

Article

The correlation between family support and health status in patients with diabetes mellitus

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Abstract

Introduction: The health status of a patient is strongly influenced by the family members because they play an important role during the health care process, and in healthy living. This implies that they must be involved in decision-making and therapeutic actions at every stage of the treatment. Therefore, this study aims to determine the relationship between family support and the health status of diabetes mellitus patients in Malang.

Design and Methods: This study used a descriptive correlational design with a cross-sectional approach, which was carried out by filling questionnaires to determine the relationship between family support and the health status of diabetes mellitus patients. The sample population consists of 327 diabetes mellitus patients and 327 family caregivers of patients with the disease. Meanwhile, the respondents were selected through a cluster random sampling technique.

Results: The results showed that 62.7% of the caregivers provided a good family support, while 90.8% of the patients have a good health status. This indicates that there is a positive correlation between family support and the health status of people with the disease ($p\text{-value} = 0,000$, $\alpha < 0,05$, $r = 0,400$).

Conclusions: Further studies are advised to explore the use of nursing interventions as an effort to maintain and improve the ability of families in providing long-term care for members with diabetes mellitus.

Introduction

Diabetes Mellitus (DM) is a long-lasting metabolic disorder caused by the inadequate production of insulin by the pancreas or the body's inability to effectively use it. Insulin is a hormone that regulates blood sugar levels, thereby preventing high glucose levels in the body (hyperglycemia).¹ Furthermore, the disease is characterized by hyperglycemia due to defects in insulin function and/or secretion abnormalities.²

In 2014, the World Health Organization (WHO) discovered that there were 422 million overweight or obese adults with diabetes mellitus globally. The disease accounted for over 1.5 million

deaths among people less than the age of 70. Based on doctors' diagnosis, the 2018 Riskesdas result showed that its prevalence increased to 2% among people in Indonesia aged > 15 years. Furthermore, in East Java Province, there was a 0.5% increase in its rate between 2013 and 2018, when a prevalence of 2.6% was recorded⁵. Malang city has the eleventh highest rate of 2.3% among the 38 cities in East Java.⁶ The health profile data about the city revealed that DM was ranked 4th out of the 10 common diseases, and various public health data revealed that its prevalence is expected to continue increasing over the next couple of years.⁷

Data from the Malang City Health Office in 2017 showed that approximately 22,206 people had diabetes in the 16 Primary Health Centers with an average of 1,850 cases per month.⁸ Furthermore, lower numbers were obtained in 2018, where 18,817 cases were recorded with an average of 1,568 per month.⁹ In 2019, a total of 12,509 cases were reported between January and July with an average of 1,787 people per month.¹⁰

Diabetes mellitus is a non-communicable disease and is a serious threat to world health. It is caused by abnormal blood sugar levels, and the patients usually express clear physical symptoms. Meanwhile, the condition or state of health of a person is known as health status, and it is influenced by the ability of the patients to understand and optimize their condition. It is also influenced by their ability to reach their physical and mental potentials optimally as well as to prevent risk factors that can occur due to illness.¹¹

The American Diabetes Association stated that there is a need to develop a medical intervention using a multifactorial risk reduction strategy that is beyond glycemic control.¹² The management of DM is guided by the 4 pillars of diabetes management, which consists of knowledge about the condition, a regulated diet, adequate amount of physical activity, and medication adherence.¹³ Furthermore, the management of the disease can be divided into two categories, where the first management is short-term, which involves controlling blood sugar and preventing constant illness in the patients.¹⁴ Families are expected to participate in the treatment from the beginning because they play an important role in the recovery program.¹⁵ Family support is defined as an act of acceptance by the families of patients with certain health problems. Furthermore, it can be divided into 4 types, namely informational, reward, instrumental, and emotional support.¹⁶ Motivation and

Significance for public health

Family is the main source of support for people with chronic diabetes mellitus. Furthermore, their support is easier to obtain because they are closely related, hence, they can help to improve knowledge, attitudes, and compliance during the treatment process. The health status of the patients is strongly influenced by the form of support provided by the family. Therefore, this paper describes the correlation between family support and the health status of diabetes mellitus patients.

support from families are needed in the management of diabetes.¹⁷

The health status of patients is strongly influenced by their family members because they play a role during the treatment.¹⁶ Therefore, they need to participate in decision-making and therapeutic action at every stage to achieve successful disease management.¹⁸ A challenge that often occurs during DM treatment is the patient's disobedience during the process. Support from family is an important element in improving their health because they can promote the patient to live healthily.¹⁹ Therefore, this study aims to determine the relationship between family support and the health status of diabetes mellitus patients in Malang City.

Design and Methods

This study used an analytical correlational design with a cross-sectional approach, which involves the concurrent measurement and observation of data to determine the relationship between family support and health status of diabetes mellitus patients. A quantitative data analysis method was used by recording the data obtained in the form of numbers for analysis. The inclusion criteria for the study were DM patients who were members of the Prolanis program at every public health center, had health insurance, and were willing to be respondents. Furthermore, a total of 327 diabetes patients and 327 family caregivers of patients with the disease were obtained using Slovin's formula in Malang city. A cluster random sampling technique was used to select the respondents from the 16 Public Health Centers in the city. Data collection was carried out by visiting each selected public health center by first calculating the proportion, then we took it randomly based on the attendance list at the time of the Prolanis activity (health program activities for managing chronic diseases). Instrument using family support scale (FSS) and health status using Short Form 12 (SF-12). The results of the validity and reliability test have an r arithmetic value of $0.48 - 0.79 (> 0.44)$ and a Cronbach Alpha coefficient of $0.932 > 0.600$, and have an r arithmetic of $0.466 - 0.721 (> 0.44)$ and a Cronbach Alpha coefficient of $0.909 > 0.600$. Data analysis was then carried out using the Pearson Product Moment SPSS because the data is a numerical scale, test with a 95% confidence level (CI; 5%).

Results and Discussions

Table 1 shows the characteristic of respondents and the majority of the caregivers were <45 years (48.3%), and this finding is consistent with Damayanti where most of the family respondents were in the same age range with this study.²⁰ Furthermore, this range is known as productive age and has sufficient experience to care for members that are suffering from a disease.²¹ Friedman reported that the level of maturity affected the support received by the respondents, hence, age is an important factor that affects the role of caregivers in family nursing.¹⁶

The level of education influences the knowledge on environmental factors that affect health requirements as well as the amount of knowledge and information received.²² 158 caregivers (48.6%) had the latest high school or equivalent education, and this is in line with Chusmeywati that obtained a total of 29 respondents (55.8%) with the same level of education.²³ The insight about caring for family members with disease conditions is influenced by education level. Almost all of the caregivers used in this study were Muslims, and this finding is consistent with Chusmeywati where all respondents practiced the religion.²³ Friedman's theory states that God, prayer, and faith are needed to overcome any dis-

ease.¹⁶ Furthermore, Susanti reported that the spiritual factor, which is a guidance in daily living affects the rate of socialization with the surrounding environment and the ability to achieve life's desires.²⁴

The majority of the family respondents were male (51.4%), and this is inconsistent with Jessica where 57.6% (19 caregivers) were female.²⁵ Furthermore, 57.5% of the caregivers (188) have a private or self-employed job, and this finding is in line with Alfiaturrohmah.²¹ Good financial ability to support life can be obtained when the respondent has a job.²¹ Chusmeywati reported that 40.4% of the caregivers (21 respondents) were children, and a similar result of 47.1% (154 respondents) was obtained in this study.²³ The elementary school was the most recent education in 169 patients (51.7%), while cleonara reported that 14 respondents (45.2%) have an elementary school education.²⁶ A low educational level makes it difficult to receive information due to limited knowledge. Furthermore, inappropriate food selection and uncontrolled diet are factors that can increase the risk of diabetes mellitus.²⁷

Table 2 reveals that 285 respondents (96%) received good emotional support, while 290 (97.6%) received appraisal support. The diabetic patients in the working area of the Public Health Centre in Malang City received good family support, and this is in line with Damayanti that it influences the implementation of self-management.²⁰ Friedman stated that there are 4 types of family support, namely instrumental, informational, emotional, and appreciation supports.¹⁶ The highest type of support received by the patients was reward support, followed by emotional, informational, and instrumental supports.

Furthermore, 92% of the patients received reward support, which is the feedback received for their action, and this is inconsistent with Setyoadi where it was the lowest type of support. This type of support can be given in the form of praise or appreciation, providing motivation, and asking for their opinion while solving problems.²⁶ Emotional support was the second-highest type of support received with a total of 296 respondents (90.5%). This finding is in line with Setyoadi, which reported that approximately 89.47% of the respondents received this type of support.²⁶ Examples of emotional support are attention, affection, and sympathy.¹⁶ Furthermore, it can be provided in the form of psychosocial protection by listening to their complaints, keeping their feelings private, comforting the patients when they are sad as well as expressing affection with actions and words. 87.5% of the patients received good informational support, which is not in line with Setyoadi where it was the most widely received by 51 respondents (89.47%).²⁶ This type of support can be in the form of providing solutions to problems, advice, and information needed in the healing process. Informational support can easily be received because information about a disease can easily be accessed from various media.²⁷ 202 respondents (61.8%) received good instrumental support because the families have good health care and economic function. Providing food, clothing, shelter, and assisting patients in taking medication are health care functions that can be provided. Meanwhile, providing adequate finance for care and medication is an economic function in the family.²⁸

Based on these results, family support is an important aspect that is needed during the treatment process. The health status of diabetic patients tends to deteriorate when the support received is less. Furthermore, several factors affect the level of support, namely age, education, occupation, gender, and relationship with the patient. Good family support gives the patient a sense of calmness and comfort.²⁹ It can also decrease mortality rate and increase the recovery rate, consequently, Friedman concluded that family support is very beneficial because it has a major effect on health and

well-being.¹⁶ Most of the respondents have a better health status (Table 3), and this is in line with Amigo that good health status was obtained in 123 respondents (75.5%) out of 163.¹¹ Furthermore, most of the patients are between the age of 45-65 years (63.3%). A similar result was obtained by Trisnawati where 47.5% of the respondents were within the age range of 45-52 years.⁹ The risk of

developing diabetes increases along with age because glucose intolerance begins at the age of 45-65 due to decrease in the activities of the pancreatic β cells. 80.4% of the respondents were females because they have a greater chance of developing a high BMI. Fats are easily accumulated in their body due to hormonal processes, such as premenstrual syndrome and post-menopause,

Table 1. Distribution of respondents.

Demographic aspects	Caregivers		Patients	
	f	%	f	%
Age (years)				
<45	158	48.3	7	2.1
45-65	123	37.	207	63.3
>65	46	14.1%	113	34.6
Religion				
Islam	317	96.9	317	96.9
Christian	7	2.1	7	2.1
Catholic	3	0.9	3	0.9
Gender				
Male	168	51.4	64	19.
Female	159	48.6	263	80.4
Last education				
Uneducated	1	0.3	2	0.6
Elementary School	71	21.7	169	51.7
Middle School	54	16.5	76	23.2
High School	159	48.6	65	19.9
College	42	12.8	15	4.6
Profession				
Does not work	120	36.7	225	68.8
Labor	9	2.8	3	0.9
Farmers	1	0.3	0	0
Civil servants	7	2.1	3	0.9
TNI/POLRI	2	0.	1	0.3
Entrepreneur	188	57.5%	95	29.1
Relationship with patients				
Husband	102	31.2	-	-
Wife	51	15.6	-	-
Child	154	47.1	-	-
Mother	1	0.3	-	-
Grandchild	9	2.8	-	-
Sister	6	1.8	-	-
Niece	1	0.3	-	-
Son/Daughter in law	5	0.9	-	-
Older Suffer (Years)				
<1	-	-	36	1
1-5	-	-	159	48.6
>5	-	-	132	40.4
The last result of GD (mg/dL)				
80-109	-	-	9	2.8
110-125	-	-	34	10.4
>125	-	-	284	86.9

Table 2. Distribution of family support and type of support.

Family Support	Not good		Good	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Whole support	122	37.	205	62.7
Emotional Support	31	9.5%	296	90.5
Appraisal Support	26	8	301	92
Instrumental Support	125	38.2	202	61.8
Informational Support	41	12.5%	286	87.5

hence, they have a high risk of developing diabetes mellitus.³⁰ Damayanti reported that 60.3% of the respondent used were female, while 39.7% were males.²⁰ Based on the results, the most recent blood sugar level was 125 mg/dl, which was obtained in 284 respondents (86.9%). This result is consistent with Cleonara where all respondents had sugar levels of 126 mg/dl, which has been previously categorized as an uncontrolled level.³¹ Uncontrolled eating patterns combined with decreased physical activity make it difficult for diabetic patients to control blood sugar.³²

Table 4 shows that 197 patients with good health status (66.3%) received good family support, while 100 patients with good health status (33.7%) were not supported by their families. Furthermore, a total of 195 patients (65.7%) received instrumental support, while 277 (93.7%) received informational support and they all have a good health status. Table 5 shows the analysis results, which revealed that there is a significant relationship between family support and health status ($p < 0.001$; $\alpha = 0.05$; $r = 0.400$). The higher the family support, the higher the health status of the patients. Previous study also confirmed the positive correlation in type 2 diabetes mellitus patients, where 38.30% of the respondents that received family support were healthier. Therefore, the higher the support from the family, the better the health status.³³

Good appreciation support with good health status has the

highest percentage in this study, which accounted for 97.6% of the respondents (290). This finding is in line with Yusra that there is a relationship between the dimensions of appreciation and the quality of life of diabetic patients.³⁴ These results are also consistent with Friedman's theory that reward support is a form of effective family function, which improves the mental health of sick members.¹⁶ Patients receive recognition for their abilities and skills with the support of appraisals, and they help to improve their psychosocial status, motivation, enthusiasm, and self-esteem, which also improve their health status.

Good emotional support with good health status had the second-highest percentage of 96% (285 respondents). A similar study reported that the easiest type of support to obtain was emotional support, which can be in the form of acceptance by the family.³⁵ This support makes the patients more alert and able to manage the complications as well as their physical disorders.³⁶ This finding is in line with Nuraisyah that support has a relationship with the quality of life.³⁷

Health can be improved through family support, which helps to reduce the incidence of stress in diabetic patients. Medical and paramedics are expected to always advise families to be closer to the patient. They can assist in arranging a routine blood sugar check schedule, which serves as a motivation to improve their

Table 3. Distribution of health status domain.

Health Status Domain	Not good		Good	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
General health	145	44.3	182	55.7
Physical function	17	5.2	310	94.8
Physical role	48	14.7	279	85.3
Discomfort	31	9.5	296	90.5
The role of emotions	26	8	301	92
Mental health	4	1.2	323	98.8
Vitality	97	29.7	230	70.3
Social function	6	1.8	321	98.2

Table 4. Cross tabulation results between family support, types of family support and health status.

		Health Status			
		Not good	%	Good	%
Family Support	Less	22	73.3	100	33.7
	Good	8	26.7	197	66.3
Types of family support					
Emotional Support	Less	19	63.3	12	4
	Good	11	36.7	285	96
Appraisal Support	Less	19	63.3	7	2.4
	Good	11	36.7	290	97.6
Instrumental Support	Less	23	76.7	102	34.3
	Good	7	23.3	195	65.7
Informational Support	Less	21	70	20	6.7
	Good	9	30	277	93.7

Table 5. Results of analysis of the relationship between family support and health status using the pearson product moment test.

Variable	Correlation Coeff.	P-value
Family Support with Health Status in Diabetes Mellitus Patients	0.400**	0,000

health status.³⁶ This motivation can also be provided through informational support, and in this study, 277 respondents (93%) that received it had a good health status.

Instrumental support has the lowest percentage of 65.7% where 195 respondents that received it had a good health status. This kind of support can be provided through diet monitoring, medication adherence, exercise, as well as a routine control of blood sugar levels. Furthermore, a similar study stated that it can be provided by increasing the level of medication adherence and blood sugar stability.³⁷ The health status of patients with the support was better compared to others without it, and this result is consistent with Friedman's theory, which states that the instrumental dimension involves supporting each respondent's efforts to exercise, care efforts, paying for treatment, and providing food based on the required diet.¹⁶ Active instrumental support from the family affects the adherence to diabetes mellitus treatment.³⁸

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Previous studies showed that health increases along with the level of support provided by the family. They provide motivation to sick members and also work together to provide treatment. This study's findings are in accordance with Friedman that a good family support decreases the incidence of death and facilitates the recovery of intellectual function, physical, and emotional health.¹⁶ The limitations of the results of the study only looked at one external factor, namely family support, there was also a health service support factor, and family values. Health status is also largely determined by internal factors such as self-efficacy, demographic characteristics, and level of independence. It is suggested for the next research to involve more other variables that affect the health status of DM patients to get more comprehensive results.

Conclusions

Based on the results, 62.7% of the family caregivers in the working area of Malang City Public Health Center provided good family support for their member, while 90.8% of the diabetic patients had a good health status. This finding indicates that there is a positive correlation between family support and health status ($p < 0.001$; $\alpha = 0.05$; $r = 0, 400$).

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