FACTORS RELATED TO DIET COMPLIANCE IN ELDERLY PARENTS WITH TYPE 2 DIABETES MELLITUS IN THE WORK AREA OF MOJOLANGU COMMUNITY HEALTH CENTER

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Abstract

Introduction: The increasing incidence of type 2 diabetes mellitus can be caused by various factors, namely gender, education, knowledge, and family support. The aim of the study was to determine the factors associated with dietary compliance in the elderly with type 2 diabetes mellitus at the Mojolangu Health Center. Method: This research is a type of quantitative research using a cross sectional design. The sampling technique used was a purposive sampling technique with a total sampling of 40 respondents. The independent variable factors related to dietary adherence are gender, education, knowledge, and family support and the dependent variable is DM dietary adherence. Results: The results showed that 32 respondents (80%) adhered to the DM diet and 8 respondents (20%) did not comply. From the results of the chi-square correlation test, it was found that the p value was $0.237 > 0.05$ indicating that there was no relationship between gender and diet adherence to type 2 DM. The results of the Spearman rho test showed that there was a relationship between education (p value = 0.047, r = -0.316), knowledge (p value = 0.003, r = 0.454), and family support (p value = 0.003, r = 0.445) with dietary compliance with type 2 DM. Conclusion: Factors associated with dietary compliance in the elderly with type 2 diabetes mellitus are education, knowledge, and family support. Suggestion: It is hoped that the Mojolangu Health Center can improve health services for the community, such as providing education about adherence to the DM diet through electronic media, such as showing interesting educational videos when control patients are in the poly.

Keywords: Diabetes Mellitus Type 2, Diet Compliance , Elderly

1. INTRODUCTION

The incidence of diabetes mellitus in the world in 2000 was recorded at 171 million people and is predicted to increase in 2030 to 366 million people. Meanwhile, in Indonesia, the number of diabetes sufferers in 2000 was 8.4 million people and is estimated to increase 3-fold to 21.3 million people in 2030 where of all diabetes cases 95% of cases come from type 2 diabetes mellitus (Widyarni & Setiandari L. O, 2020). The latest data from the International Diabetes Federation in 2017 shows that Indonesia is currently ranked 6th in the world with the largest number of diabetes sufferers, namely 10.3 million people (Salma, Fadli, & Fattah, 2020). In East Java Province itself, the incidence of DM increased from 1.3% in 2007 to 2% in 2018 based on data from basic health research on the prevalence of

diabetes mellitus against doctor's diagnosis in the population of all ages (Ministry of Health of the Republic of Indonesia, 2018). According to basic health research in 2018, the prevalence of the highest age category in Indonesia with diabetes mellitus sufferers is in the age range of 55-64 years (6.3%) and 65-74 years (6.03%) (Ministry of Health of the Republic of Indonesia, 2018). Meanwhile, according to the research results of Anna Izzo et al., in 2021, the prevalence of DM cases in the elderly over 65 years was known to be 25% of all DM sufferers in the world.

The height percentage This DM case is because DM sufferers have not been able to control blood glucose properly, which can be seen from the daily blood glucose levels that remain high. Sufferers often experience failure in regulating food due to non-compliance with good diet rules (Ernawati, Harini, & Gumilas , 2020). Dietary non-compliance is a very serious problem because it can cause blood sugar levels to increase. According to research conducted by Fadli Maine and Ismail, the better a person's diet, the lower the tendency for blood glucose to be at any time. Thus, DM patients must follow and comply with the diet management program according to the recommendations of the health team (Yang et al., 2020).

According to previous research conducted by Ari Widyarni and Elsi Setiandari LO (2020) entitled Analysis of Factors Influencing Diet Compliance in Diabetes Mellitus Patients in the Inpatient Room of Dr. R Soeharsono Hospital, Banjarmasin, patients who comply with diabetes mellitus diet management are 45% and those who do not comply with the implementation of diabetes mellitus diet are 55% (Widyarni & Setiandari L. O, 2020). Meanwhile, based on the results of research conducted by Zeilen Fitriana et al., (2021), more compliance samples were obtained at 53.2% and those who did not comply were 46.8%.

According to (Yang et al., 2020) dietary compliance is influenced by several factors, namely knowledge, education, health worker counseling, and family support. In addition, based on research (Hestiani, 2017) at the Tlogosari Wetan Health Center, dietary compliance is influenced by several factors, namely gender and family support. The results showed that there was a relationship between gender and compliance in diet management where female respondents had a two times greater risk of low compliance in diet management. In the education variable, there was no relationship between education level and compliance in diet management, as evidenced by respondents with low education more than those with high education. In the employment variable, there was no relationship between employment status and compliance in diet management, it was found that the proportion of compliance in diet management in respondents who worked was higher than that of respondents who did not work. In the knowledge variable, there was a relationship between the level of knowledge and compliance in diet management, as evidenced by the proportion of compliance in diet management in respondents who had a good level of knowledge being higher

than that of respondents with a background of poor knowledge. In the family role variable, there is a relationship between family role and compliance in diet management in type 2 DM patients, as evidenced by the respondents who have a good family role more than those who have a poor family role.

Whereas results research conducted by (Rohani, 2018) is influenced by several factors, namely work, knowledge, and family support. With the results in the Harapan Raya Health Center work area showing that the male gender is mostly compliant in the diet program, which is 25 people (64.1%) where there is no significant relationship between gender and diet compliance. The education variable shows that low education is mostly compliant in the diet program, which is 57 people (64.8%) so it can be concluded that there is no significant relationship between education and diet compliance. In the employment variable there is a relationship with it being shown that respondents who do not work are mostly compliant in the diet program, which is 51 people (73.9%), meaning that respondents who do not work have a 3.923 times chance of being compliant with the diet program compared to respondents who work. The knowledge variable shows that respondents who have good knowledge are mostly compliant in the diet program, which is 45 people (73.8%) so there is a significant relationship between knowledge and diet compliance. In the family support variable, there is a relationship where respondents who receive family support are mostly compliant with the diet program, namely 48 people (76.2%).

Based on the background of the problem, the aim of this study was to analyze factors related to dietary compliance in the elderly with type 2 DM in the Work Area. Health Center Mojolangu . Factors dietary compliance according to theory from Researchers Brunner & Suddart (2002) and Flesichhacker (2003) included 12 factors, namely age, gender, knowledge, education, work and income, length of suffering, perception, motivation, self-confidence, participation in nutritional counseling, health workers, and family support, but based on the limitations of the researchers in this study, they only limited it to the factors of gender, education, knowledge, and family support.

2. METHOD

In this study, the researcher used a quantitative approach because the data obtained is direct data that can be calculated or managed with statistics. The design of this study is a correlation with a cross-sectional approach, namely the researcher conducts measurements or research at one time. The researcher used a cross-sectional design because this study intends to identify whether or not there is a relationship between the independent variable and the dependent variable in one measurement using a questionnaire measuring instrument. In this study, the data to be collected in one measurement are gender data, education level, family support and data on the level of compliance of Type 2 DM sufferers. The number of elderly population suffering from type 2 diabetes mellitus in the Mojolango

Malang health center work area is 229 people. This study used a quota sampling type, namely sampling that focuses more on special characteristics or criteria determined by the researcher. The sample determination process was carried out by randomly distributing questionnaires to respondents who met the inclusion criteria and exclusion criteria in 40 respondents. Data collection in this study was carried out by interviewing and using a questionnaire (questionnaire) which was filled out by the researcher. There is a dietary compliance questionnaire adopted from a questionnaire conducted by researcher Kumala (2018). In addition, it adopted a DM knowledge questionnaire from a questionnaire conducted by researcher Sofiah (2019) and a questionnaire from researcher Evariani Sulanjari (2018) regarding family support for DM diet compliance. The independent variables in this study are gender, education, knowledge, and family support, while the dependent variable in this study is DM diet compliance.

3. RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Respondent Characteristics

Variable	Category	n	%
Age	60 – 62 Years	6	15
	63 – 65 Years	12	30
	66 – 68 Years	8	20
	69 – 71 Years	7	17.5
	72 – 74 Years	2	5
	75 – 77 Years	5	12.5
Total		**40**	**100**
Gender	Man	13	32.5
	Woman	27	67.5
Total		**40**	**100**
Type of work	Retired / Unemployed	12	30
	Self Employed / Trader	7	17.5
	Housewife (IRT)	21	52.5
Total		**40**	**100**
Level of education	Elementary	14	35
	School / MI / Equivalent	11	27.5
		10	25

	Junior High School / MTs / Equivalent	5	12.5
	High School / MA / Equivalent		
	College		
Total		**40**	**100**
Long Suffering	12 years old	22	55
	3 – 4 Years	3	7.5
	5 – 6 Years	2	5
	7 – 8 Years	6	15
	9 – 10 Years	4	10
	11 – 12 Years	3	7.5
Total		**40**	**100**
Diet Compliance	Obedient	32	80
	Not obey	8	20
Total		**40**	**100**
Level of Knowledge	Good	27	67.5
	Not enough	13	32.5
Total		**40**	**100**
Level of Family Support	Good	26	65
	Enough	7	17.5
	Not enough	7	17.5
Total		**40**	**100**

Most respondents from the age group of 63-65 years were 12 people with a percentage of 30%. Respondents were dominated by females with a total of 27 respondents (67.5%). Respondents had jobs as housewives (IRT) as many as 21 respondents with a percentage of 52.5%. Respondents with elementary school education or equivalent were more, namely 14 respondents with a percentage of 35%. Elderly respondents suffered from DM for the most part around 1-2 years with a total of 22 respondents (55%). Elderly who adhere to the DM diet with a total of 32 respondents (80%). Elderly who have good knowledge of DM diet compliance are 27 respondents (67.5%). Elderly who receive good family support with a total of 26 respondents (65%).

Table 2. Results of Cross Tabulation Table and *Chi Square Test* of the Relationship between Gender and DM Diet Compliance

Gender	Diet Compliance				Total		P-value
	Obedient		Not obey		n	%	
	n	%	n	%			

	9	69.2	4	30.8	13	100	
Man	9	69.2	4	30.8	13	100	0.237
Woman	23	85.2	4	14.8	27	100	

Based on table 2, the results show that there are 9 male elderly who comply with the DM diet with a percentage of 69.2%, 23 female elderly who comply with the DM diet with a percentage of 85.2%, while 4 male elderly who do not comply with the DM diet with a percentage of 30.8% and 4 female elderly who do not comply with the DM diet with a percentage of 30.8 %. percentage 14.8%.

The P value of the chi square test obtained was 0.237, so the hypothesis was rejected because the P value was 0.237 > 0.05, so it can be concluded that there is no relationship between gender and dietary compliance in the elderly with type 2 diabetes mellitus at the community health center. Mojolangu .

The results of this study are in line with research conducted by Rohani & Ardenny (2018) and Yulia (2015) which showed that there was no significant relationship between gender and dietary compliance in the elderly with type 2 DM. Meanwhile, the results of this study differ from research conducted by Novi Hidayati (2008) in (Yulia, 2015) which stated that There is connection between gender and dietary compliance in type 2 DM patients (p=0.008). Where male gender tends to be more compliant than female.

Meaninglessness between type gender with diet compliance can be caused because gender is not a factor that is directly related to compliance behavior as expressed in the Health Belief Model theory or health belief model. However , the theory This different with Hestiani (2017) who supports existence connection gender with diet compliance where men are more compliant with diets than women. This is because the role of men as breadwinners and heads of families motivates them to be healthier by complying with the dietary recommendations given and the possibility of support from their life partners by consuming food according to the rules of the diabetes mellitus diet (Haque, 2013) in (Simbolon , Triyanti , & Sartika , 2019).

The lack of relationship between gender and dietary compliance is because gender is not a factor that is directly related to compliance behavior. In addition, based on the results in the field, the respondents of the study were dominated by female respondents. In this study, the number of respondents between women and men had a very significant difference, dominated by female respondents with the number of female respondents as many as 27 people (67.5%) and the number of male respondents as many as 13 people (32.5%).

Table 3. Results of Cross Tabulation Table and Spearman's rho Test of *the* Relationship between Education and DM Diet Compliance

Education	Diet Compliance		Total		P-	Correlation
	Obedient	Not obey	n	%	value	Coefficient

	n	%	n	%				
Elementary School / MI / Equivalent	9	64.2	5	35.7	14	100		
Junior High School / MTs / Equivalent	9	81.8	2	18.2	11	100	0.047	- 0.316
High School / MA / Equivalent	9	90	1	10	10	100		
College	5	100	0	0	5	100		

Based on table 3, the results of the Spearman rho statistical test show a significant value of p = 0.047, which means that the p value <0.05, which can be concluded that the hypothesis is accepted, meaning that there is a relationship between the last education and DM diet compliance and the correlation coefficient - 0.316 indicates a negative correlation direction or the related variables are not in the same direction with sufficient correlation strength, which means that the lower the level of education, the higher the level of compliance.

Research result This in line with research conducted by Rusimah (2011) at the dr. H. Moch. Ansari Saleh Regional Hospital. Patients who have a low level of education will find it difficult to accept and understand the health messages conveyed, thus affecting the patient's ability to respond to a problem they face. On the other hand, patients who have a higher education will have broader knowledge and also allow the patient to control themselves in overcoming the problems they face (D. Susanti, 2018)

According to Norma (2014) in (Cahyati & Wantonoro , 2021), patients who have higher education will have broader knowledge and also allow patients to control themselves in overcoming the problems they face, high self-confidence, experienced, have the right estimates of how to deal with incidents, easily understand what is recommended by health workers. The higher the level of education of an individual, the awareness of their health will also increase. The reason is because they are aware that health is an important aspect and encourage them to adhere to good diet therapy. Individuals with higher education have no difficulty in receiving information and increasing their knowledge (Absor, Nurida, Levani, & Nerly, 2020).

Research result This shows continuity between theory and facts about the relationship between education level and diet compliance. However, there is a slight difference in this study because the proportion of diet compliance in respondents

with low education tends to be more compliant in carrying out the diet because the number of respondents with elementary school education is greater than the number of respondents with college education. This can happen because someone who has a low education but gets good information from various media will increase their knowledge. Someone who has a low education but gets good information from various media will increase their knowledge. In addition, people with high education also find it easy to understand and absorb information so that can implement it in daily behavior and lifestyle , especially in adhering to diabetes mellitus diet management (Hestiani , 2017).

Table 4. Results of Cross Tabulation Table and Spearman's rho Test of *the* Relationship between Knowledge and DM Diet Compliance

Knowledge	Diet Compliance				Total		P-value	Correlation Coefficient
	Obedient		Not obey					
	n	%	n	%	n	%		
Good	25	92.6	2	7.4	27	100	0.003	0.454
Not enough	7	53.8	6	46.2	13	100		

Based on table 4, the results of the Spearman Rho statistical test show a significant value of p = 0.003, which means that the p value <0.05, which can be concluded that the hypothesis is accepted, meaning that there is a relationship between knowledge and compliance with the DM diet and the correlation coefficient of 0.454 indicates a positive correlation direction or variables that are related in the same direction with sufficient correlation strength, which means that the higher the correlation, the higher the correlation. level knowledge the more tall level his compliance .

The results of this study are in line with research conducted by Handayani , Yanesti , & Irwan Haryanto (2017) in his research mention existence understanding especially knowledge about diet management so that it will make someone more careful and alert in the food that will be consumed and eventually will form a behavior that is compliant with the diet that will be undertaken. Elderly who have broader knowledge allow the patient to control themselves in overcoming the problems faced, have high self-confidence, are experienced and easily understand the recommendations of health workers, so that it will be able to reduce anxiety and will help the patient in making decisions about the health problems they face.

However, the results of this study differ from the study conducted by Putra (2015) which showed that there was no significant relationship between knowledge and dietary behavior in type 2 DM patients. Good knowledge is not always balanced by a person's obedient attitude because a person's obedient attitude can be influenced by the strong will of diabetes mellitus sufferers to carry out a good and correct diet.

The results of this study show that there is continuity between theory and facts about the relationship between knowledge and compliance with DM diet. Diet knowledge has an influence on compliance with type 2 diabetes mellitus diet. The more Lots information obtained, then a lot of knowledge will be obtained and can have a positive attitude towards compliance with the type 2 diabetes mellitus diet. In this study, good respondent knowledge is indicated by respondents who understand the early symptoms of diabetes mellitus. namely Lots eating (polyphagia), a lot drinking (polydipsia), and frequent urination (polyuria).

Table 5. Results of Cross Tabulation Table and *Spearman's rho* Test of the Relationship between Family Support and DM Diet Compliance

Family Support	Diet Compliance				Total		P-value	Correlation Coefficient
	Obedient		Not obey		n	%		
	n	%	n	%				
Good	24	92.3	2	7.7	26	100		
Enough	5	71.4	2	28.6	7	100	0.003	0.445
Not enough	3	42.9	4	57.1	7	100		

Based on Table 5 shows the results of the Spearman Rho statistical test, which obtained a significant value of p = 0.003, which means that the p value <0.05, which can be concluded that the hypothesis is accepted, meaning that there is a relationship between family support and DM diet compliance and the correlation coefficient of 0.445 indicates a positive correlation direction or variables that are related in the same direction with sufficient correlation strength, which means that the higher the correlation, the higher the correlation. level support family the more tall his compliance .

The results of this study are in accordance with previous research conducted by Lestari (2012) which also showed a relationship between family support and diet compliance, namely respondents who received positive support from their families were more compliant in carrying out their diet compared to respondents who received negative support from their families (Lestari, 2012). This is because in this study and the study conducted by Lestari (2012), the proportion of DM diet compliance was higher in respondents who received good support from their families compared to respondents who received less support from their families.

According to Niven (2002) in (Amelia, Nurchayati , & Elita, 2014) family support is one of the factors that influences diet compliance that cannot be ignored because family support is one of the reinforcing factors that influences patient compliance in carrying out a diet (Amelia et al., 2014). Real family support is a form of family concern to provide support, remind and help DM sufferers in regulating their eating (Hendro, 2010). Based on Susanti's research (2018) in his research , support family given to patients in the form of informational support, assessment support, instrumental support and emotional support. Aspects of emotional support

include support that is manifested in the form of affection, trust, attention, listening and being heard.

It can be concluded from the results of this study that there is continuity between theory and facts about the relationship between family support and DM diet compliance. Patients who have good family support and patients who have sufficient or insufficient family support show a significant difference in compliance behavior, where patients who have good family support are more compliant in carrying out the diet compared to patients who have less family support. According to Bertalina & Purnama (2016) that good family support will influence someone to carry out and comply with the recommended diet such as reminding to avoid prohibited foods/drinks, reminding to apply a diabetes mellitus diet and reminding to check blood sugar levels and routine diet consultations are family support that is widely given.

4. CONCLUSION

There is no significant relationship between gender and compliance in carrying out diet in elderly with type 2 DM at Mojolangu Health Center. There is a significant relationship between education, knowledge, and family support with compliance in carrying out diet in elderly with type 2 DM at Mojolangu Health Center.

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