

## Original Research Article

# THE RELATIONSHIP BETWEEN SELF-MANAGEMENT AND QUALITY OF LIFE AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS

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### Abstract

**Background:** Diabetes Mellitus (DM) is a metabolic disease characterized by high blood glucose levels as a result of insufficient insulin secretion, impaired insulin activity or both. Patients with diabetes mellitus are at risk for complications that can affect their quality of life. These complications can be minimized through self-management.

**Objectives:** The aim of this study was to determine the relationship between self-management and quality of life in type 2 DM patients.

**Design:** This study was a quantitative research. The design in this study was a cross-sectional analytic with a sample of 75 people who were carried out at the endocrine polyclinic RS Pusat TNI Angkatan Laut (RSPAL) DR. Ramelan Surabaya. Research instrument used the Diabetes Self-Management Questionnaire (DSMQ) developed by Schmitt et al (2013) to determine the self-management of type 2 DM patients and to measure the quality of life using the Diabetes Quality of Life Brief (DQoL Brief) instrument developed by Burrough et al (2008). The sample size with simple random sampling method, and data analysis using spearman rank test.

**Results:** The results showed that there was a significant relationship between self-management and quality of life in type 2 DM patients ( $p$ -value = .000,  $r$  = .394).

**Conclusion:** There is a significant positive relationship between the level of self-management and quality of life in type 2 DM patients. From the results of the Spearman test correlation coefficient, there is a positive sign. This means that the higher the patient's self-management, it will also improve the quality of their life. The implication of this study are nurses can increase patient knowledge by providing education that focuses on improving self-management and facilitating the provision of family support as well as supervision and monitoring related to self-management by type 2 DM patients.

**Keywords:** Self-management, quality of life, type 2 diabetes mellitus.

## INTRODUCTION

Diabetes mellitus is a group of metabolic disorders characterized by chronic

hyperglycemia, which is caused by impaired insulin secretion, insulin action or both (ADA, 2012). The International Diabetes Federation

(IDF) states that diabetes mellitus is a major health problem. The main problem faced by patients with diabetes mellitus is chronic hyperglycemia which can lead to various complications (Papatheodorou, et al., 2016). The results of a study conducted on 66,726 patients with type 2 diabetes mellitus proved that 53% had microvascular complications and 27.2% had macrovascular complications. (Litwak et al., 2013).

Diabetes mellitus can be prevented or its occurrence can be delayed and controlled, with optimum treatment management (Brady, et al., 2013). Where the higher the quality of life of patients with diabetes mellitus, the prevention of diabetes mellitus is also good, but in fact a decrease in the quality of life in patients with diabetes mellitus is often followed by the inability of these patients to carry out self-management independently (Choi, et al., 2011). The inability of patients with diabetes mellitus to perform self-management can affect the quality of life in terms of physical health, psychological well-being, social relationships, and relationships with the environment (Jonkman, et al., 2016). In this case, quality of life is an important concern for health professionals because it can be a reference for the success of an action or therapy. Diabetes mellitus will accompany the patient's lifetime so that it greatly affects a person's quality of life. Low quality of life can exacerbate complications and can end in disability or death (Brady, et al., 2013).

One of the efforts that can be done to improve diabetes outcomes in diabetes management is diabetes self-management (DSM). The results of a systematic review conducted on 3,421 research articles also prove that diabetes self-management is effective in supporting a person's success in managing diabetes (Heinrich, Schaper, & Vries, 2010). The level of knowledge about DM affects the patient's ability to perform self-management. In addition, knowledge of DM can be used as a basis for decision making about diet, exercise, blood glucose monitoring, drug use, weight control, and foot care. (Palmer, et al., 2014). The ability to take care of yourself is not only

determined by attitude. However, attitudes and abilities in good self-management and monitoring the daily lifestyle behavior of DM patients and changing old habits are one of the efforts to control diabetes. Thus, the factor of understanding or knowledge about diabetes with one's self-management behavior is very important to be considered by health professionals. Attitude is an important role of emotional response and affects the patient's efforts to manage diabetes in daily life (Perkeni, 2015). Self-management of diabetes mellitus can develop patient skills in problem solving, increase self-confidence and support the application of knowledge in real life (Choi, et al., 2011).

Based on the results of interviews with 5 people with diabetes mellitus at RSPAL DR. Ramelan Surabaya, showed that 3 of them experienced low quality of life due to fatigue during activities and disturbed sleep. One of them said that he only took medication if there were complaints and an inability to follow a diet. Based on this description, the researcher is interested in describing the relationship between self-care and quality of life in type 2 diabetes mellitus patients at the endocrine polyclinic RS Pusat TNI Angkatan Laut (RSPAL) DR. Ramelan Surabaya

## **METHODS**

### *Study Design*

This research is a quantitative study with a descriptive correlation method through a cross sectional approach.

### *Setting*

This research was conducted at the endocrine polyclinic RS Pusat TNI Angkatan Laut (RSPAL) DR. Ramelan Surabaya.

### *Research Subject*

This research was conducted from 20 February to 20 March 2021. The population in this study were all patients suffering from type 2 diabetes mellitus. The sample size in this study was 75 patients. The sampling technique in this study used simple random sampling method. The sample is then selected based on

the characteristics and criteria of the sample based on:

1. Inclusion Criteria
  - a. Patients who come to the endocrine polyclinic RSPAL Surabaya
  - b. Patients who have been treated at the endocrine polyclinic RSPAL
  - c. Diagnosed with type 2 diabetes mellitus.
  - d. Respondent in the study fill out the questionnaire given.
  - e. Cooperative.
2. Exclusion Criteria
  - a. Diagnosed with type 1 diabetes mellitus.
  - b. Patients who cannot remember activities during the previous 1 week.

*Instrument*

The instrument used is the Diabetes Self-Management Questionnaire (DSMQ) developed by Schmitt et al (2013) to determine the self-management of type 2 DM patients. The DSMQ questionnaire instrument that has been analyzed using the validity and reliability test of the SPSS 24 computerized system for windows with degrees of freedom  $30-2 = 28$  ( $r$  table = .374) gets the results from 16 statements that have 2 invalid statements, namely number 4 ( $r = - .171$ ) and number 9 ( $r = - .044$ ), but because the substance of the question is considered important, the question is not deleted but the statement is corrected. The DSMQ questionnaire is reliable, that is, by using the alpha test, the Cronbach alpha value is .741. The Instrument for quality of life using

used to the Diabetes Quality of Life Brief (DQoL Brief) instrument developed by Burrough et al. (2008). The diabetes quality of life questionnaire is reliable, that is, by using the alpha test, the Cronbach alpha value is .963.

*Data Analysis*

After the data is collected the researcher sorts out the research data and does the coding. Data analysis using SPSS version 25. The analysis used the Spearman rank test with a significance level  $\alpha < .05$ .

*Ethical Consideration*

This research has been reviewed and declared to have passed the ethical review of the RS Pusat TNI Angkatan Laut (RSPAL) DR. Ramelan Surabaya Ethics Committee. Ramelan Surabaya with number SKET/3348/II/2021 in an effort to protect the human rights and welfare of nursing research subjects. At the time of conducting the research, the researcher guaranteed all the confidentiality of the respondents and did not violate the rights of the respondents and did not cause harm to the respondents who participated in this research.

**RESULTS**

*Characteristics of Respondents*

The results of data analysis about the characteristics of the respondents (table 1) showed that the majority were male as many as 39 respondents (52%). The characteristics of the respondents' age showed that most of them were 56-75 years old as many as 40 respondents (53%), and the proportion of good HbA1c values is 46 respondents (61.3%).

**Table 1.** Distribution of Frequency of Respondents in the Endocrine Polyclinic RS Pusat TNI Angkatan Laut (RSPAL) DR. Ramelan Surabaya from February 20, 2021 to March 20, 2021.

Characteristics of Respondents	Frequency (f)	Percentage (%)
<i>Gender</i>		
Male	36	48.0
Female	39	52.0
<i>Age (Years)</i>		
40-55	32	42.7
56-75	40	53.3

Characteristics of Respondents	Frequency (f)	Percentage (%)
> 75	3	4.0
Value of HbA1c		
Bad	29	38.7
Good	46	61.3

Sources: Primary Data of Questionnaire, 2021.

### *Analysis of the Correlation between Self-Management and Quality of Life among Patients Type 2 Diabetes Mellitus*

The result data on the table 2 showed that self-management had relationship with quality of

life among patients type 2 diabetes mellitus positively ( $p$ -value = .000,  $r$  = .349). This result mean relationship between self-management and quality of life was good enough.

**Table 2.** Relationship between Self-Management and Quality of Life among Patients Type 2 Diabetes Mellitus in the Endocrine Polyclinic RS Pusat TNI Angkatan Laut (RSPAL) DR. Ramelan Surabaya from February 20, 2021 to March 20, 2021.

Self-Management	Quality of Life							
	Not Good		Sufficient		Good		Total	
	f	%	f	%	f	%	f	%
Not Good	11	14.7	19	25.3	0	0.0	30	40.0
Sufficient	0	0.0	25	33.3	10	13.3	35	16.7
Good	0	0.0	1	1.4	9	12.0	10	13.3
Total	11	14.7	45	60.0	19	25.3	75	100.0

$p$ -value = .000;  $r$  = .349

Sources: Primary Data of Questionnaire, 2021.

## DISCUSSION

The results showed that most of the respondents were aged 56-75 years with a total of 40 respondents (53%). Based on the pathogenesis of DM, the aging process is at risk for the occurrence of DM or called prediabetes, namely the condition of the patient's blood sugar having impaired tolerance (140-199 mg/dL). If the blood sugar level reaches 200 mg/dl then it is classified as diabetes mellitus. Wulansari & Isfandiari (2013) stated that increasing age resulted in the ability of insulin as the key to enter glucose into cells not functioning properly, resulting in insulin resistance.

Naturally, as a person ages, changes occur both physiologically, psychologically and intellectually. The addition of age, especially in the elderly, will have an impact on anatomical, physiological and biochemical changes. This will result in susceptibility to a disease and can

lead to failure to maintain homeostasis against stress. Failure to maintain this homeostasis will result in a decrease in the body's resistance to life and result in an increase in the ease of emergence of several disorders in the individual (Hayes, et al., 2013). Whereas in type 2 diabetes patients, the changes that occur will have an impact on increasing impaired glucose tolerance and insulin resistance. This will have an impact on various problems both physiologically, psychologically and socially. This will cause various limitations that will affect the quality of life. In addition to the age factor and decreased body function, it also has an impact on the decreased ability in self-care and the implementation of diabetes management so that health problems will easily arise. This of course will affect the quality of life (Choi, et al., 2011).

The next respondent characteristic is that most of the sufferers are women as many as 39

respondents (52%). Women are more at risk of developing DM because physically women have a greater chance than men to develop central obesity and increase body mass index (Yusra, 2011).

Self-management has a relationship with quality of life, this is in accordance with table 2 statistical test results value  $<0.05$  with a positive correlation direction, which means that if self-management is carried out regularly, the quality of life of DM sufferers will increase. This is in line with the results of a systematic review study to see the relationship between diabetes self-management and quality of life in 7,878 literatures conducted from 1985 to 2013 proving a significant relationship that self-management can improve the quality of life of patients with chronic diseases, namely diabetes (Jonkman et al., 2016). In line with the meta-analysis research conducted on 23 research articles in determining the effectiveness of the Chronic Disease Self-Management Program (CDSMP) it proved that it was effective in improving behavior change, physical and psychological health. Changes in health behavior including physical activity, cognitive management and communication with doctors increased significantly so that the quality of life improved (Brady et al., 2013). In line with the results of a meta-analysis conducted on 1,892 subjects to see a comparison between the intervention group given diabetes self-management training and the control group, the results showed that there was an increase in the value of quality of life in the intervention group while there was no increase in the control group (Choi, Y.J, et al., 2011).

Based on the researcher's assumption that self-management is one of the strongest predictors of quality of life. However, the contribution of various other factors also needs to be considered. Family support, as well as high education and avoiding various complications will certainly further improve the health of type 2 diabetes patients, so that components of quality of life such as physical, psychological and social functions will

certainly be well maintained (Brandy, T.J, et al, 2013).

Based on the assumption of the researcher, naturally along with the age of a person changes occur both physiologically, psychologically and intellectually. The addition of age, especially in the elderly, will have an impact on anatomical, physiological and biochemical changes. This will result in susceptibility to a disease and can lead to failure to maintain homeostasis against stress. Failure to maintain this homeostasis will result in a decrease in the body's resistance to life and result in an increase in the ease of emergence of several disorders in the individual (Zychowska, et al., 2013).

## CONCLUSION

There is a significant positive relationship between the level of self-management and quality of life in type 2 DM patients. From the results of the Spearman test correlation coefficient, there is a positive sign. This means that the higher the patient's self-management, it will also improve the quality of their life.

## SUGGESTION

The implication of this study are nurses can increase patient knowledge by providing education that focuses on improving self-management and facilitating the provision of family support as well as supervision and monitoring related to self-management by type 2 DM patients.

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There is no conflict of interest in the writing.



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## AUTHOR CONTRIBUTION

**Ninik Ambar Sari:** Contributes to the completion of the article.

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