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THE RELATIONSHIP OF FAMILY SUPPORT WITH COMPLIANCE WITH BLOOD SUGAR CONTROL IN DIABETES MELLITUS PATIENTS

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ABSTRACT
Diabetes mellitus (DM) is a condition where blood sugar levels increase because the pancreas cannot carry out its function optimally and efficiently in producing sufficient amounts of insulin. Indonesia is the 7th country most affected by diabetes with an incidence of 10.7 million people. One factor that plays an important role in maintaining blood sugar control is family support because patients with good support also have good blood sugar control. This study aims to determine whether there is a relationship between family support and compliance with blood sugar control in diabetes mellitus sufferers in the Kartasura Health Center working area. The research method is quantitative with analytical observational type using a cross sectional approach. The sample taken was 174 respondents who received treatment at the Kartasura Community Health Center. Sampling was taken using accidental sampling. Data collection was carried out on respondents using a questionnaire. Univariate data analysis used the Kolmogorov Smirnov test and bivariate using the correlation test (Spearman Rank). The research results show that there is a relationship between family support and compliance with blood sugar control in diabetes mellitus sufferers with p-value=0.005 or <0.05. The conclusion of this research is that the better the family support, the better the patient's compliance in controlling blood sugar.

Keywords: blood sugar control compliance; diabetes mellitus; family support

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INTRODUCTION

Diabetes mellitus (DM) is a chronic disease that occurs when the body cannot produce enough insulin (a hormone that controls blood sugar or glucose) due to pancreatic disorders, or the body cannot efficiently utilize the insulin produced. According to (Galicia-Garcia et al., 2020) the main cause of diabetes mellitus is obesity, apart from obesity there are other factors that can cause high blood sugar levels, namely genetics and insulin secretion. The World Health Organization (WHO, 2020) estimates that people most at risk of developing diabetes mellitus come from Southeast Asia and the West Pacific. In the last few decades, the incidence of diabetes mellitus has increased in several countries, both low and middle income. The prevalence of diabetes mellitus can reach 422 million people (Arania et al., 2021). Data obtained from the International Diabetes Federation (IDF) at the end of 2021 showed that there were 537 million people suffering from diabetes mellitus, and the prevalence will reach 643 million in 2030 and in 2045 it is projected to reach 783 million people (International Diabetes Feredation, 2022). Based on data obtained from the Ministry of Health of the Republic of Indonesia in 2019, Indonesia was the 7th country most affected by diabetes with an incidence of 10.7 million people, and based on the latest data in 2021, this country rose to 5th place, reaching 19.51 people with a death rate of 237 people (Irmawati et al., 2023). Based on data obtained from the Central Java Health Service in 2021, the prevalence was 63,00 people with cases of diabetes mellitus in Sukoharjo Regency, namely 2.0% or an estimated 16,302 cases.

Based on a preliminary survey conducted by researchers in January 2024 at the Kartasura Community Health Center, the results obtained were that the incidence of diabetes mellitus for 3 consecutive months, namely in October-December 2023, was 306 DM sufferers who had undergone control and treatment. Adherence to control in DM patients is associated with continuous treatment to achieve a better level of health. However, non-compliance has become a problem that often haunts sufferers even though many interventions have been carried out in the form of information, education and behavior to increase the compliance of DM patients (Tabasi et al., 2014). Research conducted at the Banjarmasin Community Health Center in 2021 stated that as many as 66 (68.8%) respondents did not comply with blood sugar control (Olviani & Novita, 2022).

Family support is one way to control patients by family members to provide a sense of comfort both psychologically and physically when someone experiences illness (Sari et al., 2023). In 2020, in research in the working area of the Semerap Community Health Center, Kerinci Regency, 76.2% of patients were concluded to experience a lack of family support (Sisy Rizkia, 2020). According to (Maghfiroh, 2019) states that there are four types of family support, namely informational support, appreciation support, instrumental support and emotional support. This is in line with research conducted by (Luthfa & Ardian, 2019) which examined family support for patients suffering from DM which showed that of the 56 family respondents, 32.1% had high support, and 67.9% had low support. low. Another study showed that motivation is one of the factors that plays a role in maintaining glycemic control because patients with good motivation also have good glycemic control. The family plays a very significant role in everyone's life, including individuals who have difficulty coping with diabetes. This shows that the role of those closest to you, especially family, has a very crucial role in efforts to avoid diabetes complications (Ninda Cahyaningrum, 2020). The greater the encouragement felt by respondents, the smoother their behavior changes in managing blood sugar levels. Therefore, motivation to regulate blood sugar is an important factor in managing diabetes (Irmawati et al., 2023). The aim of this research is to find out whether there is a relationship or not between family support and compliance with blood sugar control in diabetes mellitus sufferers in the Kartasura Health Center working area in 2024.

METHOD

This research method is quantitative with analytical observational type using a cross sectional approach. The population in the study was all DM patients who received treatment and blood sugar control at the Kartasura Community Health Center, totaling 306 people. Then, samples taken using hypothesis testing resulted in a sample size of 174 people who received treatment at the Kartasura Community Health Center. Sampling was taken using accidental sampling based on inclusion and exclusion criteria. The inclusion criteria in the study were DM sufferers who underwent examinations at the outpatient clinic at the Kartasura Community Health Center, DM sufferers who lived in the same house as other family members such as husband/wife and children, DM sufferers who were more than 18 years old, DM sufferers who were willing to become respondents and exclusion criteria in the study were DM sufferers who were uncooperative or experienced decreased consciousness and memory problems. The variables in this study consist of 2 variables, namely the independent variable family support and the dependent variable blood sugar control compliance. This research was conducted in June-August 2024 at the Kartasura Community Health Center. The data collection technique used by researchers is a questionnaire sheet. There are 2 questionnaires, namely the Indonesian version of the Hensarling Diabetes Family Support Scale (HDFSS) to measure family support and the Indonesian version of the Diabetes Self-Management Questionnaire (DSMQ) to measure blood sugar control compliance. The HDFSS family

support questionnaire has been tested for validity with a significance result of 0.05 with respondent characteristics >0.355, which means all statements are said to be valid because there is a Cronbach's Alpha value showing a validity test result of 0.856. The DSMQ blood sugar control compliance questionnaire has been tested for validity and has been translated into Indonesian and a validity test of 0.84 has been carried out, which means it can be said to be valid. The HDFSS family support questionnaire has been tested for reliability with a Cronbach's Alpha value of 0.9. This shows that the measurements carried out have obtained consistent results. Then, the DSMQ blood sugar control compliance questionnaire was tested for reliability with a Correlated Item value of 0.349-0.661 and a reliability test was carried out which obtained a Cronbach Alpha value of 0.789. Data analysis used univariate analysis and bivariate analysis by categorizing good, moderate and fair then carrying out normality tests and correlation tests with Spearman Rank. Next, the data was analyzed using univariate analysis, namely to determine the characteristics of each respondent. Bivariate analysis to determine the relationship between the independent variable and the dependent variable, namely family support and blood sugar control compliance. This research was approved by the ethics committee of the Faculty of Health Sciences, Muhammadiyah University of Surakarta with letter number 287/KEPK-FIK/IV/2024.

RESULT

Table 1.
Respondent characteristics

Respondent characteristics	f	%
Gender		
Male	15	8,2
Famale	159	86,4
Age		
25-42 years old	9	4,9
42-59 years old	84	45,7
59-75 years old	81	44,0
Education		
No school	22	12,0
SD	72	39,1
SMP	42	22,8
SMA	30	16,3
PT	8	4,3
Work		
PNS	7	3,8
Private employees	13	7,1
Self-employed	28	15,2
Laborer	35	19,0
IRT	91	49,5
Caring family		
Husband	101	54,9
Wife	15	8,2
Child	58	31,5

Table 1 shows the characteristics of respondents who experienced DM who underwent treatment at the Kartasura Community Health Center with the highest frequency being women, 159 (86.4%), 84 (45.7%) aged 42-59 years, 84 (45.7%), the highest education was elementary school, 72 (39). .1%), the most common job is a housewife 91 (49.5%), and the family who takes care of the most is the husband 101 (54.9%).

Table 2.
Characteristics of DM patient respondents based on family support undergoing treatment at the Kartasura Community Health Center

Respondent characteristics	f	%
Good	162	94,1
Enough	6	3,3
Not Enough	6	3,3

Table 2 shows the distribution of respondents based on family support of DM patients at the Kartasura Community Health Center, with good family support totaling 162 respondents (94.1%).

Table 3.
Characteristics of respondents based on control compliance of DM patients undergoing treatment at the Kartasura Community Health Center

Respondent characteristics	f	%
Good	139	79,9
Currently	31	17,8
Not Enough	4	2,3

Table 3 shows compliance with routine control in dm sufferers at the kartasura community health center with a high category of 139 (79.9%).

Table 4.
Relationship between family support and compliance with blood sugar control in diabetes mellitus sufferers at the Kartasura Health Center

Family Support	Control Compliance								
	Kurang		Sedang		Tinggi		Total		*p value*
	f	%	f	%	f	%	f	%	
Kurang	1	0,6	3	1,7	2	1,1	6	3,4	
Cukup	0	0,0	2	1,1	4	2,3	6	3,4	0,005
Baik	3	1,7	26	14,9	133	76,4	162	93,1	

Table 4 shows the relationship between family support and compliance with blood sugar control in dm sufferers at the kartasura health center, by conducting a non-parametric rank spearman test on two variables, namely family support and compliance with control, a p value of 0.005 or <0.05 was obtained, so it can be concluded that there is a relationship between family support and compliance with control in diabetes mellitus sufferers at the kartasura community health center.

DISCUSSION

Univariate analysis of respondents based on age shows that many women suffer from diabetes mellitus with a total of 159 respondents (86.4%) compared to men. This is in line with research conducted by (Sisy Rizkia, 2020) which states that many women experience 90 (84.9%) of type 2 DM is caused by a decrease in the hormons estrogen and progesterone, especially during menopause. The decrease in these hormones during menopause also causes a decrease in insulin response. This is caused by the ability of the hormones estrogen and progesterone to increase the insulin response in the blood. The same research conducted by (Rosita et al., 2022) showed that women suffered more from diabetes mellitus with a total of 106 respondents (56.1%) while men were 83 respondents (43.9%), in the test The correlation results show that there is a relationship between gender and the occurrence of diabetes mellitus with a p-value of 0.012.

Based on age characteristics, the majority of respondents were aged 42-59 years (45.7%). This is supported by research conducted by (Praxis, 2022), showing that the most respondents suffering from DM were aged 46-55 years. In Indonesia, the majority of diabetes mellitus

patients are aged between 45 and 64 years. As people get older, diabetes mellitus sufferers need to carry out routine control to compensate for the progress of the disease. Patients who carry out routine controls will receive education and support from health workers in managing blood sugar, so that they can prevent and slow down the emergence of complications. Another study stated that the majority of type 2 diabetes mellitus patients were aged 46-65 years as many as 93 patients (69.4%) out of 134 patients (Komariah & Rahayu, 2020). According to researchers, the elderly age group is more likely to lack awareness and education regarding the importance of maintaining health, especially checking blood sugar, and those aged <45 and above are very easy to experience a decline in bodily functions, one of which is metabolic function in the body. The same research showed that the majority of respondents aged 50-64 were 24 respondents (60.0%) (Nababan et al., 2020).

Based on educational characteristics, the highest was elementary school (SD) with 72 respondents (39.1%). This research is in line with research (Yana Setian, 2023) with the results that the largest number of respondents was elementary school education level, totaling 26 respondents (32.9%). The same research on the relationship between level of education, knowledge, age and family history of DM with behavior to prevent type 2 DM in young adults with the result that there was no significant relationship between level of education, knowledge and age and behavior to prevent type 2 diabetes mellitus (p value > 0.05). Although it is possible that people with a high level of education understand or are more careful about their health because they have knowledge about health. However, it does not rule out the possibility that the person could still develop diabetes mellitus. So anyone has the potential to develop diabetes mellitus.

Based on job characteristics, the majority were housewives (IRT) with 91 respondents (49.5%). This is because someone who works does physical activity more often which can cause insulin receptors to work more actively and in greater numbers. This means that a lack of physical activity can cause DM because activities that are not carried out repeatedly result in the amount of energy consumed being greater than the energy expended, the impact of the imbalance of positive energy consumed and released will cause insulin retention or insulin not working properly. This research is supported by research which states that 53 respondents (91.4%) of DM sufferers mostly do not work and have a less active lifestyle (Yana Setian, 2023). Research conducted by (Rizal & Faridah, 2024) showed the work results of 78 respondents, the majority of housewives were 46 respondents (59.0%), then the researcher stated that housewives tend to be more susceptible to diabetes mellitus than respondents who work due to lack of physical activity. However, there were some respondents who remained at home but did physical activities such as gardening, sweeping, washing and cooking. As a result of this large amount of activity, a person can quickly feel tired so that they are unable to do other activities, which in the end can cause fat accumulation. Thus, researchers assume that activity plays an important role in controlling blood sugar levels so that they remain stable and controlled.

Based on the table of characteristics of respondents based on caring families, the highest result is husbands with 101 (54.9%). According to researchers' assumptions, the support provided by families, especially partners of DM sufferers, will be more meaningful than non-partners, for example children or other relatives. Because couples who have spent time together know their partner's daily life. Apart from that, sufferers also prefer to be reminded by their partner rather than by other family members. The same research was conducted by (Ganjar Safari, Megga Siti Nurlani, 2021) stated that the characteristics of respondents based on family members who cared for them were husbands with a total of 12 respondents (33.3%)

while those cared for by wives were 11 respondents (30.6%). Then, in the same study, it showed that 44.6% of husband's support greatly influenced compliance in controlling blood sugar in female diabetes mellitus patients (ASMIATI et al., 2024).

From the research results, it is known that there were more respondents with family support who supported treatment than those who did not receive support from family with a total of 162 respondents (94.1%). These results are supported by research entitled the relationship between knowledge and family support and routines in controlling blood sugar in type 2 DM sufferers with prevalence results from 50 respondents, there were 43 respondents (86.0%) who had supportive family support, while 7 respondents (14 .0%) have less supportive family support (Indirawaty et al., 2021). Patients who receive support from their family tend to be better able to accept their disease condition, feel more confident, and have the motivation to undergo therapy regularly to improve quality of life and achieve good blood sugar control (Putri & Kurniawati, 2021). Then, in the same study, results from 131 respondents showed that there were 129 respondents (98.5%) who had good family support and there were 2 respondents (1.5%) with poor family support. When respondents faced difficulties related to their diabetes, families who also suffer from diabetes often need a place to share their stories. The first step respondents usually take is to talk to the family. An empathetic family response can make respondents feel more comfortable and relieved after sharing. This support really helps respondents in efforts to heal or keep blood sugar levels stable, so that unwanted complications can be prevented (Dian saviqoh, 2021).

Based on the results of research conducted by researchers, the majority of the results showed a high level of control compliance, as evidenced by the results of research from 174 respondents, there were 139 respondents (79.9%) who complied with carrying out controls at the Kartasura Community Health Center. This is in line with research conducted by (Ismansyah, 2020) with results of 36 respondents (51.4%) complying with the control, while 34 respondents (48.6%) did not comply with the control. This can happen because there are several factors that influence the level of control compliance, including education level, employment, economic level, healthy behavior, support from the health profession and support from the closest family (ANTORO et al., 2023). The success of treating diabetes mellitus (DM) patients can be assessed by how well their blood sugar levels are controlled. Control of blood sugar levels is influenced by several factors, such as compliance with taking medication, diet, use of insulin, physical activity, and regular checking of blood sugar levels (Hexendri & Hartutik, 2023). Other research states that blood sugar control compliance can increase when patients get full support from the family who care for them (Anita & Daniel Hasibuan, 2021).

The relationship between family support and compliance with control in DM sufferers at the Kartasura Community Health Center using the Spearman Rank test has a significance value of 0.005 or less than 0.05, where this value means there is a significant relationship between the two variables. This is supported by research conducted by (Nataria Yanti Silaban et al., 2022) with a Chi Square test which obtained a p value of 0.017, meaning it can be concluded that Ha is accepted or there is a relationship between family support and compliance with control in diabetes mellitus sufferers. This research is in line with research conducted by (Sa'adah et al., 2023) with a significance value of 0.00, which means less than 0.05, so it can be said that there is a family relationship with routine control compliance. The better the family support, the better a person's control compliance will be.

CONCLUSION

Family support for diabetes mellitus sufferers mostly showed higher support than non-support with a prevalence of 162 respondents (94.2%). Families who support the treatment of DM sufferers tend to better understand how to anticipate DM disease so that the chain of metabolic disease is broken. Then, control compliance becomes important in controlling a disease. The research results mostly showed a high level of compliance with the number of respondents being 139 (79.9%). It can be concluded that there is a relationship between family support and compliance with control in diabetes mellitus sufferers at the Kartasura Community Health Center, proven by a significance value of 0.005 or less than 0.05. So the better the family support, the better the level of control compliance in diabetes mellitus sufferers.

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