



# Analysis of Self-Care Implementation in Patients with Diabetes Mellitus

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**Abstract.** Diabetes mellitus (DM) is a chronic condition that cannot be cured and can lead to complications, necessitating self-care. Correct self-care can improve the sufferer's capacity to fulfill life's demands independently, allowing them to control their illness and avoid complications. The purpose of this study was to examine how diabetes mellitus patients practice self-care. It employs a cross-sectional method by involving 71 respondents, using the SDSCA and the DMSES as instruments. The data were then analyzed by chi-square test. According to the findings, most of the patients had suffered from DM for more than 5 years with low self-efficacy and inadequate self-care behavior. Furthermore, the only self-care components that was considered good was medicine consumption behavior. The findings also indicate that the duration of DM did not predict self-care behavior. Diabetes patients should practice more self-care in order to enhance their health and avoid further complications

**Keywords:** DM, Self-care, Self-efficacy.

## 1 Introduction

Diabetes mellitus (DM) is a chronic condition that is terminal and can lead to complications. According to the International Diabetes Federation (IDF), around 463 million people aged 20 to 79 years had diabetes mellitus in 2019, with that number anticipated to rise to 578 million by 2030 and 700 million by 2045 [1]. In Indonesia, about 10.7 million persons have diabetes [2]. While in Central Java, the number of DM patients reached 13.39% in 2019, and increased to 13.91% in 2021 [3]. Furthermore, in 2021, the number of DM cases in Klaten Regency was 37,485 [4].

Due to its chronic nature, if DM left untreated, complications may occur to almost every part of the body. Thus, diabetes management strategies are critical. Specifically, by attempting to return blood sugar levels to normal. This is one of the most effective long-term preventative strategies [5]. To reduce the occurrence of complications, efforts centered on empowering DM patients and their families, self-management education, as well as controlling lifestyle variables must be prioritized. Self-care is one of the effective self-management education approaches. Self-care is an essential component of therapy in DM, ensuring that patients can safely monitor and regulate their blood glucose levels [6].

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Diabetic patients' self-care involves modifying eating patterns (diet), foot care, physical activity, blood sugar monitoring, and taking diabetic medication. The diet's concept is to pay attention to the eating schedule, eating pattern, food type, and sugar diet. This approach aims to control and maintain balance at typical levels [7].

Self-efficacy is one aspect that impacts DM patients' self-care [8]. Self-efficacy in health behavior is critical for improving patients' attitudes toward a healthy lifestyle. Self-efficacy is defined as a person's conviction in his or her ability to achieve certain goals, which actively impacts his or her life [9]. Sufferers with high self-efficacy will have the confidence to complete the components of elements that promote DM Self Care Management, and will be motivated to do so. Self-efficacy also assists a person to gain independence and self-confidence in self-care. Aside from that, the duration of suffering from DM might have an impact on self-care. Someone who has had diabetes for a long period has learnt DM self-care behavior while receiving treatment. This care regimen teaches patients about self-care tasks [10].

When compared to other studies, this study is novel in that it focuses on indicators of self-care activities, allowing us to learn more about patients' self-care practices in detail. It is intended that patients will be able to maintain normal blood sugar levels in this way. The purpose of this study was to provide an overview of how DM patients conduct self-care activities.

## **2 Methods**

### **2.1 Design and Sampling**

A survey with a cross-sectional approach was used in this study. The study was carried out at Prolanis Public Health Center in Prambanan, Klaten, which includes two Community Health Centers: Prolanis Prambanan Community Health Center and Prolanis Kebondalem Lor Community Health Center. The research sample consisted of 71 respondents chosen by purposive sampling. The inclusion criterion was Prolanis members with strong communication skills. Whilst the exclusion criteria were members of Prolanis who are 60 years of age or older, as well as those who suffer from mental health issues.

### **2.2 Variable and instruments**

In this study, the independent factors were self-efficacy and length of DM suffering. Self-care was the research dependent variable. A questionnaire was used to gather demographic information, self-efficacy, and self-care. Age, gender, education level, and duration of diabetes mellitus were among the demographic data obtained. The Diabetes Mellitus Self-Efficacy Scale (DMSES) was used to assess self-efficacy, and self-care was assessed by using the Summary of Diabetes Self-Care Activities (SDSCA) developed by Toobert, Hampson, and Glasgow (2000). Questionnaire for DMSES The questionnaire has 20 questions on blood glucose levels, foot care, medication, food, and levels of physical activity. The SDSCA questionnaire includes 13 questions about food, physical activity, medicine, blood sugar monitoring, and foot care.

### 2.3 Statistical Analysis

Descriptive and inferential statistics were used to analyze the data. The mean, standard deviation, and percentage (%) of respondent attributes are reported. The chi-square test was performed to assess variations in self-care based on DM duration and self-efficacy.

## 3 Result and Discussion

According to the research findings, most of respondents were women, more than half respondents had at least a secondary school education, and the majority had DM for more than 5 years. According to the research findings, a large proportion of respondents exhibited low self-efficacy and self-care. The whole data is shown in Table 1.

**Table 1.** Distribution of respondents based on characteristics (n=71)

	Characteristics	N	%
Age	mean±SD = 53,52±4,456		
Sex	Male	16	22.5
	Female	55	77.5
Education level	No education	7	9.9
	Elementary School	13	18.3
	Junior High School	21	29.6
	Senior High School	26	36.6
	Higher Education	4	5.6
Duration of DM	< 5 years	27	38
	≥ 5 years	44	62
Self-efficacy	Poor	47	66.2
	Good	24	33.8
Self-care	Poor	45	63.4
	Good	26	36.6

The research findings also revealed that self-care implementation level was largely inadequate when examined from each component, including food, physical exhaustion, blood sugar monitoring, and foot care. However, the component of taking medicine is included in the good category for the majority of responders. The whole data is shown in table 2 below.

**Table 2.** Distribution of respondents based on self-care activity (n=71)

	Self-care Activity	N	%
Dietary habit	Poor	43	60.6
	Good	28	39.4
Physical exercise	Poor	39	54.9
	Good	32	45.1

Self-care Activity		N	%
Blood-glucose monitoring	Poor	66	93
	Good	5	7
Taking medicine	Poor	18	25.4
	Good	53	74.6
Foot care	Poor	38	53.5
	Good	33	46.5

The chi-square test results revealed that there were significant variations in self-care implementation between respondents with excellent and poor self-efficacy. However, when compared to the length of DM suffering, the practice of self-care made no substantial difference. The entire analysis findings are shown in Table 3 and 4.

**Table 3.** Self-care difference based on self-efficacy (n=71)

Self-efficacy	Self-care				Amount	P Value	
	Poor		Good				
	n	%	n	%			
Poor	35	74.5	12	25.5	47	100	0.014
Good	10	41.7	14	58.3	24	100	
Total	45	63.4	26	36.6	71	100	

**Table 4.** Self-care distribution based on duration of DM (n=71)

Duration of DM	Self-care				Amount	P Value	
	Poor		Good				
	n	%	N	%			
< 5 years	17	63	10	37	27	100	0.014
≥ 5 years	28	63.6	16	36.4	44	100	
Total	45	63.4	26	36.6	71	100	

Diabetes mellitus risk increases with age. As people become older, their body's processes decline, including the work of the insulin hormone, which produces high blood sugar levels. This study supports the findings of [11], who found that the age group 45-59 years had the highest prevalence of diabetes. According to research [12] respondents aged 45-59 years had a 1.75 times greater chance of getting type 2 diabetes mellitus than respondents aged 60 and more.

According to Risksesdas, women have a greater prevalence of diabetes mellitus than males, with a ratio of 1.78% to 1.21% [13]. Moreover, women have more cholesterol than males, and there are also variations in carrying out all every-day activities and lifestyle choices, all of which have a significant impact on the occurrence of diabetes mellitus [14]. Men have 15-20% of their body weight in fat, whereas women have 20-25%. As a result of the larger increase in fat levels in women than in men, the risk of diabetes mellitus in women is 3-7 times higher than in males.

A person's level of education will typically influence their understanding of health, which will have an impact on their awareness in preserving their health. It can promote self-efficacy and effective self-care behavior [15]. Using self-care in an attempt to maintain health or a healthy lifestyle, as well as issues that people with diabetes are able to do on their own to stay healthy is necessary. The main goal is keeping blood sugar levels within the normal range [16, 17]. Patients with diabetes mellitus will have more regulated blood sugar levels if they practice better self-care management. Maintaining blood sugar control can lower morbidity and mortality and avoid problems [18]. Self-care has a vital part in enhancing patients' quality of life and wellbeing. Self-care attempts to keep blood sugar levels normal in order to avoid complications and minimize morbidity and death [19]. Self-care consists of five components: food, physical activity, blood sugar monitoring, medication administration, and foot care.

Diabetes patients can improve their metabolic control by changing their diet as well as increasing their physical activity. Diet management includes eating meals that are balanced or meet each individual's calorie and nutritional requirements. Diabetes patients should be reminded of the necessity of regular eating schedules, calorie types, as well as quantities, especially if they use medicines that boost insulin production or insulin treatment itself. Diabetes foot problems (diabetic ulcers) can be avoided with regular foot care. [13] mention that every diabetic patient should undergo a full foot examination at least once a year, which includes inspection, feeling the pulse of the dorsalis pedis and posterior tibial arteries, and screening for sensory neuropathy.

Several factors impact DM patients' self-care implementation, including self-efficacy. The capacity of DM patients to make the appropriate decision is defined as self-efficacy, which focuses on the sufferer's belief in being able to carry out behavior that can assist disease healing and improve individual self-management. According to research [20], the influence of self-efficacy on DM patients may be demonstrated in behavioral changes by altering how a person thinks, motivates themselves, and behaves in carrying out treatment independently. The trigger for a person's attitude and behavior to begin the task at hand, the amount of effort made in carrying out the activity, and the length of time the person will complete the work is self-efficacy. [21] research also confirms this, stating that 87.50% of respondents reported low self-care behavior and moderate self-efficacy. The study discovered that there was no change in the self-care behavior of DM patients based on the amount of time they had the disease.

#### **4 Conclusion**

Diabetes mellitus is a chronic condition for which a person needs therapy for the rest of their lives. Patients with diabetes mellitus ought to perform self-care in order to maintain normal blood sugar levels and avoid problems. The study's findings indicated that most patients had not completed all recommended self-care practices, particularly with regard to nutrition, exercise, blood sugar regulation, as well as foot care.

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