Level of Knowledge and Family Support toward Medication Adherence among Patient with Diabetes Mellitus in Malang, Indonesia

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Abstract

Patient compliance with long-term therapy for chronic diseases in developing countries is still low. Efforts to control blood sugar levels remain normal with medication adherence depending on family support and patient knowledge of the disease. This study aimed to determine the relationship between the level of knowledge and family support with medication adherence in patients with diabetes mellitus in Malang, Indonesia. The study design was cross-sectional. The sample of this study was 48 people with diabetes mellitus recorded in Ciptomulyo Health Center. This study uses a simple random sampling technique. The questionnaire used consisted of demographic data, knowledge, family support, and medication adherence. The results of the study were that there is no relationship between the variable level of knowledge and medication adherence in patients with diabetes mellitus with a significance value of p = 0.561. There was a relationship between family support and medication adherence in patients with diabetes mellitus with a significance value of p = 0,000 and a Correlation Coefficient value of 0.616 which indicates a significant relationship with a strong degree of relationship strength. There is a relationship between family support and medication adherence in patients with diabetes mellitus at the Ciptmulyo Health Center. The better the family support, the more obedient the patient is undergoing treatment.

Keywords: *Knowledge, Family Support, Medication adherence, Diabetes Mellitus*

Introduction

The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. The prevalence is higher in urban (10.8%) than rural (7.2%) areas, and in high-income (10.4%) than low-income countries (4.0%). Indonesia became Top 10 countries or territories for number of people with diabetes (20–79 years) in 2019, 2030 and 2045 [1]. In addition to the world and Indonesia level, the increase in the incidence of Diabetes Mellitus in the data based on the diagnosis of doctors, the prevalence of Diabetes Mellitus in the population of all ages by the province in 2018 especially in the province of East Java was recorded as much (2%), the average age of 55-64 years sufferers (6.3%), male (1.2%) while the female (1.8%). In urban areas more (1.9%) and rural areas only (1.0%). The prevalence of Diabetes Mellitus according to the 2015 Consensus consensus in the population aged ≥ 15 years was recorded at 10.9% [2]. According to WHO, it is predicted that there will be an increase in Diabetes sufferers in Indonesia from 8.4 million in 2000 to 21.3 million in 2030 [3].

WHO reports that the average patient adherence to long-term therapy for chronic diseases in developing countries is still low, whereas in developed countries it reaches 50%. Several reasons can affect diabetics who do not routinely take OAD / insulin injections, among others: feeling healthy, not routinely going to a health care facility, taking traditional medicine, often forgetting, not being able to take side effects, not being able to buy

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drugs regularly, and the unavailability of drugs in health care facilities [2]. Successful management of Diabetes Mellitus can be seen from adherence to the glucose diet and also depends on the patient himself. Things that can affect the attitude in going on a diet or treatment are adequate levels of knowledge from sufferers about their illness, controlling blood sugar levels, and preventing complications to live healthier and more quality.

Compliance with medication in patients with diabetes mellitus against treatment programs that have been recommended by doctors or health workers can worsen the condition of the disease. Efforts to control blood sugar levels remain normal also depend on motivation, family support, and patient knowledge of the disease. Someone who is making a choice is also related to the knowledge that is related to the behavior that will be taken [4]. The knowledge in question is the patient's knowledge about the causes, signs, how to treat, and where to seek treatment [5]. Meanwhile, family support can increase a patient's positive emotional response to the management of his illness due to the help and motivation. Patient compliance with taking drugs plays a very important role in the success of treatment to maintain blood glucose levels and blood pressure in the normal range.

The purpose of this study was to determine the relationship between the level of knowledge and family support with medication adherence in patients with diabetes mellitus. The results of this study can be used as a reference for community nurses in providing education for people with diabetes mellitus about the importance of increasing knowledge about their illnesses and the importance of family support for adherence to taking medication for people with diabetes mellitus. As a result, blood sugar levels remain stable and normal.

Method

Study design and Sampling

The research method used is a correlational research design with a cross-sectional approach. The sampling technique used in this study was carried out with the Simple Random Sampling technique. Samples obtained as many as 48 respondents from 54 populations in RW 2. The number of samples was obtained from the results of calculations using the Slovin formula.

Level of knowledge questionnaires

This questionnaire uses The Diabetes Knowledge Questionnaire (DKQ-24) related to the client's knowledge of the cause of the disease, symptoms or signs of the disease, how to treat or where to seek treatment by respondents who were adopted from the Menino (2017) that was modified by the researcher [6]. This questionnaire has 24 statement items. In this questionnaire using a scoring of 3 categories that are worth <56% (Less), 56% -75% (Fair), 76% -100% (Good) with a score of 1 correct answer and 0 on the wrong answer [7].

Family support questionnaires

Family support for Diabetes Mellitus patients was measured using a social response questionnaire adopted from Kurniawan (2016) and modified by researcher [8]. This questionnaire has 4 criteria for answers starting from options always to never using multiple-choice types [9]. This family support questionnaire includes 3 family support domains with 12 question items. The scope of the family support domain in this questionnaire includes the domain of informational support, instrumental support, and emotional support and self-esteem. The scoring in this questionnaire uses four scales worth 1-4. Value 1 (never), 2 (rarely), 3 (often) and 4 (always). The highest total score is 48 and the lowest is 12.

Medication adherence questionnaires

Medication adherence for patients with diabetes mellitus measured using MMAS-8 (Morisky Medication Adherence Scale) is used to assess compliance with taking drugs that have been translated and validated in the Indonesian version by Ardanti (2016) about research into drug adherence in DM patients consisting of four aspects i.e. forgetting / not taking medicine as much as 4 questions with item number 1,2,4,5; stop taking medicine for 2 questions for items number 3 and 6; treatment interferes with 1 question on item number 7 and it is difficult to remember taking medicine on item number 8 [10]. This questionnaire contains 8 questions, each question has a choice of the answer "yes" or "no" and one question with 5 Likert scales (never / rarely, several times, sometimes, often and always). Response categories consist of "yes" or "no" for question items number 1-8. In question items, number 1-4 and 6-8 the value is 1 if the answer is "no" and 0 if the answer is

"yes", while question number 5 is valued 1 if "yes" and 0 if "no". The interpretation of this questionnaire is stated to be compliant (value = 8), less compliant (value = 6-7) and non-compliant (value = <6) [11].

Data Analysis

Research data were analyzed using descriptive and analytical analysis with the Spearman Rank correlation test. Data analysis using Statistical Package for Social Sciences (SPSS) software version 23.0. A p-value <0.05 was considered statistically significant.

Results

Demographic characteristics

Based on table 1 shows that the highest age of diabetes mellitus patients is in the age range 18-65 or 65 in the amount of 34 people (71%). Patients with diabetes mellitus recorded in RW 2 Ciptomulyo Public Health Center were the most female, as many as 39 people (81.2%). Whereas for the most recent education characteristics data, there were 28 elementary schools (58.3%) and occupational diabetes mellitus patients in RW 2 Ciptomulyo Public Health Center were on average not working, as many as 33 people (68.8%) due to the diabetes mellitus patients already starting to enter old age.

Table 1: Demographic data of the respondents (n=47)

No	Characteristics		F	Percentage (%)
1	Age 18-65 66-79 80-99		 34 12 2	 71 25 4
2	Gender Male Female		 9 39	 18,8 81,2
3	Education No Elementary Junior high Senior high		 4 28 11 5	 8,3 58,3 22,9 10,4
4	Occupational status Not employment Employment		 33 15	 68,8 31,2

Level of knowledge

Table 2 showed that the majority of respondents had a lack of knowledge, which is 69% (n = 33).

Table 2: Level of Diabetes knowledge (n=47)

Level of knowledge	Frequency	Percentage (%)
Good	1	2
Moderate	14	29
Poor	33	69

Family support

Table 3: Family support of the respondent (n=47)

Family support	Frequency	Percentage (%)
Good	1	2
Moderate	13	27
Poor	34	71

Table 3 explains that the frequency of family support variables in patients with diabetes mellitus is in the poor category by 34 people (71%) and the good category by 1 person (2%).

Table 4: Each dimension of family support

Dimension	Category					
	Low	(%)	Moderate	(%)	High	(%)
Informational	23	48	3	6	22	46
Instrumental	0	0	30	62,5	18	37,5
Emotional	23	48	5	10	20	42

Table 4 explained that the dimension of informational family support has a high percentage compared to other family support, which is as much as (46%).

Medication adherence

Table 5: Medication adherence of the respondent's (n=47)

Medication adherence	F	(%)
Good	8	17
Moderate	25	52
Poor	15	31

Table 5 explained that the frequency of medication adherence variables in patients with diabetes mellitus is in the category of poor adherence as many as 25 people (52%) and the category of non-adherent as many as 15 people (31%).

Crosstabulation of the level of knowledge, family support, and medication adherence

Table 6 shows the results between the level of knowledge and family support with medication adherence in patients with diabetes mellitus, it is known that the highest score on the variable level of knowledge is in the category of lack of knowledge and adherence to taking medication that is less adherent as many as 19 respondents from 48 respondents. Meanwhile, the family support variable is lacking in the category, and adherence to taking medication that is not compliant is 20 respondents out of 48 respondents.

Table 6: *Crosstabulation* of the level of knowledge, family support, and medication adherence

		Medication adherence			Total
		Good	Moderate	Poor	
Level of Knowledge	Poor	3	19	11	33 (69%)
	Moderate	4	6	4	14 (29%)
	Good	1	0	0	1 (2%)
Total		8	25	15	
Family support	Poor	0	20	14	34 (71%)
	Moderate	7	5	1	13 (27%)
	Good	1	0	0	1 (2%)
Total		8	25	15	

Correlation between Level of knowledge and medication adherence

Based on table 7, it is known that the Spearman rho correlation test results obtained p-value = 0.05 smaller than alpha (0.05), then meaning that there is no relationship between the level of knowledge and adherence to taking medication with patients with diabetes mellitus.

Table 7: Correlation between Level of knowledge and medication adherence

			Correlation	
			Level of knowledge	Medication adherence
Spearman's rho	Level of knowledge	Correlation Coefficient Sig. (2-tailed) N	1.000 48	.086** .561 48
	Medication adherence	Correlation Coefficient Sig. (2-tailed) N	.086** .561 48	1.000 48

Correlation between family support and medication adherence

Based on table 8, it is known that the Spearman's rho correlation test results obtained p-value = 0.005 smaller than alpha (0.05), then there is a relationship between family support and medication adherence with patients with diabetes mellitus. The correlation coefficient (0.616) shows the level of relationship between the variables of family support with medication adherence in patients with diabetes mellitus included in the category of strong correlations.

Table 8: Correlation between family support and medication adherence

			Correlation	
			Family support	Medication adherence
Spearman's rho	Family support	Correlation Coefficient Sig. (2-tailed) N	1.000 48	.616** .000 48
	Medication adherence	Correlation Coefficient Sig. (2-tailed) N	.616** .000 48	1.000 48

Discussion

The results showed that the majority of respondents had a lack of knowledge. The level of knowledge can be influenced by several things, such as experience, education level, beliefs, and facilities [12]. The majority of respondents in this study fall into the category of adult age, adulthood is the age at which individuals re-evaluate life experiences and redefine themselves in their roles and values. This is confirmed by research conducted by Sulistin (2015) using adult respondents with a high level of knowledge and there is a significant relationship between the level of knowledge and people's attitudes about schistosomiasis [13]. Research respondents who are in RW 2 Ciptomulyo Public Health Center in Malang, it can be concluded that diabetes mellitus patients have a lack of knowledge, this can be influenced by age and education factors, where the majority of patients including 28 elementary school graduates. In line with a previous study reported that people with diabetes mellitus had poor level in diabetes knowledge (31.5%) [14]. Based on the results of the study, it was found that the family support of patients with diabetes mellitus at the Ciptomulyo Health Center is classified in the poor category. This is likely due to instrumental and emotional family support being classified as low. This study in line with Iloh (2018) that reported 22.5% did not have family support among diabetic patient [15].

It was found that adherence to taking medication in patients with diabetes mellitus was classified as less compliant as many as 25 people (52%). According to Alqarni (2019) reported that 21,4 % had low medication adherence among diabetic patients in the Bisha governorate of Saudi Arabia [16]. Factors recorded in this study, which can be called influential on adherence to taking medication for patients with diabetes mellitus are knowledge, which can be seen from the data filling questionnaire level of knowledge that the majority of patients included in the category of fewer than 33 people (69%).

The results of this study can be concluded that the relationship between the level of knowledge with medication adherence in patients with diabetes mellitus in Ciptomulyo Health Center is uncorrelated because the variable level of knowledge has a significance value> 0.005 and with a very weak correlation strength. In this

study, the variable level of knowledge with medication adherence does not have a significant relationship because Factors recorded in this study are internal factors, it was found that the majority of patients with diabetes mellitus in Puskesmas Ciptomulyo graduated from elementary school as many as 28 people (58.3%), not working as many as 33 people (68.8%), aged 18- 65 as many as 34 (71%). These factors affect the level of knowledge of patients regarding adherence to taking the medication they live. So it can be concluded that in this study Ho was accepted that there was no relationship between the level of knowledge with medication adherence in patients with diabetes mellitus in Ciptomulyo Health Center.

Based on the results of the study, it is known that the highest score on the variable family support with the category of lack and adherence to taking the category of medication less adherent as many as 20 respondents from 48 respondents. Developmental stage in patients with diabetes mellitus in Puskesmas Ciptomulyo RW 2, including at the stage of family life with old age, at which stage the patient adjusts to losing a partner and maintains intergenerational ties, so that the majority these patients only live alone and are often left traveling by family and children, both for work, family matters, etc. Meanwhile, in terms of education and the level of knowledge of the majority of diabetes mellitus patients in Ciptomulyo Public Health Center there are 28 elementary school graduates (58, 3%) and with a level of knowledge of the category of fewer than 33 people (69%). Results from the Spearman Rank correlation test can be concluded that family support with medication adherence in patients with diabetes mellitus correlates with a significance value <0.005 and with sufficient correlation strength. The results of tests that have been carried out can be concluded that the better the support provided by the family will increase the compliance to take medication for patients. In line with a previous study that perceived family members engage in more unsupportive behavior is associated with less adherence to one's diabetes treatment regimen, and being less adherent is associated with poorer glycemic control [17].

Conclusions

There is no relationship between the level of knowledge and adherence to taking medication and the relationship between family support with adherence to taking medicine that is with the strength of a strong relationship. In mean that family support should be improved to provide medication adherence among diabetes patient. Family support have a main role improving medication adherence among patient with diabetes mellitus. As a result, nurse should work together with the family member to prevent the diabetes complication through medication adherence,

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