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The Relationship Between Level of Knowledge About Diet With Diabetes Mellitus Diet Compliance at Pangkur Public Health Center, Ngawi Regency

[K]Mulyadi[1], Didik Mulyono[2], Sriyatun[3]
[1]Latkesmas Murnajati Lawang Malang (Kampus Madiun)
[2]Rumah Sakit Paru Manguharjo Madiun
[3]Puskesmas Pangkur Kabupaten Ngawi
Email Correspondence Author ([K]): moeller_coy@yahoo.com

ABSTRACT

Diabetes Mellitus (DM) is a non-communicable disease that often causes health problems in the community. One way to avoid complications of DM is to adjust the diet. Adherence to the DM diet is a problem for DM patients in the community. The purpose of this study was to determine the relationship between the level of knowledge about diet with dietary compliance in patients with diabetes mellitus. This research is a quantitative study using a cross sectional design. A sample of 37 respondents was taken using the Simple Random Sampling technique. Bivariate analysis conducted in this study used the Spearman test. The results of the study obtained Pearson correlation with p value = 0.000 <0.05 with a correlation level of 0.779. In conclusion, there is a relationship between the level of knowledge about diet and dietary compliance in patients with diabetes mellitus with a very strong correlation level. Knowledge about diabetes mellitus is one of the factors in increasing dietary compliance in people with diabetes mellitus. Health workers should be more active in involving families in the care of patients with diabetes mellitus.

Keywords: Diabetes Mellitus, Knowledge, Compliance

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INTRODUCTION

Diabetes Mellitus (DM) is a chronic condition characterized by an increase in blood glucose concentration accompanied by the appearance of characteristic symptoms, namely large amounts of sweet-tasting urine. Diabetes Mellitus that is not well controlled can increase the occurrence of acute and chronic complications [1]. Knowledge and dietary compliance of DM patients is one of the important things in management because patients often do not pay attention to balanced food intake. The right diet can help control blood sugar levels, given that increased blood sugar causes an imbalance in the amount of insulin [2]. Patient non-compliance is influenced by external and internal factors Internal factors that affect patient compliance, one of which is the knowledge of the patient [3].

The World Health Organization (WHO), predicts an increase in the number of people with DM which is one of the global health threats. The number of people with DM is skyrocketing every year, both in Indonesia and the world. The WHO data predicts an increase in the number of people with diabetes in Indonesia from 8.4 million in 2000 to around 21.3 million in 2030 [4]. The International Diabetes Federation (IDF) predicts that for the age of 20-79 years, the number of people with diabetes in Indonesia will increase from 10 million in 2015 to 16.2 million in 2040. With this figure, Indonesia ranks 6th in the world in 2040, or up one rank compared to IDF data in 2015 which was ranked 7th in the world [5].

The report on the results of Riset Kesehatan Dasar (Riskesdas), shows an increase in the prevalence of DM in Indonesia from 5.7% in 2007 to 6.9% or around 9.1 million in 2013. Diabetes has become the 4th largest cause of death in the world. In 2012 there were 4.8 million deaths directly caused by diabetes. Every 10 seconds there is one person or every 1 minute there are 6 people who die from diseases related to diabetes. The 2014 Sample Registration Survey data shows that diabetes is the third largest cause of death in Indonesia with a percentage of (6.7%), after stroke (21.1%) and coronary heart disease (12.9%) [6]. The prevalence of Diabetes Mellitus sufferers in East Java in 2019 was 3.2% of the total population. While the prevalence for Ngawi Regency is 26,563 which is 3.2% of the total population in Ngawi Regency [7] .

Complications that are often experienced by DM sufferers include stroke with a prevalence of 5.30%, foot ulcers 8.70%, blindness 1-2%, kidney disease 20%, heart failure 2.70%, neuropathy 54.00% and even 50% experienced death (Bistara dan Ainiyah, 2018). Chronic hyperglycemia in diabetes mellitus is associated with long-term damage, dysfunction and failure of several organs, especially the eyes, kidneys, nerves, heart and blood vessels. [9].

Management of DM using the 5 Pillars, namely participating in health education / counseling activities about self-care, adjusting the right diet, exercising regularly, compliance with drug consumption and monitoring blood pressure regulation, cholesterol levels, blood pressure, abnormalities feet and so on. DM can be controlled with the pillars of DM management through education to patients and families. Educational topics such as understanding the meaning of DM, signs and symptoms, how to prevent complications, physical exercise such as exercise (frequency, intensity, time and type of

exercise), taking medication according to a doctor's prescription and adherence to the "3J" diet including schedule, amount and type [10].

The cause of non-compliance of DM patients in undergoing therapy is not understanding and misunderstanding the benefits of diet, exercise, and drugs. Good knowledge of when and how to carry out a therapy will help a person to always behave obediently to the therapy. Knowledge of DM patients about the disease and its therapy is very important, the better the patient's understanding, the more patients understand how to change their behavior [1].

The results of a study conducted by Hassan et al (2017) entitled "Factors influencing insulin acceptance among type 2 diabetes mellitus patients in a primary care clinic: a qualitative exploration" which examined 36 DM patients showed that most of the results (55.6%) did not stick to diet [11]. Another study conducted by Rahayu (2016) on "The relationship between the level of knowledge about diet and adherence to diet behavior in patients with diabetes mellitus" found that 44 respondents only adhered to the diet and the rest were in the category of less compliant and non-compliant. The results of the study above indicate that diet compliance with DM patients is mostly in the poor category [9].

Given that by not complying with their diet, DM sufferers can experience various complications such as chronic hyperglycemia which can cause dysfunction and failure of several organs of the body, especially the eyes, kidneys, nerves, heart and blood vessels. This background underlies the author to conduct research on "The Relationship Between Level of Knowledge About Diet and Dietary Compliance in Diabetes Mellitus Patients at Pangkur Health Center, Ngawi Regency"

METHOD

This research is a type of correlational research with a cross sectional design, namely to determine the relationship between knowledge about diabetes mellitus diet and diabetes mellitus diet compliance. The population in this study were all patients with diabetes mellitus who took prolanis in the work area of the Pangkur Public Health Center, Ngawi Regency, amounting to 40 people. The research sample amounted to 37 respondents taken by simple random sampling technique. The data were analyzed using Spearman's test.

RESULTS

Tabel 1 Characteristics

Variable	Classification	n	%
Gender	Male	9	24
	Female	28	76
Age	36-45	2	5
	46-55	20	55
	56-65	12	32
	>65	3	8
Education	Elementary School	15	41
	Junior High School	13	35
	Senior High School	8	22
	College	1	2
Pekerjaan	Unemployed	3	8
	Salesman	3	8
	Enterpreuner	5	14
	Farmer	25	68
	PNS/TNI/POLRI	1	2

Table 1 shows that most of them are female as many as 28 people (76%). Based on age characteristics, the age group of most respondents with a percentage of 55% is the age group of 46-55 years. Based on the characteristics of education, almost half of the respondents, namely 41% with an elementary education level. The occupation of the respondents as much as 68% of the total respondents is farmer.

Table 2 Distribution of Respondents Base on Knowledge Level About Diabetes Mellitus Diet at Pangkur Public Health Center, Ngawi Regency

No	Knowledge Level	Frequency (n)	Percentage (%)
1	Good	19	51,4
2	Enough	15	40,5
3	Poor	3	8,1
Total		37	100

Table 2 shows that more than half of the respondents, amounting to 19 or 51.4%, are classified as good knowledge, while a small proportion of respondents amounting to 3 or 8.1% of respondents are classified as having poor knowledge.

Table 3 Frequency Distribution of Respondents Base on Compliance with Diabetes Mellitus Diet at Pangkur Public Health Center, Ngawi Regency

No	Compliance	Frequency (n)	Percentage (%)
1	adherent to diet	20	54
2	non-adherent to diet	17	46
Total		37	100

Table 3 shows that more than half of the respondents, 20 or 54%, are classified as adherent to diet DM.

Tabel 4 Cross Tabulation of the Relationship between Knowledge Level and Compliance with Diabetes Mellitus Diet at Pangkur Community Health Center, Ngawi Regency

		Compliance			P value	Spearman Rho (r)
		Adherent to diet	Non-adherent to diet	Amount (n%)		
Knowledge	Good	18 (84,8%)	1 (15,2%)	19 (100%)	0,000	0,779
	Enough	1 (28,2%)	14 (71,8%)	15 (100%)		
	Poor	1 (0%)	2 (0%)	3 (100%)		

Based on the results of data analysis in table 4 using the Spearman Rank test with 0.05, a p value of 0.000 < 0.05 was obtained, so H1 was accepted and H0 was rejected, which means that there is a relationship between Knowledge and Compliance with DM Diet at Pangkur Health Center, Ngawi Regency with r value or correlation coefficient value of 0.779 (very strong). The direction of the relationship shows a positive number meaning the better the knowledge, the higher the level of patient compliance with the DM diet.

DISCUSSION

Level of Knowledge About Diabetes Mellitus

The results of this study obtained more than half or 19 respondents with good knowledge. Knowledge is the result of "knowing" and this occurs after people have sensed a certain object [12]. Good knowledge may be influenced by many factors, such as experience, age and means of information. Knowledge is not only obtained formally but also through experience. In addition, knowledge is also obtained through information facilities available at home, such as radio and television. Most of human knowledge is obtained through the eyes and ears so that the use of the five senses for information is very important [13].

The age factor is likely to influence, considering that the age of all respondents in the average age group is 55 years. Age describes physical, psychological and social maturity that affects the teaching and learning process. This means that it is one of the factors that affect the capture of information which ultimately affects the increase of one's knowledge [14]. According to researchers, the age range of more than 40 years shows at the stage of late adult development who has started to age or is entering the stage of development of the elderly age. This age period is a period full of life experiences and getting a lot of information about the disease that is experienced.

Judging from the level of education where almost half of the respondents (41%) have an education or have graduated from elementary school. Where elementary school graduates are elementary level education graduates. According to the theory, it is stated that the higher the level of education, the higher a person's ability to maintain a healthy lifestyle. The level of education can affect a person's ability and

knowledge in implementing healthy living behaviors [15]. According to the researcher, the differences in existing facts and theories are possible because based on the inclusion criteria in this study, the respondents used were prolanis participants who had attended the activity for at least 3 months, so that respondents had been exposed to knowledge about diet in diabetes mellitus. This is evidenced by the source of information obtained by 95% of respondents from health workers.

The results showed that more than half of the respondents had good knowledge, according to the researcher, it was possible for information from health workers to provide health promotion in prolanis activities. Health workers at Prolanis activities provide knowledge about diabetes mellitus, namely about understanding, risk factors, causes, signs and symptoms, complications and prevention of diabetes mellitus. This can be seen from the results of the study that almost all of the respondents obtained information from health workers.

From the results of the study, it was also found that the question items that most respondents answered incorrectly were questions about the regulation of diet or diabetes mellitus diet. From the statement items regarding the regulation of diet or diabetes mellitus diet, there were 68% of respondents with wrong answers. Based on the results of interviews with several respondents, researchers found that related to diet settings or diabetes mellitus diets, respondents were still confused about eating patterns such as the right time, schedule and type of food. Knowledge of dietary regulation is an indicator of the knowledge of respondents who suffer from diabetes mellitus to avoid complications due to their disease. This needs attention for health workers in providing health education. In addition to increasing the intensity of health promotion about diabetes mellitus, the material presented is more focused on diet or diabetes mellitus diet.

Adherence to the Diabetes Mellitus Diet

The results showed that 20 respondents (64%) adhered to the diabetes mellitus diet, 17 respondents (36%) did not adhere to the diabetes mellitus diet. It can be concluded that most of the respondents adhere to the diabetes mellitus diet.

Fatmi, Tahlil, & Mulyadi, (2017) define compliance (obedience) as the level of patients in carrying out treatment methods and behaviors suggested by doctors or others. Compliance can also be defined as a change in behavior from behavior that does not obey the rules to behavior that obeys the rules [16]. According to Bistara & Ainiyah (2018) states that obedience is like obeying orders, obeying orders, while obedience is behavior according to rules [8]. This is in accordance with the results of research conducted that more than half of the respondents are obedient in carrying out the diabetes mellitus diet.

In terms of age, all respondents in the average age group were 55 years. According to Lestari (2012) age is a demographic factor that is not directly related to compliance but is related to a person's perception of a disease prevention measure and that perception is directly related to a person's compliance behavior [17]. Respondents aged 46-55 years are adults. According to researchers, adults have the ability to make decisions, think rationally, are tolerant and are more open to the views of others so

that when there are suggestions or recommendations from trusted sources such as health workers, they will tend to comply with these recommendations..

Judging from the level of education, the majority of respondents are elementary school, which is almost half of the respondents (41%) have an education or graduate from elementary school. The results of this study are in line with the research of Mubarak, Chayatin, Rozikin, & Supriadi (2017) that the level of education does not have a significant effect on compliance [18]. This is very different from the theory expressed by Notoatmodjo (2014), that the level of education is very influential on changes in attitudes and behavior of healthy living. Patients who have low education will find it difficult to receive and understand health messages that are conveyed so that it affects the patient's ability to respond to a problem at hand. On the other hand, patients who have higher education will have broader knowledge and allow themselves to control themselves in dealing with the problems they face, have high self-confidence, experience and have an accurate estimate of how to deal with incidents and easily understand what is recommended by officers. health, especially in terms of diet [12]. The fact that most respondents are elementary school graduates but obedient in terms of running a diabetes mellitus diet is possible because not only one educational factor affects, for example age and information related to diet are obtained. In addition, to obtain detailed results related to the relationship between age and dietary compliance, the researcher suggests that further research be carried out by involving a larger sample.

Relationship between Knowledge Level and Compliance with Diabetes Mellitus Diet

The results showed, based on the Spearman rank test of 37 respondents with a 95% confidence level with 0.05, a p value of 0.000 <0.05 was obtained. P value < , then H0 is rejected (Hi is accepted) meaning that there is a relationship between the level of knowledge and dietary compliance in patients with diabetes mellitus who are prolanis participants with a correlation level of 0.779 (very strong relationship). The results showed that there was a positive relationship between knowledge and dietary compliance in patients with diabetes mellitus who took prolanis. The higher the respondent's level of knowledge, the more obedient to the diabetes mellitus diet.

The results of this study are in line with research conducted by Tania, (2016), in Type 2 DM outpatients at Fatmawati Hospital which states that respondents who have good knowledge are 12.5 times more compliant with diet compared to respondents with less knowledge [19]. According to Niven (2018), one of the factors that influence compliance is knowledge. Knowledge is the result of "knowing" and this occurs after sensing a certain object. Most of human knowledge is obtained through the eyes and ears. Knowledge is an important domain for determining one's actions, because experience and research proves that behavior is based on knowledge [2]. According to Mubarok (2007), knowledge is the result of remembering something, including recalling events that have been experienced either intentionally or unintentionally and this happens after people make contact or observation of a certain object [18].

In accordance with the results of the research and the theory that has been mentioned that respondents have a high curiosity, what foods should be allowed and not allowed for people with diabetes mellitus, once they know they will increase their knowledge and experience to behave positively to carry out a diabetes mellitus diet with good. A good respondent's knowledge may be influenced by many factors, such as experience, means of information.

There is a finding in this study that there is 1 respondent with a good level of knowledge but does not adhere to the diabetes mellitus diet and conversely there is 1 respondent with a low level but adheres to the diabetes mellitus diet. This is in accordance with Fatmi's opinion (2017), which states that dietary compliance does not only come from the concept of knowledge possessed by respondents. At the knowledge stage, it turns out that it has not been fully able to continue with the implementation or health practice, meaning that patients who have good knowledge are not necessarily able to apply it in the form of dietary compliance. [16].

. Knowledge is not only obtained formally but through experience. In addition, knowledge is influenced by the means of information available at home such as television and radio. Likewise, dietary compliance is not only influenced by the level of knowledge but also needs family support. Types of family support can be provided in the form of emotional support through empathy, care, and attention from their family members, appreciation support (assessment) with enthusiasm given by family members so that they are enthusiastic to fight the disease they suffer, and informative support can be given to the respondent's family by providing information about DM disease either directly or by providing reading in the form of books or magazines. Thus, health workers should be more active in involving families in the care of diabetes mellitus patients by increasing family support in monitoring patient dietary compliance.

CONCLUSIONS

The results of this study found that a disinfectant NaOCl solution with the addition of essential oil contained in the liquid extract of fresh ginger and lemongrass rhizomes made by the maceration method can change the odor of the solution. The product have not been tested on surfaces contaminated with the COVID-19 virus, so for further research, the test can be carried out. The resulting product has sediment so it is advisable to precipitate it before use and it is better to filter it first when making this product because the sediment needs to be removed because it will leave stains when applied to the surface being disinfected.

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