

Relationship of Anxiety with Adherence to Medication in People with Diabetes Mellitus

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Abstract - Diabetes mellitus is a disease that requires long-term therapy and causes complications in various organs of the body. To accelerate healing requires high adherence to taking medications by patients with education, which is an important factor to prevent patient anxiety in taking medications regularly. This study aimed to determine patients' anxiety about adherence to taking patients' diabetes mellitus medication. A cross-sectional study was conducted on 107 patients with accidental diabetes mellitus. The results of the study found that the anxiety of people with diabetes mellitus was in the mild category of 46 respondents (43.0%) and adherence to taking medicines for people with diabetes mellitus was in the low category of 46 respondents (43.0%). The results of statistical tests showed that the p -value was $= 0.000 < 0.05$, there was a relationship between anxiety and adherence to taking medications in people with diabetes mellitus. It is hoped that the public health center will be able to provide education about medication adherence to prevent anxiety about the treatment of diabetes mellitus.

Keywords: Anxiety, Compliance, Diabetes Mellitus

I. Introduction

Diabetes is a chronic metabolic disease showed by an increase in blood glucose levels (blood sugar), which can cause severe damage to the heart, blood vessels, kidneys, eyes and nerves (Sari et al., 2022). The World Health Organization (WHO) predicts an increase in the number of people with diabetes mellitus from 8.4 million in 2000 to around 21.3 million by 2030. The increasing prevalence of diabetes mellitus in the world, both in developed and developing countries, has resulted in diabetes mellitus becoming a global health problem in a society that must receive special attention to reduce its incidence rate (Nazriati et al., 2018).

Adherence to treatment refers to a patient's willingness to follow treatment recommendations and to take regular medication therapy under the service provider's recommendations. Noncompliance with diabetes mellitus treatment is still a significant issue in diabetes management. Some studies report that the compliance rate of people with type 1 diabetes mellitus ranges from 70 to 83%, while type 2 diabetes mellitus is around 64–78% (Bulu et al., 2019). The success of diabetes mellitus treatment depends on the patient's adherence to taking medications (Sugawara & Nikaido, 2014).

Based on a statement by the International Diabetes Federation (IDF), it is suspected that the number of people with diabetes mellitus between the ages of 20–79 years in several countries around the world has been identified. There are 10 countries with the highest number of diabetics, such as China, the United States, and India, which rank third highest according to the number of existing sufferers at around 116.4 million, ranging from 31 million to 77 million (IDF, 2021).

One of the health problems experienced by diabetes mellitus patients is stress and self-anxiety when undergoing some treatment and changes in lifestyle, and they should not consume some foods that they like. Changes in lifestyle cause people with diabetes mellitus to experience psychological reactions and anxiety (Siregar & Hidajat, 2017). The prevalence of diabetes mellitus in Indonesia at the age of 15 years increased from 1.5% in 2013 to 2% in 2018. However, the prevalence of diabetes according to the results of blood sugar tests increased from 6.9% in 2013 to 8.5% in 2018. In Aceh province, there were 121,160 people with diabetes mellitus in 2020, and 75,518 (or 62%) received standard services (RISKESDAS, 2018)

Diabetes mellitus can cause a wide variety of complications. In most patients, morphological changes are most likely to be encountered in the arteries (microvascular disease), basal membranes of fine vessels (microangiopathy), kidneys (diabetic nephropathy), retina (retinopathy), nerves (neuropathy), and other tissues (Basu et al., 2013). Uncontrolled diabetes mellitus often results in a vascular disease with a 75% mortality rate. Heart attack, kidney failure, stroke, vascular disorders, blindness, and gangrene are the main complications (Sari et al., 2022).

Research by Natalia P, et al. (2013) explained that 54.4% of respondents had good knowledge about the treatment of diabetes mellitus patients, 43.5% of respondents had a moderate knowledge of the treatment of diabetes mellitus patients, 84.6% of studies used obedient respondents in carrying out treatment, and as many as 15.4% did not comply in treatment. They concluded that there

was a significant relationship between the level of adherence to taking medications and blood sugar levels in patients with Type II diabetes mellitus. Diabetes mellitus is also considered the main cause of finish-stage kidney disease, and diabetic nephropathy constitutes 30–40% of people with chronic kidney disease (CKD) and is associated with a high risk of cardiovascular disease (Raharjo, 2010).

According (Louisiana Department Of Health Bureau, n.d.), the anxiety that cause depression experienced by diabetics is twice as much as that experienced by the general population, with 15% to 30% of diabetic patients meeting the criteria for depression. Recent research has found that diabetics, especially those with complications, have a 3-fold increased risk of depression compared to the general population (Siregar & Hidajat, 2017). The preliminary study that has been conducted at the Muara Satu Health Center in Lhokseumawe City got the number of visits to diabetics from January to June 2022 to 335. The results of interviews with 10 people with diabetes mellitus found that 3 diabetics were less obedient to take medicine, 5 people did not obediently take medicine, and 2 people obeyed to take medicine. Based on these issues and backgrounds, the author wishes to conduct research on "The Relationship between Anxiety and Adherence Rates in People with Diabetes mellitus."

II. Method

The design of this study is quantitative with a cross-sectional approach. The population in this study was all people with diabetes mellitus at the Muara Satu Health Center, which amounted to 335 patients. The samples in this study were 107 with accidental sampling techniques.

III. Result and Discussion

3.1. Univariate Analysis

3.1.1 Characteristics of Respondents

Table 1. Frequency Distribution of Respondents Characteristics (n=107).

No	Characteristics of Respondents	Frequency (F)	Percentage (%)
1	Age		
	26-35 years	13	12,1
	36-45 years	19	17,8
	46-55 years	34	31,8
	56-65 years	41	38,3
	Total	107	100
2	Gender		
	Man	45	45,5
	Woman	62	44,5
	Total	107	100
3	Final Education		
	Primary school	4	3,7
	Secondary School	33	30,8
	High School	42	39,3
	University	28	26,2
	Total	107	100
4	Work		
	Farmer	27	25,2
	Civil servants	15	14,0
	Merchant	21	19,6
	Trader/self-employed	13	12,1
	Not working	31	29,0
	Total	107	100

Based on to Table 1, out of 107 respondents, the majority of respondents were aged 56-65 years: 41 respondents (38.3%), the majority of whom were female: 62 respondents (54.5%), the last education of the majority of respondents was in high school

education, which amounted to 42 respondents (39.3%), and the majority of respondents were not working, which amounted to 31 respondents (29.0%).

3.1.2 Anxiety

Tabel 2. Frequency Distribution of Anxiety in Diabetes Mellitus Patients (n=107).

No	Anxiety	Frequency (F)	Percentages (%)
1	Mild anxiety	46	43,0
2	Moderate anxiety	40	37,4
3	Severe anxiety	21	19,6
Total		107	100

Based on to Table 2, anxiety of people with diabetes mellitus respondents who were in the mild category was higher by 46 respondents (43.0%), compared to the heavy category by 21 respondents (19.6%), while in the moderate category as many as 40 respondents (37.4%).

3.1.3 Adherence

Tabel 3. Distribution of Adherence to Taking Medications for People with Diabetes Mellitus (n=107).

No	Adherence	Frequency (F)	Percentage (%)
1	High	20	18,7
2	Moderate	41	38,3
3	Low	46	43,0
Total		107	100

Based on Table 3, it can be concluded that respondents with diabetes mellitus with low compliance were higher by 46 respondents (43.0%), compared to those with high compliance by as many as 20 respondents (18.7%), and those with moderate compliance by as many as 41 respondents (38.3%).

3.2. Bivariate Analysis

Tabel 4. The Relationship of Anxiety with the Level of Adherence to Taking Medications for People with Diabetes Mellitus (n = 107)

Anxiety	Level of Adherence				P-Value
	High	Moderate	Low	Total	
Mild anxiety	16 34,8%	24 52,2%	6 13,0%	46 100%	0,000
Moderate anxiety	4 10,0%	15 37,5%	21 52,5%	40 100%	
Severe anxiety	0 0,0%	2 9,5%	19 90,5%	21 100%	
Total	20 18,7%	41 38,3%	46 43,0%	107 100%	

Based on Table 4 above, it shows that as many as 24 respondents (52.2%) who have mild anxiety have a greater level of compliance than respondents who have anxiety and a moderate level of compliance in terms of taking medication. Respondents who had severe anxiety were more adherent than the respondents' level of adherence to taking high and moderate medications, with a total of 19 respondents (90.5%). The results of statistical tests show that the p-value = 0.000, so $p\text{-value} = 0.000 < \alpha = 0.05$. It is proven that there is a relationship between anxiety and the level of adherence to taking medications for people with diabetes mellitus at the Muara Satu Health Center, Lhokseumawe City.

3.3. Discussion

3.3.1 Characteristics of Respondents

Based on the results of the study, it was found that the majority of respondents were aged 56–65 years, totaling 41 respondents (38.3%). According to the assumption of researchers, the age of respondents can be one of the influential factors in filling out the questionnaire because age will affect the perspective, thinking, and assessment of the questionnaire material, which is connected with experiences that have been experienced and an understanding of adherence to taking medications for people with diabetes mellitus.

The increasing age of a person's maturity level and strength in thinking and working will be more mature, so that they will be more mature in thinking and gaining knowledge about adherence to taking medicines for people with diabetes mellitus. The older a person is, the better the mental development process is, but at a certain age, the increase in this mental development process is not as fast as when he was in his teens.

The majority of respondents' genders were female, which amounted to 62 respondents (54.5%). According to the researchers' assumptions, consumer sex distribution data shows that respondents of the female and male sexes are almost evenly matched, indicating that there is no sex dominance and that they should be able to represent both states.

The majority of respondents were not working, totaling 31 respondents (29.0%). The researcher's assumptions about public knowledge about the adherence to taking medicines for people with diabetes mellitus at the Muara Satu Health Center in Lhokseumawe City were also influenced by his work. A person's profession and occupation will affect the income he receives; the better the respondent's employment rate, the better at meeting the drug needs of people with diabetes mellitus they will be.

According to Notoatmodjo (2016), a person who works can increase knowledge due to association and social interaction compared to a person who does not work. Education level influences income level as well; a person with a higher education will get a better job, resulting in a higher income gain.

The last education of the majority of respondents was in high school education, which amounted to 42 respondents (39.3%). The researcher's assumption shows that respondents are dominated by a fairly good educational background, so they have good knowledge related to information services about adherence to taking medications for people with diabetes mellitus. This will certainly affect respondents' perceptions of public knowledge about adherence to taking medications for people with diabetes mellitus. A person's level of education will also affect the values he adheres to, his way of thinking, his perspective, and even his perception of a problem.

According to Notoatmodjo (2016), education can change a person's behavior. This shows that the higher a person's education, the broader or better knowledge will be, besides that the higher a person's education will make it easier for that person to receive information.

3.3.2 Anxiety

Based on the results of the study, it was found that the anxiety of people with diabetes mellitus respondents who were in the mild category was higher by 46 respondents (43.0%), compared to the heavy category by 21 respondents (19.6%), while in the moderate category as many as 40 respondents (37.4%).

Anxiety is something that is not easy for individuals to face or accept in people with diabetes mellitus. Therefore, people with diabetes mellitus certainly really need support from their social environment and anxiety disorders are usually unpleasant feelings that can include feelings of worry, fear, and there are feelings of worry caused by the influence of threats or disorders to something that has not happened to him and can affect activity, people with diabetes mellitus are a disorder in metabolism, anxiety and depression are not factors that can make a person vulnerable and weak, not only mentally but also physically (Syam & Amri, 2017).

Researchers' assumptions of factors that can trigger a person to feel anxiety can come from themselves or from outside themselves, most respondents who have mild anxiety can control their anxiety because they have been suffering from diabetes mellitus for a long time, get social support from their families, and receive education at the Puskesmas. Based on the results of the study, it can be concluded that the anxiety of people with diabetes mellitus respondents who are in the mild category, this is caused by respondents getting social support from their families, so that people with diabetes mellitus are able to overcome their anxiety.

3.3.3 Adherence

Based on the results of the study, adherence to taking medications for people with diabetes mellitus was higher in the low compliance category by 46 respondents (43.0%), compared to high compliance by 20 respondents (18.7%), and moderate compliance by 41 respondents (38.3%).

Compliance with individual behaviors while adhering to the diet is also aimed at lowering other risk factors such as excess weight, high levels of cholesterol, uric acid in the blood, and other degenerative diseases such as heart, kidney, and diabetes. Compliance as an effort of active, conscious, and collaborative involvement on the part of the patient with behaviors that support healing is an ordinary change. Respondents who have had diabetes mellitus for longer will receive a longer course of treatment, including blood sugar checks. The longer the respondent undergoes treatment, the treatment process will often be carried out, so it is not easily forgotten by the respondent (Andala et al., 2016).

The researcher's assumption that a person's non-compliance in taking medications is due to several things such as, the high cost of drug redemption, the long duration of drug consumption, side effects of drugs, forgetting to take medicines, unpleasant taste of drugs, not carrying drugs when recreational, feeling that there is no need to take drugs anymore because their blood sugar is under control. Based on the results of the study, it can be concluded that adherence to taking medicines for people with diabetes mellitus respondents is low compliance, this is because respondents consider that diabetes mellitus is not a deadly disease.

3.3.4 Relationship of anxiety with compliance

Based on the results of the study, it was found that respondents who had mild anxiety were more adherent to taking medications, by 24 respondents (52.2%), compared to respondents who had more severe anxiety and had low adherence to taking medications, with as many as 19 respondents (90.5%). The results of statistical tests show that the $p\text{-value} = 0.000$, $p\text{-value} = 0.000 < \alpha = 0.05$. It is proven that there is a relationship between anxiety and the degree of adherence to taking medications in people with diabetes mellitus.

According to the researchers' assumptions, the onset of anxiety in individuals suffering from diabetes mellitus is a complex problem that is influenced by various factors in their lives. Every diabetic generally experiences anxiety about everything related to their disease, for example, anxiety about any high blood glucose levels or anxiety about the onset of complications due to diabetes. People with diabetes mellitus experience a high level of depression and anxiety as a result of the treatment that must be followed and the serious complications that can occur; they must follow a diet or eating plan, check blood sugar levels, take medications, and exercise. In addition, the risk of disease complications that can be taken by sufferers also causes anxiety.

Based on the results of the study, it can be concluded that there is a relationship between anxiety and the level of adherence to taking medications for people with diabetes mellitus, the lower the anxiety in diabetes mellitus patients, the more obedient they are in taking medications.

IV. Conclusion

Based on the results of the study, it was found that the anxiety of people with diabetes mellitus was in the mild category of 46 respondents (43.0%) and adherence to taking medicines for people with diabetes mellitus was in the low category of 46 respondents (43.0%). The result of the $p\text{-value} = 0.000 < 0.05$, then it can be concluded that there is a relationship between anxiety and the level of adherence to taking medications for people with diabetes mellitus.

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