

# THE RELATIONSHIP BETWEEN SELF-EFFICACY AND SELF-CARE MANAGEMENT WITH THE QUALITY OF LIFE OF PATIENTS WITH DIABETES MELLITUS

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## THE RELATIONSHIP BETWEEN SELF-EFFICACY AND SELF-CARE MANAGEMENT WITH THE QUALITY OF LIFE OF PATIENTS WITH DIABETES MELLITUS

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### ABSTRACT

Diabetes Mellitus (DM) is a disease that suffers for years and even throughout life. DM patients have the possibility of experiencing various kinds of complications that hurt their quality of life. Factors that affect the quality of life include characteristic respondent (family history, gender, age, long suffering of DM), self-efficacy, and self-care management. This study analyzed the relationship between self-efficacy and self-care management and the quality of life of DM patients. This quantitative study used an analytical observational approach using a cross-sectional study design with a sample size of 180 respondents, determined by a purposive sampling technique. Data was collected from respondents using a questionnaire. The research data were analyzed using logistic regression. There is a relationship between self-efficacy (p-value = 0.003) with OR (95% CI) = 7.108 (1.981 – 25.510) and self-care management (p-value 0.024) with OR (95% CI) = 3.703 (1.190 – 11.525) with quality-of-life DM patients. This study recommends that structural education programs and increased social support improve self-efficacy and self-care management to impact the quality of life of DM patients positively.

**Keywords:** diabetes mellitus (DM), quality of life, self-efficacy, self-care management

### Introduction

There is an epidemiologic transition by non-communicable diseases.<sup>1</sup> One of the noncommunicable diseases is Diabetes Mellitus (DM).<sup>2</sup> DM is a group of metabolic disorders characterized by elevated blood sugar levels or hyperglycemia due to abnormalities in insulin secretion.<sup>3</sup> The prevalence of DM worldwide is expected to increase to 643 million (11.3%) by 2030 and to 783 million (12.2%) by 2045.<sup>4</sup> Meanwhile, in Indonesia, the number of people with DM is 21,257,000, ranking second in Southeast Asia.<sup>5</sup> If it is not handled properly, DM can lead to complications such as retinopathy, neuropathy, and nephropathy (microvascular), as well as peripheral vascular and coronary artery disease (microvascular).<sup>6</sup> Once any of these occur, it will impact the quality of life of DM patients.<sup>7,8</sup>

Quality of life describes the health status of people with DM as seen from the physical, psychological, and social health domains, which are influenced by a person's experiences, beliefs, expectations, and perceptions.<sup>9</sup> Various factors can influence it, but the critical determinants identified are the long-suffering of DM, socio-demographic factors such as family history, gender, age, and economic status, and psychosocial factors such as stress level and self-efficacy.<sup>10-13</sup> Another critical factor is self-care management.<sup>14</sup> Self-care management is an action taken by individuals to control blood sugar.<sup>15</sup> These care efforts include dietary arrangements, physical activity, blood sugar monitoring, and health-related problem-solving.<sup>16-18</sup>

However, one of the critical factors as a predictor of self-care management is self-efficacy.<sup>19</sup> Self-efficacy describes an individual's belief in themselves to perform a specific behavior and keep doing it despite obstacles.<sup>20</sup> Self-efficacy is a foundation for behavior change and self-care management.<sup>21</sup> Therefore, self-efficacy and self-care management must be connected to the lives of people with DM to achieve a good quality of life.<sup>22</sup> Previous studies also stated a relationship between self-efficacy and self-care management with the quality of life of DM patients.<sup>23</sup> However, the difference with this study is the number of respondents, the age range of respondents, and the use of questionnaires to measure self-efficacy and quality of life of DM patients, and there has been no research examining this relationship in Surakarta, Central Java. Therefore, this study aims to determine the factors associated with the quality of life of DM patients at Kratonan Health Center.

### Methods

This study used a cross-sectional approach. The data collection technique used purposive sampling because respondents had to meet the inclusion criteria in this research. The inclusion criteria of this study are type 2 DM patients who seek treatment and reside in the working area of

the Kratonan Community Health Center. The exclusion criteria are type 1 DM patients who didn't reside in the Kratonan Community Health Center working area. The type of DM and address respondents were based on Kratonan Community Health Center data. The sample consisted of 180 patients with type 2 DM. Data collection was carried out in August 2023.

The data on the independent variables are characteristics of respondents in this study, such as family history, gender, age, and long-suffering of DM categories of < 5 years and  $\geq$  5 years were carried out using a questionnaire. For the other, independent variables, such as self-efficacy and self-care management levels, are measured using the DMSES and DSMQ instruments, which have been tested for validity and reliability using construct validity and internal consistency tests. A questionnaire using the Diabetes Management Self-Efficacy Scale (DMSES) was used to measure variable self-efficacy, and 20 questions were asked. The validity and reliability of the questionnaire have been tested valid and reliable. DMSES questionnaire has a calculated r value of 0.644-0.480 > r table 0.361 and Cronbach's alpha coefficient of 0.939 for the total score.<sup>23</sup> DMSES uses categorization into two: bad < median (24) and good  $\geq$  median (24). Then, the other independent variable, which is self-care management, uses Diabetes Self-care Management (DSMQ) and contains 16 items developed by Schmitt, which has been modified with results with a degree of freedom of 30-2 (r table = 0.374) and Cronbach's alpha value = 0.641.<sup>24,25</sup> DSMQ categorization is divided into two, namely bad < median (27) and good  $\geq$  median (27). DSMES and DSMQ questionnaires use median or quartile to categorize the 'poor' and 'good' categories because the data is not normally distributed.

The quality of life of patients with DM was measured using the World Health Organization Quality of Life (WHOQOL-BREF), valid and reliable.<sup>26</sup> WHOQOL-BREF consists of 26 question items with categorization into 2: poor < mean (86) - 1SD (14.5) and good  $\geq$  mean (86) + 1SD (14.5). The quality-of-life categories are based on a previous study of Nigerian teaching hospitals.<sup>27</sup> This study used statistical analysis for univariate analysis to descriptively describe respondents' characteristics. In contrast, bivariate analysis used the chi-square test to test the relationship between independent and dependent variables. For multivariate analysis, logistic regression is used to assess the influence of independent variables on the quality of life by considering other variables with a significance level of  $\alpha = 0.05$  and a confidence level (CI) of 95%. This study passed the ethics of the Health Research Ethics Committee of Dr. Moewardi Hospital Number 1.769/IX/HREC/2023.

## Results

Table 1 illustrates that most respondents aged  $\geq$  60 are elderly, with as many as 95 respondents (52.8%). Based on gender, the majority of respondents were female, as many as 101

respondents (56.1%); based on education, most respondents had a high school education (SMA) with job status showing that most were housewives, as many as (27.2%), the long-suffering of majority was  $\geq 5$  years as many as 122 respondents (67.8%), and majority respondents not having complications status as many as 119 respondents (66.1%).

**Table 1. Descriptive Frequency for Characteristics of Respondents**

Characteristic of Respondent	n	%
<b>Age</b>		
Adult (19 – 44 years)	3	1.7
Pre-elderly (45 – 49 years)	82	45.5
Elderly ( $\geq 60$ years)	95	52.8
<b>Gender</b>		
Male	79	43.9
Female	101	56.1
<b>Level of Education</b>		
1) Education History	33	18.3
Elementary School	21	11.8
Junior High School	26	14.4
Senior High School	83	46.1
University	17	9.4
<b>Job Status</b>		
Unemployment	39	21.7
Housewives	49	27.2
Farmer	11	6.1
Trader	31	17.2
Entrepreneur	24	13.3
Civil Servants	10	5.6
Others	16	8.9
<b>Long Suffering of DM</b>		
< 5 years	58	32.2
$\geq 5$ years	122	67.8
<b>Total</b>	<b>180</b>	<b>100</b>

Table 2 below illustrates the analysis of family history, long-suffering of DM, age, gender, self-efficacy, and self-care management with quality-of-life DM patients.

**Table 2. Bivariate Analysis of Quality Life Diabetes Mellitus Patients**

Variable	Quality of Life Diabetes Mellitus of Patients				Total		P-value	OR	95% CI	
	Poor		Good		n	%			Lower	Upper
	n	%	n	%						
<b>Family History</b>										
Yes	11	14.5	65	85.5	76	100	0.846	1.088	0.464	2.550
No	14	13.5	90	86.5	104	100				
<b>Long Suffering of DM</b>										
< 5 years	7	12.1	51	87.9	58	100	0.626	0.793	0.311	2.020
$\geq 5$ years	18	14.8	104	85.2	122	100				
<b>Age</b>										
< 60 years	8	9.4	77	90.6	85	100	0.100	0.477	0.194	1.169
$\geq 60$ years	17	17.9	78	81.8	95	100				
<b>Gender</b>										
Male	9	11.4	70	88.6	79	100	0.392	0.683	0.285	1.640
Female	16	15.8	85	84.2	101	100				
<b>Self-Efficacy</b>										
Bad	21	29.6	50	70.4	71	100	0.001	11.025	3.594	33.825
Good	4	3.7	105	96.3	109	100				
<b>Self-care Management</b>										
Bad	14	37.8	23	62.2	37	100	0.001	7.304	2.954	18.063
Good	11	7.7	132	92.3	143	100				

Table 2 illustrates the relationship between self-efficacy (p-value = 0.001) and self-care management (p-value = 0.001) in quality-of-life DM patients. There is no relationship between family history (p-value = 0.846), long-suffering of DM (p-value = 0.626), age (p-value = 0.100), and gender (p-value 0.392) with quality-of-life DM patients.

For multivariate analysis, Table 3 illustrates the result of the multivariate analysis; there is a relationship between self-efficacy (p-value = 0.003) with OR (95% CI) = 7.108 (1.981 – 25.510) and self-care management (p-value 0.024) with OR (95% CI) = 3.703 (1.190 – 11.525) with quality-of-life DM patients in Kratonan Community Health Center. In addition, there is no relationship between family history (p-value = 0.685), gender (p-value = 0.131), age (p-value = 0.539), and long-suffering of DM (0.147) with quality-of-life DM patients.

**Table 3. Multivariate Analysis of Quality Life Diabetes Mellitus Patients**

Variable	B	S.E.	OR	P-Value	95 % CI
Age	-0.329	0.536	0.720	0.539	0.252-2.059
Family History	0.205	0.504	1.227	0.685	0.457-3.295
Gender	-0.790	0.523	0.454	0.131	0.163-1.266
Long Suffering of DM	-0.847	0.583	0.429	0.147	0.137-1.345
Self-care Management	1.309	0.579	3.703	0.024	1.190-11.525
Self-Efficacy	1.961	0.652	7.108	0.003	1.981-25.510
Constant	1.300	0.632	3.668	0.040	

**Discussion**

DM is a metabolic disease caused by the ineffectiveness of the pancreas in producing insulin, resulting in an imbalance in blood sugar levels.<sup>25</sup> DM is a chronic disease that can last a person's life.<sup>28</sup> If DM is uncontrolled, the probability of complications such as retinopathy, neuropathy, and nephropathy (microvascular) as well as peripheral vascular disease and coronary arteries (microvascular).<sup>6,28-30</sup> Previous studies show that status complications in DM patients are related to quality of life.<sup>31,32</sup> Quality of life represents the extent to which a healthy person enjoys every process of life and the ability to live a better life.<sup>33</sup> Quality of life can also be defined as a form of well-being owned by a person, including his physical and social conditions.<sup>34</sup>

There is no relationship between family history (p-value = 0.685), gender (p-value = 0.131), age (p-value = 0.539), and long-suffering of DM (0.147) with quality-of-life DM patients. Other results, based on Table 3. show self-efficacy (p-value = 0.003) with OR (95% CI) = 7.108 (1.981 – 25.510) and self-care management (p-value 0.024) with OR (95% CI) = 3.703 (1.190 – 11.525) with quality-of-life DM patients in Kratonan Community Health Center. The analysis aligns with research at Pelamonia Hospital Makassar, which shows a significant relationship between self-efficacy and the quality of life of people with DM (p = 0.006).<sup>35</sup> Other studies have also demonstrated a positive relationship between self-efficacy and the quality of life of DM patients.<sup>5,36,37</sup> Self-efficacy is one of the cognitive and psychosocial factors.<sup>38</sup> Self-efficacy is a concept from "Social Learning Theory" defined as a person's belief in their ability to manage and

carry out an activity needed to support life in the future.<sup>39</sup> Self-efficacy refers to an individual's belief in their ability to carry out a specific behavior and face the accompanying obstacles.<sup>40</sup> Table 3 also shows that the OR of self-efficacy is 7.108, which means that DM patients with good self-efficacy have a 7.108 times greater chance of having a better quality of life for DM. Also, the previous study showed that suitable self-efficacy patients contribute 95% to controlling their disease and motivating healthy behavior. Patients with bad self-efficacy will feel inferior and worried about their health status.<sup>41,42</sup>

This study found that most respondents have a suitable category for self-efficacy and quality of life for DM patients, as many as 105 respondents (58.3%), so that level of self-efficacy needs to be maintained so that it does not change for the worse. Still, on the other side, as many as 50 respondents (27.8%) have bad self-efficacy but have a good quality of life. This may be related to the ability to manage anxiety and maintain good health.<sup>43,44</sup> In addition, there may be environmental factors, including the physical environment and emotional state, also significantly affect the quality of life with positive feelings.<sup>45</sup> Besides that, self-efficacy can also be a foundation in planning and identifying interventions to modify behavior to achieve effective self-care management.<sup>46</sup> Self-efficacy and self-care management are two critical factors in improving the quality of life of DM patients.<sup>47</sup>

Another study shows that self-care management is another factor that can improve the quality of life of DM patients.<sup>48</sup> Besides that, self-care management is crucial for preventing high blood glucose levels.<sup>49</sup> Self-care management in DM patients includes physical activity, diet, medication adherence, blood glucose monitoring, and diabetes self-care-related problem-solving.<sup>50</sup> This study is found in Table 3. that there is a relationship between self-care management (p-value 0.024) with OR (95% CI) = 3.703 (1.190 – 11.525) with quality-of-life DM patients. Previous studies show that self-care management positively correlates with the quality of life of patients with DM at Mataram University Hospital (p-value = 0.000).<sup>51</sup> This also aligns with other research at Santa Elisabeth Medan Hospital, which shows a relationship between self-care management and patients' quality of life with DM (p-value= 0.004).<sup>52</sup> Previous studies have also mentioned that people with DM who have good and consistent self-care management will be able to balance blood sugar levels, minimize the incidence of complications, reduce mortality, and improve the quality of life of DM patients.<sup>53,54</sup> This study was conducted on self-care management and quality of life. DM patients found that as many as 132 respondents (73.3%) have good self-care, so it should be appreciated and monitored because it's difficult.<sup>55</sup> On the other side, as many as 11 respondents (6.1%) have bad self-care management but have a good quality of life. It may be caused by another factor, such as psychological resilience or social support, or DM patients already in the acceptance phase contributing to perceived quality of life.<sup>56,57</sup>

This study also found that as many as 21 respondents (11.7%) have bad self-efficacy, and as many as 14 respondents (7.8%) have bad self-care management with quality of life. Because DM patients still have a bad category for self-efficacy, self-care management, and quality of life, several strategies can be recommended based on recent research findings to monitor self-efficacy and self-care management, which are critical to improving quality of life. Previous studies applied that implementing structured educational programs focusing on self-management skills can significantly enhance individuals' confidence in managing their health conditions.<sup>58</sup> These programs should incorporate practical tools and resources that facilitate self-monitoring, such as mobile health apps, which have increased engagement and adherence to self-care care management.<sup>59</sup> Also, fostering a supportive environment through peer support groups can increase self-efficacy by providing emotional and informational support.<sup>60</sup> Research shows that social support networks are essential in encouraging individuals to participate actively in their health management, and they can affect their quality of life.<sup>61</sup>

The limitation of this study is the scope of respondents of DM patients; it should be more extensive, including respondents who seek treatment at the Kratonan Community Health Center even though they do not reside in the Kratonan Community Health Center working area because they include DM patients who are under the monitoring of treatment by the Kratonan Community Health Center.

### Conclusion

Self-efficacy and self-care management are related to the quality of life of DM patients in the Kratonan Community Health Center. Then, there is no relationship between family history, gender, age, and long-suffering DM with quality-of-life DM patients. Most respondents have good self-efficacy, self-care management, and quality of life. However, the other side still found that respondents have bad self-efficacy, self-care management, and quality of life. So, this study suggests some interventions that can be applied, like a structural educational program and raising social support for DM patients to improve their self-efficacy and self-care management to increase their quality of life.

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### Conflict of Interest

The authors declare that we have no conflict of interest.

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