Self-Efficacy and Implementation Self Care Activity Diabetes Mellitus

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Abstract. Diabetes mellitus is a metabolic disease with symptoms resulting from high blood glucose levels due to a decrease in the body's ability to react with insulin, impaired insulin secretion, or both. This study aimed to analyze self-efficacy and self-care activity in diabetes mellitus. Methods: A cross-sectional study was conducted between July and August 2023 on Banjar Baru, Kalimantan Selatan, involving 40 respondents with diabetes mellitus selected through purposive sampling techniques. The independent variables included individual factors, and self-efficacy, while the dependent variable was the implementation of the self-care activity. Results: The median self-efficacy score was 37.08 with the lowest score being 18 and the highest being 45. The median score for implementing self-care activities was 68.53 with the lowest score being 39 and the highest score being 92. Analysis of self-efficacy between the implementation of self-care activities has a significant relationship (p=0.001), and the correlation coefficient is 0.612. Self-efficacy is related to the implementation of self-care activities in Diabetes Mellitus patients. Conclusions: Self-efficacy is associated with implementing self-care activities in Diabetes Mellitus patients. This means that the better self-efficacy, the better the implementation of self-care activities, or the worse the self-efficacy, the worse the implementation of self-care activities.

Keywords: Diabetes mellitus, self-care activity, self-efficacy.

1 Introduction

Diabetes Mellitus is a group of metabolic diseases characterized by hyperglycemia (increased blood sugar levels) which occurs due to abnormalities in insulin secretion, insulin action or both.[1] International Diabetes Federation (IDF) 2021 stated that as many as 537 million adults live with diabetes and this has increased by 16% (74 million) since IDF estimates in 2019.[2] The South Kalimantan Provincial Health Service stated that the number of diabetes mellitus sufferers in South Kalimantan is increasing every year. The incidence of diabetes mellitus in 2019 was 67,783 cases out of a population of 4,244,096 people, and in 2020 it increased to 122,919 cases, with the number of cases in the Kota Banjar Baru area being 1212.[3]

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Diabetes mellitus is a chronic disease that is progressive and can cause complications if prevention is not carried out. Management of risk factors is an effort to carry out prevention such as changing your lifestyle to a healthy one, maintaining your diet, controlling blood sugar, and doing sufficient physical activity.[4] The success of preventing diabetes mellitus is influenced by several factors, including information, family role, diet, activity patterns, nutritional status, and self-efficacy.[5][6] States that high self-efficacy can reduce the re-admission rate of diabetes.[6]

Self-efficacy can be obtained from individual experiences, other people's experiences, social persuasion and physical and emotional conditions.[7] Self-efficacy has an important role in the management of diabetes mellitus, which aims to ensure that diabetes mellitus sufferers can carry out self-care as recommended.[8]

2 Methods

2.1 Research Design and Samples

This cross-sectional study was conducted from July to August 2023 at Puskesmas Banjar Baru Selatan, Banjar Baru, South Kalimantan. The research sample consisted of 40 respondents with Diabetes Mellitus with purposive sampling technique. With the inclusion criteria of Diabetes Mellitus patients who are willing to become respondents and can read and write, for exclusion criteria are patients who refuse to become respondents. This study collected demographic data and individual factors, self-efficacy, and implementation of respondents' self-care activities, informed consent and questionnaires were given to participants to ensure confidentiality and data reliability.

2.2 Variable and Instruments

The independent variables of this research encompassed individual internal factors, and self-efficacy. Individual internal factors included age, gender, education level, occupation, marital status, long suffering from diabetes mellitus, and complications. Self-efficacy encompassed nutrition and weight, medication and foot care, physical exercise and general care, and blood sugar control. The dependent variable was the implementation of a self-care activity. The study's instruments included a structured questionnaire of characteristics' respondents, self-efficacy (Adopted from[9]) sourced from The Diabetes Management Self Efficacy Scale (DMSES) (Van der Bijl and Shortbridge-Bagget[10]) and has been modified by researchers), and implementation of selfcare activity[11][12]).

2.3 Data Analysis

This research consists of 1. Respondent characteristics using descriptive statistics. and 2. Bivariate analysis using the Spearman test (SPSS IBM Statistic 27) as a parametric approach was used to test the significant relationship between self-efficacy and the implementation of self-care activities.

2.4 Ethical Considerations

The study received ethical approval from the Ethics committee of the Medical Faculty, Universitas Lambung Mangkurat, Indonesia, with certificate number 132/KEPK-FK ULM/EC/VI/2023. After receiving an explanation and instructions on research procedures, all respondents voluntarily gave their informed consent to take part in the research.

3 Results and Discussion

3.1 Results

Table 1. Respondents' Characteristics

Respondents' Characteristics	N	%
Age		
31-40 years	2	5,0
41-50 years	6	15,0
51-60 years	15	37,5
> 60 years	17	42,5
Gender		
Male	13	32,5
Female	27	67,5
Educational background		
Not in school	1	2,5
Elementary school	14	35,0
Junior high school	4	10,0
Senior high school	14	35,0
Bachelor's degree	7	17,5
Occupation		
Civil servant	5	12,5
Private employee	6	15,0
Doesn't work	2	5,0
Housewife	23	57,5
Retired	4	10,0
Long suffering		
< 5 years	18	45,0
5-10 years	19	47,5
> 10 years	3	7,5
Complication		
Yes	26	65,0
No	14	35,0
Marital status		
Married	35	87,5
Death divorce	5	12,5

3.1.1 Characteristics of Respondents

The results of respondents' characteristics show that most are 60 years old (42,5%). Many respondents were female (67,5%), 14 respondents (35,5%) held elementary school and senior high school. Furthermore, 23 respondents (57,5%) were employed as housewives, 19 respondents (47,5%) had long suffered from diabetes mellitus for 5-10 years, 26 respondents (65%) have complications, and 35 respondents (87,5%) were married.

3.1.2 Self-Efficacy and Implementation of Self-care Activity

Table 2. Value of Self-Efficacy and Implementation of Self-care Activity

Variable component	n	Mean	Median	Modus	Standard Deviation	Min-Maks
Self-efficacy	40	37,08	37,50	37	5,399	18 – 45
Implementation of selfcare activity	40	68,53	71,50	69	14,131	39 – 92

The result of the median value of self-efficacy in 40 respondents is 37,08 with the lowest score in 18 and the highest score in 45. The median value of implementation of selfcare activity is 68,53 with the lowest score in 39 and the highest score in 92.

3.1.3 Correlation of Self-Efficacy and Implementation of Selfcare Activity

Table 3. Correlation of Self-Efficacy and Implementation of Selfcare Activity

Variable component	P Value	Correlation coefficient (r)
Self-efficacy Implementation of selfcare activity	0,001	0,612

3.1.5 Implementation of Selfcare Activity

The analysis of self-efficacy between the implementation of self-care activity has a significant relationship (p=0.001), and a correlation coefficient of 0,612. Self-efficacy correlates with implementation of selfcare activity in Diabetes Mellitus patients. It means getting better self-efficacy, implementation of selfcare activity will be getting better too, or getting worse self-efficacy, implementation of selfcare activity will be getting worse too.

3.2 Discussion

Table 1 shows that many diabetes mellitus respondents are more than 60 years old. Age is a risk factor that cannot be controlled in diabetes mellitus. In elderly age, the physiological body's functions will decrease. The insulin hormone cannot work optimally and causes the blood sugar levels to be uncontrolled.[13] This condition of older adults affects physical function, physical, psychological, and cognitive abilities.[14] Women have a higher risk of developing diabetes mellitus type 2, which causes differences in sexual hormone levels, body composition, and adipose tissue and fat levels between women and men. Women who experience menopause will experience an increase in fat in the abdominal area, which causes a decrease in the concentration of estrogen and an uncontrolled increase in fatty acids.[15] Body fatty acids have an important role in insulin resistance, especially in diabetes mellitus type 2.[16]

Logistic regression analysis indicated that the level of education affects diabetic sufferers. Many respondents held elementary school and senior high school. The level of education has goals and differences in each outcome produced at each level, be it elementary school, middle school, and high school, so that this becomes a differentiator for each individual in receiving information and then becomes an understanding that is received as information.[17] The higher the level of education, the more capable an individual is of thinking and digesting the information obtained, so that individuals who have higher education tend to more easily accept and understand information conveyed by other people.

Many respondents were employed as housewives. Housewife has a lack of activities that require a lot of energy, which means that not much blood sugar in the body is converted into energy and ultimately accumulates in the blood and causes the number of diabetes mellitus sufferers in the group of people who are housewives to be the highest. Occupation has influence on the level of physical activity. Diabetes mellitus cases often occur in housewives due to unhealthy lifestyle factors such as lack of movement and unhealthy food, as well as a lack of knowledge about diabetes mellitus regarding management that is not adhered to, especially physical exercise or sports.[18]

The range of long suffering of respondents in 5-10 years, it means diabetes mellitus sufferers need care and self-care as well as good knowledge regarding their current health condition so that it serves as a reminder that diabetes mellitus is a disease that cannot be cured, so monitoring and good self-care must also be carried out, including healthy living behavior in order to maintain and improve the quality of life. The ability to carry out self-care is obtained from experience and habits to change behavior in managing diabetes mellitus.[12]

Majority of respondents have a complication after they was diagnosed diabetes mellitus. Diabetes mellitus is one of the trigger factors for the emergence of disease or other health problems in the future because high blood sugar levels in the blood can cause serious complications or damage to other body organs. After all, blood flow is disrupted and the content in the blood changes, potentially damaging organs. Other examples include kidney failure and coronary heart disease.

Family has an important role for diabetic sufferers, in prevention, where care efforts and depending on the family's habits, these actions can be seen in the daily care process. An attitude is not automatically realized in an action, or for an attitude to become a real change requires supporting factors or enabling conditions.[5] Family support is very influential in carrying out self-care, because with family support, self-care behavior for diabetes mellitus patients will be carried out more easily and regularly.[12]

Self-efficacy is a personal factor that acts as a major and important predictor of self-care behavior among patients with type 2 diabetes[19][20][21][22] and a mediator in the interaction between behavioral factors and environmental factors. Self-efficacy for diabetes sufferers focuses on the sufferer's confidence or ability to carry out various behaviors that can improve health status and self-care management of the disease, such as physical exercise, diet, controlling blood glucose, or medication.[23] This self-efficacy will increase with the provision of functional literacy.[22] This ability comes from within oneself to cure the disease one is suffering from, seen from: Strength of belief (Strength), Difficulty (Magnitude), and Generality (Generality).[24]

One of the driving factors in self-care for diabetes patients is motivation. If the patient's motivation is not good, it will affect the patient's level of self-efficacy. Self-efficacy is a diabetes patient's belief in their ability to achieve certain goals that can support their health by meeting the desired goals and expectations.[23] There was an improvement in the results of symptoms and quality of life in patients due to the increasing belief in self-efficacy in managing chronic diseases.[25][26][22] One of the important factors in the continuity of the self-care program for diabetes mellitus patients is because self-efficacy is the belief within a person that what is being done now is something that will have positive results so that the individual will be motivated and enthusiastic in carrying out self-care to improve the quality of life and reduce morbidity and disability rates in patients with diabetes mellitus.

The implementation of self-care is influenced by various factors. Factors that can influence the implementation of self-care management for diabetes mellitus patients are a person's ability to obtain, understand and process information as well as the ability to reach the health services they need to make the right decisions (understanding health knowledge), confidence in a person to being able to do something successfully (self-efficacy) and most importantly of course there is support from the family in its implementation.[27] Diabetes sufferers need ongoing care to improve their quality of life. Six main aspects that have an impact on improving the quality of life or health of people with diabetes are increased self-efficacy, diabetes self-care management, increased knowledge and awareness, as well as behavior change and social support. Activities included in diabetes self-care management include dietary modification (with the Nutrition Care Process / NCP helping to improve dietary compliance[28], exercise or physical activity (walking is one option to improve HbA1c control[29], blood sugar level monitoring, foot care, and pharmaceutical treatment (some patients can use natural product preparations for blood glycemic control[30] such as Swallow's Nest Ointment[31] or Anti-Inflammatory Channa micropeltes Extract[32] which can heal diabetic wounds) or compliance in diabetes control and treatment.[33] This proves the relationship between self-care behaviors and demographic, socio-economic, and psychological factors.[34]

Self-efficacy is an important factor in implementing good self-care. Self-efficacy has a significant impact in this research on the self-care of diabetes mellitus patients, as evidenced by the results of research that has been conducted, good self-efficacy will lead to good self-care, conversely, poor self-efficacy will also lead to poor self-care. In the implementation of self-care, apart from self-efficacy which must be good, support from the family or environment also influences the continuity of the self-care program for diabetes mellitus patients because with good family and environmental support, the patient will feel that he is not alone and will be able to obtain good health services and adequate for his condition. Self-efficacy is indeed an important factor in the success of self-care programs for diabetes mellitus patients, but the role of the family in helping patients and empowering patients to achieve a good standard of life and

maximum quality of life cannot be forgotten, which is also very important so that the results obtained are more optimal. The family is the main pillar in the sustainability of this program because without a supportive family, the patient will feel alone and give up on his poor condition, then this will also have an indirect impact on the patient's self-efficacy.

4 Conclusion

Self-efficacy is related to the implementation of self-care activities in Diabetes Mellitus patients. This means that the better self-efficacy, the better the implementation of self-care activities, or the worse the self-efficacy, the worse the implementation of self-care activities. In maintaining better self-efficacy, adequate and sustainable family and environmental support is required.

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