care in people with diabetes mellitus consists of independently examining the feet, checking in shoes before wearing them, drying between the feet before washing, using footwear when going out of the house, and using moisturizers or lotions on the feet. Diabetic experts estimate that 1/2 to 3/4 of the incidence of amputation can be avoided with good foot care (Lissa et al., 2018). Research conducted by Mufidhah (2019) regarding the description of foot care behavior in people with diabetes mellitus shows the results that the foot care behavior of diabetics is mostly bad, so that they are at high risk of diabetic ulcers.

Self-efficacy is one of the factors that can support the success of self-management in people with diabetes mellitus, and one of the self-management behaviors in people with diabetes mellitus is foot care (Akiko & Annisa, 2020). Self-efficacy is an individual's belief or confidence that he has the ability to manage and perform certain tasks to achieve results according to expectations (Damayanti, 2017), and it has a very important role in changing a person's health behavior (Andala, 2015). Individuals who have good self-efficacy will try to achieve their goals despite obstacles (Munir & Solissa, 2021).

Based on research conducted by Andini et al. (2021), "the relationship of self-efficacy with behavior and accuracy of independent foot care actions in outpatients with diabetes mellitus" shows that there is a positive relationship between self-efficacy and behavior and the accuracy of independent foot care actions in outpatients with diabetes mellitus. The same study conducted by Susilawati et al. (2021) with the title "The relationship of self-efficacy to adherence to diabetes mellitus foot care during a pandemic" also concluded that there is a significant relationship between self-efficacy and foot care adherence in people with diabetes mellitus.

Another study conducted by Susanti et al. (2020) with the title "the relationship between self-efficacy and foot self-care in diabetes mellitus patients in internal medicine at Sultan Syarif Mohamad Alkadrie Pontianak Hospital" showed that there was a relationship between self-efficacy and foot self-care in diabetes mellitus patients. In line with the results of a preliminary study conducted by researchers in May 2022 at the Gandapura Health Center, Bireuen Regency, through interviews, it was found that 5 out of 8 diabetes mellitus patients had not done foot care properly. The five people's self-efficacy remains low because they believe they do not know how to properly care for their feet.

Based on the background of the problem, researchers are interested in conducting research on "The Relationship of Self Efficacy with Foot Care Behavior in Diabetes Mellitus Patients in the Work Area of the Gandapura Health Center, Bireuen Regency".

II. Method

This type of research is quantitative with a cross-sectional approach, which is a study that studies the correlation between exposure or risk factors (independent) and consequences or effects (dependent), with data collection carried out simultaneously at one time. This study aims to determine the relationship between self-efficacy and foot care behavior in diabetes mellitus patients carried out in the Gandapura Health Center work area of Bireuen Regency, with data collection starting from August 20 to September 5, 2022. The population in this study was all people with type II diabetes mellitus in the Gandapura Health Center working area of Bireuen Regency from January to December 2021, which amounted to 152 people.

The sampling technique used is non-probability sampling, using purposive sampling with a total sample of 110 respondents. The inclusion criteria for this study were: age >18 years, diabetes for at least one year, and no diabetic ulcers. Meanwhile, patients with diabetic ulcers were excluded from this study.

The instruments used in this study were the respondents' demographic characteristics questionnaire, the Foot Care Confident Scale (FCCS) questionnaire, and the Nottingham Assessment of Functional Footcare (NAFF) questionnaire. The chi-square test was used to analyze data in this study.

III. Result and Discussion

3.1. Univariate Analysis

3.1.1 Demographic Characteristics of Respondents

Table 1. Frequency Distribution of Respondents' Demographic Characteristics (n=110).

No	Characteristics of Respondents	Frequency (F)	Percentages (%)
1	Age		
	17-25	2	1,8
	26-35	8	7,3

No	Characteristics of Respondents	Frequency (F)	Percentages (%)
	36-45	24	21,8
	46-55	28	25,5
	56-65	30	27,3
	>65	18	16,4
2	Gender		
	Man	39	35,5
	Woman	71	64,5
3	Final Education		
	Basis	34	30,9
	Intermediate	55	50,0
	High	21	19,1
4	Work		
	Not working	8	7,3
	Laborer	3	2,7
	Farmer	13	11,8
	Trader/self-employed	20	18,2
	Civil servants	11	10,0
	Housewives	45	40,9
	Others	10	9,1
5	Long Time Suffering from Diabetes Mellitus		
	<5 years	56	50,9
	5-10 years	51	46,4
	>10 years	3	2,7
6	Have Received Counseling About Diabetes Mellitus Foot Care		
	Yes	45	40,9
	No	65	59,1
	Total	110	100

Based on to Table 1, out of 110 respondents, the majority of respondents were aged 56-65 years: 30 respondents (27.3%), the majority of whom were female: 71 respondents (64.5%), with the majority having a secondary education: 55 respondents (50.0%), the majority of whom worked as housewives: 45 respondents (40.9%), the majority of old respondents suffered from diabetes mellitus for at least 5 years: 56 respondents (50.9%), and the majority of respondents were never eligible: 56 respondents (50.9%).

3.1.2 Self Efficacy

Table 2. Frequency Distribution of Self Efficacy in Diabetes Mellitus Patients (n=110).

Self Efficacy	Frequency (F)	Percentages (%)
High	67	60,9
Low	43	39,1
Total	110	100

Based on to Table 2, the majority of respondents have high self-efficacy, with as many as 67 respondents (60.9%), and respondents with low self-efficacy, with as many as 43 respondents (39.1%).

3.1.3 Foot Care Behaviors

Table 3. Frequency Distribution of Foot Care Behaviors in Diabetes Mellitus Patients (n=110).

Foot Care Behaviors	Frequency (F)	Percentages (%)
Good	59	53,6
Poor	51	46,4
Total	110	100

Based on to Table 3, the majority of respondents had good foot care behaviors, as many as 59 (53.6%), and respondents who had poor foot care behaviors, as many as 51 (46.4%).

3.2. Bivariate Analysis

Table 4. The Relationship of Self-Efficacy with Foot Care Behavior in Diabetes Mellitus Patients (n = 110)

Self Efficacy	Foot Care Behavior			<i>p-value</i>
	Good	Less	Total	
High	51 (76,1%)	16 (23,9%)	67 (100%)	0,000
Low	8 (18,6%)	35 (81,4%)	43 (100%)	
Total	59 (53,6%)	51 (46,4%)	110 (100%)	

Based on Table 4 above, it shows that of the 67 respondents who have high self-efficacy, 51 respondents (76.1%) have good foot care behaviors and 16 respondents (23.9%) have poor foot care behaviors. Respondents who had low self-efficacy were 43 respondents, where 8 respondents (18.6%) had good foot care behaviors and 35 respondents (81.4%) had poor foot care behaviors. From the results of the statistical tests, a *p-value* of $0.000 < \alpha = 0.05$ was obtained, so the hypothesis was accepted, which means that there is a relationship between self-efficacy and foot care behavior in diabetes mellitus patients in the work area of the Gandapura Health Center, Bireuen Regency.

3.3. Discussion

3.3.1 Demographic Characteristics of Respondents

1) Age

Based on the results of the study obtained by the majority of respondents aged 56-65 years as many as 30 respondents (27.3%) and aged 46-55 years as many as 28 respondents (25.5%). According to Rediningsih et al. (2022) generally, a person will experience a drastic physiological decline at the age of 40 years. The increasing age of a person will certainly cause physiological and metabolic declines, including a decrease in the body's metabolic processes in the pancreatic organs, causing pancreatic β cells to be less efficient in producing insulin. According to researchers' assumptions, the aging process causes the body's function and ability to decrease, thus affecting the pancreatic β cells ability to produce insulin. It can be concluded that the risk of developing diabetes mellitus increases with age, particularly after the age of 40.

2) Gender

The study's findings obtained the majority of female respondents, with 71 (64.5%) responding. According to Irawan (2010) in (Trisnadewi et al., 2022), the risk of suffering from diabetes is higher in women due to the symptoms of the monthly cycle experienced by women as well as post-menopausal conditions that will result in the easy accumulation of body fat due to hormonal processes.

According to the researchers' assumptions, women are more susceptible to diabetes due to several factors, including differences in lifestyle and daily activities between women and men, monthly cycles, and post-menopausal conditions that occur in women and therefore increase their susceptibility to diabetes mellitus. So, it can be concluded that gender is one of the factors that can influence the occurrence of diabetes mellitus.

3) Final Education

From the results of the study, the majority of respondents' last education was secondary education, with as many as 55 respondents (50.0%). The level of education is related to a person's ability to make behavioral changes. The higher a person's education level, the more positive their health behaviors will be (Sari & Herlina, 2018).

Individuals with a secondary education, according to the researchers' assumptions, have more knowledge and understanding of health than those who are poorly educated, and thus have the awareness to seek information in managing their disease. It can be concluded that education can have an impact on how people manage their illnesses.

4) Work

The study's findings obtained the majority of respondents' jobs, namely housewives, with 45 respondents (40.9%). In general, the type of work is related to physical activity, which will affect the increase in insulin related to the incidence of diabetes mellitus (Triandhini et al., 2022). According to Adnan., et al. (2013) in (Fajriani & Muflihatin, 2021) diabetes occurs a lot in women, especially the group of housewives, because of the lack of energy needed and the little physical activity carried out, so that it can cause fat accumulation in the body, which can result in insulin resistance so that there is an increase in blood glucose levels.

Based on the description above, researchers assume that housewives' work includes physical activity that is not too strenuous and can be interspersed with a lot of rest, so that the lack of physical activity carried out can increase the risk of diabetes mellitus. So, it can be concluded that physical activity is an important factor in the management of diabetes mellitus, especially for blood sugar control.

5) Long Time Suffering from Diabetes Mellitus

The results of the study obtained the majority of old people suffering from diabetes mellitus <5 years as many as 56 respondents (50.9%). Because of the large number of experiences and frequent exposure to disease information, people with diabetes mellitus who have had the disease for a longer period will have better knowledge and adaptation to the disease (Sa'adah, 2016).

According to researchers' assumptions, individuals who suffer from diabetes mellitus longer will have a lot of experience and good coping skills in managing their disease. It can be concluded that the length of suffering from diabetes mellitus can influence a person's ability to adapt to the disease. People with diabetes mellitus with a longer duration will learn from their experience so that they have good health behaviors.

6) Have Received Counseling about Diabetes Mellitus Foot Care

The results of the study obtained that the majority of respondents never received counseling about diabetes mellitus foot care, as many as 65 respondents (59.1%). Counseling and socialization about diabetes mellitus foot care are important factors to increase respondents' knowledge and understanding of how to carry out foot care correctly and regularly to prevent complications of diabetic wounds (Ningrum et al., 2021).

According to the researchers' assumptions, individuals who are often exposed to information, one of which is through health counseling, will have better knowledge, which will increase their confidence to carry out positive health behaviors. It can be concluded that health counseling about diabetes mellitus foot care is important to increase one's knowledge to better manage diabetes mellitus.

3.3.2 Self Efficacy in Diabetes Mellitus Patients

In the results of the study, the majority of respondents had high self-efficacy, namely 67 respondents (60.9%) and respondents who had low self-efficacy, namely 43 respondents (39.1%). According to Sari, Yamin, & Santoso (2018) in (Prameshti & Purwanti, 2020), a person with low self-efficacy will tend to feel hopeless, unable to manage the situations that occur in his life when facing

obstacles, so that he will quickly give up if his efforts fail. Individuals with low self-efficacy believe the actions taken will have no effect. Meanwhile, individuals who have high self-efficacy can overcome incidents or situations effectively because they have a high sense of trust in their abilities.

This is in line with the research conducted by Huda et al. (2019) entitled "The impact of self-efficacy on the foot care behavior of type 2 diabetes mellitus patients in Indonesia," which says that individuals with high self-efficacy believe that they are able to perform difficult tasks well and that difficult tasks are something that must be mastered and not something that should be avoided.

Based on the description above, researchers assume that high self-efficacy will encourage individuals to perform diabetes mellitus management behaviors properly. Individuals with high self-efficacy will see obstacles as something that must be overcome, and they will continue to strive to achieve their goals so that the results obtained are in line with expectations. So it can be concluded that self-efficacy is an important factor that can influence a person's behavior in managing diabetes properly. The higher a person's self-efficacy, the better his health behavior in diabetes management.

3.3.3 Foot Care Behavior in Diabetes Mellitus Patients

The results of the study, the majority of respondents had good foot care behaviors as many as 59 respondents (53.6%) and respondents who had poor foot care behaviors as many as 51 respondents (46.4%). According to researchers, respondents who have good foot care behaviors have good knowledge and experience regarding diabetic foot care and have high confidence in themselves that they are able to perform foot care correctly.

A person with good knowledge also has good foot care, where habits are formed from the knowledge they have, especially good habits regarding foot care methods (Wulandari, N. A, 2021). Furthermore, from his research entitled "The relationship of knowledge of type II diabetes mellitus patients with foot care practices in preventing wounds in the West Cengkareng Village area," it is stated that the level of knowledge of diabetes patients has a relationship with understanding in carrying out foot care. This is also in line with a study conducted by Srimiyati (2018) entitled "Diabetic foot prevention knowledge of people with diabetes mellitus affects foot care," which says that individuals who have good knowledge are better at doing foot care and preventing wounds.

In this study, the majority of respondents had never received counseling about diabetic foot care, as many as 65 people (59.1%), so it can be said that respondents' knowledge is still lacking about diabetic foot care. According to researchers, respondents who have poor foot care behaviors, one of which is caused by lack of exposure to information sources such as books, the internet, or health workers, This is in line with the research Kamaru Z. N. H. et al. (2018) entitled "Knowledge and Practice of Foot Care among Diabetic Elderly in UKM Medical Center (UKMMC)," which says that poor foot care is caused by a lack of knowledge about proper diabetic foot care.

Based on the description above, researchers assume that good knowledge can influence a person's mindset for taking action so that they are able to manage their disease. Good knowledge can also increase a person's confidence to do diabetes management correctly. So, it can be concluded that knowledge becomes an important factor in forming good self-confidence so that the individual will have positive health behaviors, including doing foot care correctly.

3.3.4 Relationship of Self Efficacy with Foot Care Behavior in Diabetes Mellitus Patients

The results of the study, 67 respondents (76.1%) had good foot care behaviors, and 16 respondents (23.9%) had poor foot care behaviors. Respondents who had low self-efficacy were 43 respondents, with 8 respondents (18.6%) having good foot care behaviors and 35 respondents (81.4%) having poor foot care behaviors. Based on statistical tests, a p -value of $0.000 < \alpha = 0.05$ was obtained, so the hypothesis was accepted, which means that there is a relationship between self-efficacy and foot care behavior in diabetes mellitus patients in the Gandapura Health Center working area, Bireuen Regency.

The results of this study are in line with the study conducted by Mutiudin et al. (2022) entitled "The relationship of self-efficacy and family support with foot care behavior in people with type 2 diabetes," which found a relationship between self-efficacy and foot care behavior in people with type 2 diabetes with a p -value of $0.000 < \alpha = 0.05$. In line with the research conducted by Lukitasari et al. (2021) entitled "The relationship of self-efficacy and self-motivation with self-care management of diabetes mellitus patients at the Toroh II Health Center," which shows that there is a fairly strong relationship between self-efficacy and self-care management of diabetes mellitus patients at the Toroh II Health Center with a p -value of $0.001 < \alpha = 0.05$.

Another study conducted by Susanti et al. (2020) entitled "The relationship between self-efficacy and foot self-care in diabetes mellitus patients at the Internal Medicine Poly of Sultan Syarif Mohamad Alkadrie Pontianak Hospital" stated that there was a relationship between self-efficacy and foot self-care in diabetes mellitus patients at the Internal Medicine Poly of Sultan Syarif Mohamad Alkadrie Pontianak Hospital with a p -value of $0.000 < \alpha = 0.05$. Self efficacy is indispensable to maximize foot care

behavior in diabetics. A person with high self-efficacy can cope with his problems effectively and will try hard to face all the difficulties encountered (Huda et al., 2019).

According to Ratnawati (2016) in (Susilawati et al. (2021) the higher level of self-efficacy will lead to good confidence in carrying out self-care in diabetes management, including foot care. This is supported by a study Susanti et al. (2020) entitled "The relationship between self-efficacy and foot self-care in diabetes mellitus patients at the Internal Medicine Polyclinic of Sultan Syarif Mohamad Alkadrie Pontianak Hospital," which said that self-efficacy is very important in managing the health behaviors of diabetics. Based on the description above, researchers assume that self-efficacy is one of the important factors in the management of diabetes mellitus. A person who has high self-efficacy will have the motivation to continue to maintain their health by obediently managing diabetes mellitus, including foot care. Therefore, it can be concluded that there is a positive relationship between self-efficacy and foot care behavior, where the higher the self-efficacy, the better the foot care behavior, on the contrary, the lower the self-efficacy, the worse the foot care.

IV. Conclusion

Based on the results of this study, it can be concluded that the majority of respondents have high self-efficacy, as many as 67 respondents (60.9%), and the majority of respondents have good foot care behaviors, as many as 59 respondents (53.6%). The results of the statistical test obtained a p -value of $0.000 < \alpha = 0.05$, which means that there is a relationship between self-efficacy and foot care behavior in diabetes mellitus patients in the work area of the Gandapura Health Center, Bireuen Regency.

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