

## STRESS AND QUALITY OF LIFE PATIENTS WITH DIABETES MELLITUS

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### ABSTRACT

Diabetes Mellitus is still a health issue both globally and in Indonesia. This is evidenced by the increasing morbidity and can even lead to a decrease in the quality of life and event death if not handled properly. One of the factors that may be related to the quality of life of patients with diabetes mellitus is stress. This study aimed to analyze the relationship between stress and quality of life of patients with diabetes mellitus at Pirngadi Hospital, Medan City in 2022. The study used an analytical method with a cross-sectional approach. The number of samples was calculated using the formula and 41 patients were taken using purposive sampling technique. The instrument used for stress is the Perceived Stress Scale (PSS) which includes 10 statement items. As for the quality of life using WHOQOL-BREF as many as 26 statement items. Both of these instruments were standard instruments that have been tested for validity and reliability. Data analysis was performed using the Chi-square test. It obtained p-value 0.003. It indicated a relationship between stress and the quality of life of patients with diabetes mellitus. It is recommended that the nurse can train the patient some stress reductions methods and encourage the patient to do it every day.

**Keywords** : Stress, Quality of Life, Diabetes Mellitus

### ABSTRAK

Diabetes Mellitus masih menjadi masalah kesehatan baik secara global maupun di Indonesia. Hal ini dibuktikan dengan meningkatnya angka kesakitan bahkan dapat menyebabkan penurunan kualitas hidup dan sampai kematian jika tidak ditangani dengan baik. Salah satu faktor yang kemungkinan berhubungan dengan kualitas hidup penderita diabetes melitus adalah stres. Penelitian ini bertujuan untuk menganalisis hubungan stres dengan kualitas hidup pasien diabetes melitus di RSUD Pirngadi Kota Medan tahun 2022. Penelitian menggunakan metode analitik dengan pendekatan cross sectional. Jumlah sampel dihitung menggunakan rumus dan diambil 41 pasien dengan teknik purposive sampling. Instrumen yang digunakan untuk stres adalah Perceived Stress Scale (PSS) yang meliputi 10 item pernyataan. Sedangkan untuk kualitas hidup menggunakan WHOQOL-BREF sebanyak 26 item pernyataan. Kedua instrumen tersebut merupakan instrumen standar yang telah diuji validitas dan reliabilitasnya. Analisis data dilakukan dengan menggunakan uji Chi-square. Diperoleh hasil p-value 0,003. Hal ini menunjukkan adanya hubungan antara stres dengan kualitas hidup penderita diabetes melitus. Disarankan agar perawat dapat melatih pasien beberapa metode pengurangan stres dan mendorong pasien untuk melakukannya setiap hari

**Kata kunci** : Stress, Kualitas Hidup, Diabetes Mellitus

### INTRODUCTION

One of the chronic disease that are still receiving attention from the world and Indonesia is Diabetes Mellitus. This condition is associated with chronic metabolism of the pancreas when it can not produce enough insulin and or when the individual's body is unable to use the insulin it produces effectively. Insulin is a hormone that regulates sugar in the blood. Individuals who experience this increase will be called hyperglycemia which if this continues to occur will result in serious damage to most systems in the body, two of wich often occur in the area of blood vessel and nerves. In 2014, the prevalence of diabetes mellitus in adults increased by 8.5% in the world. Meanwhile, in 2019, it was the direct cause of 1.5 million

deaths and 48% of all deaths. From 2000 to 2016, there was a 5% increase in deaths from the disease (WHO, 2021).

Indonesia is in 7<sup>th</sup> position out of 10 countries with the highest number of people with diabetes mellitus, which is 10.7 million people based on the International Diabetes Federation (Pusat Data Dan Informasi Kemkes RI, 2022). This disease continues to experience a significant increase in prevalence. In 2013, there were 6.9 % of patients, while in 2018 was 8.5% based on doctor's diagnosis. This is almost the same as the Province of North Sumatra, shown in 2013 was 1,5% and in 2018 was 2.0% (Badan Penelitian dan Pengembangan Kesehatan, Kemenkes RI., 2013)(Tim Riskesdas 2018, Badan Penelitian dan Pengembangan Kesehatan, Kemenkes RI., 2019).

The quality of life of diabetes mellitus will decrease if the disease is not managed properly (Al-Khaledi, M., Al-Dousari, H., Al-Dhufairi, S., Al-Mousawi, T., Al-Azemi, R., Al-Azimi, T., Badr, H. E., 2018). Quality of life is a person's view of his position in life related to the cultural context and value system that he lives in relation to goals, expectations, standards, and concerns. It incorporates several dimensions including physical, psychological, level of independence, social relations, and environment (WHO., 2012). Several previous studies have shown that quality of life of diabetes mellitus patients still tends to be poor. In one study, it showed that the quality of life of patients with diabetes mellitus was poor in 3 ways including physical, psychological and environment domains (Puspasari, S., Farera, D. R., 2021). Another study showed in India that there were still 23 percent who experienced diabetes mellitus's quality of life from very bad to poor and there were about half with good quality of life (Gupta, J., Kapoor, D., Sood, V., 2021).

One of the factors may related to diabetes mellitus is stress (Suraiko, I. P., 2020). Stress in the form of excessive pressure cause physical and emotional reactions in diabetics. Conditions play a role which is quite large in increasing the body's metabolism because it will take in excess of minerals and vitamins. Patients with diabetes mellitus who experiencing stress will stimulate the release of adrenaline excessive, while to produce these hormones, vitamins are needed B, minerals, zinc, potassium and calcium. So, when stress will deplete substances needed to produce this hormone (Hawari, D., 2021). On the other hand, stressful conditions by themselves will not lead to diabetes, but there is some evidence that chronic and excessive amounts of stress can increase the risk of developing disease (Cherry, K., 2022)

Preliminary studied that have been conducted in RSUD dr. Pirngadi Medan City obtained data on the number of patients with diabetes mellitus in 2021 as much as 557. Based on the results of interviews with 5 diabetes mellitus patients, there were 3 patients who feel stressed about their disease and display a decreased quality of life. The purpose of this study was to analyze the relationship between stress and the quality of life of patients with diabetes mellitus at Pirngadi Hospital, Medan City in 2022.

## METHOD

The methods used in this study was an analytical design with a cross-sectional approach. The population in this study were all patients with diabetes mellitus in 2021. The sample size was measured by the slovin formula totalling 41 people with selecting participants by purposive sampling. This study used the Perceived Stress Scale (PSS) instrument to measure individual stress, consisting of 10 statements with answer 0=never, 1=almost never, 2=sometime, 3=almost often, 4=very often, divided into 2 score categories: mild (1-13), moderate (14-26), and severe (27-40). While WHOQOL-BREF to measure the quality consisted of 26 statements with answer choices 1 to 5, using 2 categories by taking the middle point, so that the bad category was based on the score (26-73) and good (74-120). This instrument is a standard questionnaire that have been tested for validity and reliability. This research has ethical

clearance with number 01.0864/KEPK/POLTEKKES KEMENKES MEDAN in 2022. The data were analyzed using the chi square test using IBM SPSS. The data were analyzed using the chi square test using IBM SPSS.

**RESULT**

The research was conducted from June to July 2022 with a sample of 41 respondents. The results of the study were presented from table 1 to 3.

**Table 1. Stress in Diabetes Mellitus**

Stress	Frequency	Percentage
Mild	3	7,3%
Moderate	17	41,5%
Severe	21	51,2%
Total	41	100,0%

Table 1 showed that the most respondents experienced severe stress as many as 21 respondents (51,2%), and the least mild was 3 respondents (7,3%).

**Table 2. Quality of Life in Diabetes Mellitus**

Quality of Life	Frequency	Percentage
Good	14	34,1%
Bad	27	65,9%
Total	41	100,0%

Table 2 showed that most respondents have a poor quality of life as many as 27 respondents (65,9%) and at least 14 respondents (34,1%).

**Table 3. Stress and Quality of Life Diabetes Mellitus**

	Quality of Life				Total		<i>P - value</i>
	Good		Bad		N	%	
	n	%	n	%			
Mild	2	4.9	1	2.4	3	7.3	0.003
Moderate	10	24.4	7	17.0	17	41.5	
Severe	2	4.9	19	46.3	21	51.2	
Total	14	34.1	27	65,9	41	100.0	

Table 3 showed that the most respondents with poor quality of life were under severe stress as many as 19 respondents (46,3%) and the least number of poor quality of life was in mild stress. Chi-Square statistical test obtained p-value 0.003, so that it can be concluded that there was a significant relationship between stress and the quality of life of patients with diabetes mellitus.

**DISCUSSION**

This study aimed to analyze the relationship between stress and quality of life in patients with diabetes mellitus. The findings obtained through statistical tests concluded that there was a significant relationship between the incidence of stress and the quality of life in patients with diabetes mellitus. From table 1, it can be seen that the most respondents with diabetes mellitus

experienced severe stress as many as 21 respondents (51.2%). Several previous studies have shown that many diabetic patients experience severe stress or high scores (Krishna,P., 2018)(Devaraju,K.,Shetty,S,C., 2019). Patients pre-diabetic will experience poor development if the stress event is on a severe scale as indicated by an increase in blood sugar levels from the results of the HbA1c examination. If stress continues to occur on a severe scale, then patients who are still in the pre-diabetic stage will continue to be diabetic and their condition will even become worse (Mishra,A.,Podder,V., Modgil, S., Khosia, R., Anand, A., Nagarathna,R.,Malhotra,R., Nagendra,H,R., 2020).Table 2 showed the most quality of life in the poor category was 27 patients (65,9%). Several previous studies have shown that the quality of life of patients with diabetes mellitus tends to be less good (Prajapati,V,B.,Blake,R.,Acharya,L.D.,Seshadri,S.,2017) (Tamornpark,V,B.,Blake,R.,Acharya,L,D., Seshadri,S., 2022).There are many reasons why quality of life of diabetic patient has decreased. These conditions were frequent glucose checks, physical exercise, hypertension, complication duration of diabetes, diet lotsoffat ,stressor depression(Jing,X.,Chen,J.,Dong,Y.,Han,D.,Zhao,H.,Wang,X.,Gao,F.,Li,C.,Cui,Z.,Li u,Y.,Ma,J., 2018).

Master data regarding 4 types of quality of life dimensions found that poor quality of life was in the psychological dimension as many as 29 respondent (70,7%). This showed that patients with diabetes mellitus tend to experience a decrease in quality of life on the psychological dimension. Decrease quality of life in psychological dimension was related to problems that arise from within and relationships with the environment such as unpleasant negative feelings owned by patients, excessive worry about illness (Suraiko,I,P., 2020). Several studies showed that the quality of life of DM patients is mainly decreased on the psychological dimension(Gholami,A.,Azini,M.,Borji,A.,Shirazi,F.,Zahra,S.,Zarei,E.,2013)(Kara,S.,Jena,B,N.,Yeravdekar,R., 2018) Individual psychological dimensions influence the improvement, management, and outcome of diabetes. Diabetes can cause a lot of stress, various common mental health problems such as depression, sleep disorders, anxiety, and can increase the risk of suicide. This condition worsens which significantly reduce the quality of life (Bhat,N,A.,Muliya,K,P.,Chaturvedi,S,K., 2020)

Table 3 can be seen that the most respondents with severe stress on poor quality of life were 19 respondents (46.3%). From these results, it means that increasing tension can result in a decrease in the quality of life of individuals who are experiencing diabetes mellitus. This cross tabulation has also been supported by the results of the analysis using the chi-square statistical test, which obtained p-value  $0,003 < 0,05$ . It can be concluded that there was a relationship between stress and the quality of life of patients with diabetes mellitus at the Regional General Hospital dr. Pirngadi Medan City in 2022.Type 1 diabetes ia a chronic disease characterized by the destruction of diseased beta cells leading to hyperglycemia and life long insulin dependence. Many factors, such as diet, infection, vitamin D deficiency, are proposed as environmental stressors that can trigger the onset of this disease in individuals with genetic risk. Psychological stress is also a factor that increases serum concentrations of glucocorticoids and catecholamines, thereby increasing insulin requirements and insulin resistance. While in type 2 Diabetes Mellitus, during an acute stressful event, glucose concentrations and insulin secretion are increased, so glucose removal is stimulated, and normoglycemic efforts are maintained. However, when the stressor is chronic, the process changes. During chronic stress situations, processes such as insulin resistance occur, and glucose does not return to its initial concentration, so to continue to notify cells that insulin resistance is present, this is accompanied by an increase in blood glucose mellitus(Ingrosso,D,M,F.,Primavera,M.,Samvelyan,S.,Tagi,V,M., 2022)Table 3 also found that there were respondents experiencing poor quality of life but showing mild stress as many

as 1 respondent (2,4%). This showed that there were other factors that affect the quality of life besides stress. Other factors such as family support, socioeconomic, an increase in knowledge about the prevention and treatment of DM and the support in financing adequate treatment (Tamornpark,V,B.,Blake,R.,Acharya,L,D., Seshadri,S., 2022).

Because of the relationship between stress and the quality of life of diabetes mellitus, it is necessary to improve the quality of life of patients by controlling stress in various ways. Some of the therapies for stress that can be proposed include the first psychophysiological method including deep breathing exercises, progressive muscle relaxation, biofeedback, the second meditation includes mind management, yoga, the third psychotherapy such as cognitive therapy, the fourth hypnotherapy consists of autogenic exercises, pain and stress hypnotherapy, others such as music, conversation therapy (Van den Bergh,0., 2021). Nurses can teach patients with diabetes mellitus several methods of stress control and motivate them to use in their daily life.

## CONCLUSION

There was a relationship between stress and the quality of life of diabetes mellitus patients. Therefore, it is recommended to improve the quality of life of patients by controlling stress in various ways. Nurses can teach patients with diabetes mellitus several methods of stress control and motivate them to use in their daily life.

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