

ORIGINAL ARTICLE

Family Support and Adherence to Control Among Type 2 Diabetes Mellitus: A Cross-sectional Study in the Primary Health Center Settings

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Introduction: In patients with type 2 diabetes mellitus (T2DM) it is important to carry out the four pillars of DM management including routine control, in this case family support is important to increase self-awareness. This study aims to analyze the relationship between family support and adherence to routine control in patients with T2DM. **Methods:** This research used cross sectional design. Respondents were selected from five primary health centers with the highest number of T2DM cases in Surabaya, Indonesia with the total 102 respondents using proportional random sampling techniques. Data were collected using family support questionnaire, questionnaire for frequency of routine control to primary health center in T2DM patients. Furthermore, the data were analyzed using Chi Square test with significance level < 0.05 . **Results:** The result showed that 81 respondents were female sex, aged 46-55 years and married. There was a significant correlation between family support and adherence to routine control ($p < 0.001$). **Conclusion:** The higher the level of family support affects the adherence to routine control of T2DM patients. Family involvement in T2DM management is very important so that primary health centers can involve families in monitoring and caring for T2DM patients.

Keywords: Diabetes; Health Care; Family Support; Public Health**Corresponding Author:**

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INTRODUCTION

Currently diabetes mellitus type 2 (T2DM) is a health problem that is often complained of by people in the world because the pattern of occurrence has increased. T2DM was estimated that it would increase by 48% to 629 million by 2024. Based on world diabetes statistics, Indonesia is ranked sixth with a total of 10.3 million T2DM sufferers (1). T2DM entered the 10th most number of diseases during 2017 in Surabaya (2). Basic Health Research (Risesdas) Ministry of Health Republic of Indonesia (2017) states that 48% of the average person is diagnosed with T2DM in the age range of 35-44 years (3).

Based on the results of a preliminary study, it was known that the number of men and women with

T2DM was 2.195 from January to March 2018, spread in five primary health centers with the highest number of T2DM in Surabaya. This number is spread in the following regions: West Surabaya (primary health center Asemrowo), Central Surabaya (primary health center Kedungdoro), North Surabaya (primary health center Tanah Kedinding), South Surabaya (primary health center Jagir) and East Surabaya (primary health center Klampis Ngasem health center).

T2DM treatment management must be done for life so that patients often experience boredom and non-adherence in the management of T2DM treatment often occur. The results of the study on 600 T2DM patients, showed that only 16.6% of patients were obedient in anti-diabetic treatment and blood sugar control, 23.3% of patients were obedient to the diet and 31.7% of patients with T2DM obedient to do physical exercise (4). The results of the research by Hamarno, Nurdiansyah, & Toyibah (2016) showed that adherence to control of T2DM patients can be in the form

of compliance with visiting health services, controlling blood sugar, doing sports or physical activities and planning appropriate meals according to calorie needs. Complications that often occur in T2DM patients per day, especially chronic complications can be prevented or the risk of occurrence is reduced by adherence to glycemic control (5).

The low public awareness of glycemic control makes it difficult to control blood glucose levels properly. Uncontrolled blood glucose levels cause various complications in other diseases. Research has shown that awareness of the complexity of community health workers to provide support in the management of DM (6). Several factors affect blood glucose levels, including age, duration of illness, medication adherence, dietary factors, and physical activity (7). Several studies have shown that elderly DM patients who were newly diagnosed with DM and received monotherapy showed better glycemic control. Patients with T2DM with low rates of medication adherence have poor glycemic control compared with those with high rates of medication adherence (8).

The results of the study (Anggina, LL, Hamzah, 2010) showed that one of the factors related to adherence to therapy is family support, because family support is a factor that has a significant contribution and as a reinforcing factor that greatly affects medication adherence in T2DM patients (9). The results of Nurleli's research (2016) in Banda Aceh Province Indonesia showed that the relationship between family support and medication adherence was moderately positive, meaning that the higher the value of family support, the higher adherence value of T2DM sufferers in undergoing treatment (10). The individual approach in tackling T2DM disease is more directed towards the family approach because the family is the main health service provider for individuals who suffer from chronic diseases such as T2DM (11,12). This study aims to analyze the relationship between family support and adherence to routine control in patients with T2DM.

MATERIALS AND METHODS

Study Design

The study design used was correlational descriptive research with cross sectional approach to measures the outcome and the exposures in the study participants at the same time in (13) this case the adherence to control and family support.

Sample and settings

The population used in this study were all patients with T2DM in the work area of the primary health

center with consist of Asemrowo, Kedunggoro, Kedinding Land, Klampis Ngasem and Jagir. Samples were obtained using Proportional Random Sampling techniques that is, done by taking subjects from each region determined in balance with the number of subjects in each region. Then the sample is taken randomly according to the criteria, with inclusion criteria: 1) T2DM sufferers who are willing to be the subject of research, 2) T2DM diagnosed patients for more than one year, 3) T2DM sufferers of productive age range between (35-55 years). While exclusion criteria include: 1) sufferers do not suffer from other diseases or T2DM complications such as coronary artery disease (coronary heart disease), diabetic gangrene, and cataracts. The sample in this study was 102 respondents consisting of 15 respondents from the working area of Primary health center Asemrowo, 14 respondents from the working area of the Kedunggoro Primary health center, 29 respondents from the working area of Tanah Kalikedinding Primary health center, 20 respondents from the working area of the Klampis Ngasem Primary health center, 24 respondents from the Primary health center working area Jagir. The data collection process was carried out on July-August 2018 in the work area of the Asemrowo, Kedunggoro, Tanah Kali Kedinding, Klampis Ngasem, Jagir.

Instruments

Data for independent variables include: family support, while the dependent variable data obtained from filling out a questionnaire about frequency of routine control. The instrument in this study used a demographic questionnaire and family support questionnaire which was adopted from the Nursalam questionnaire in 2005 and modified by Kurniawan (2016) (14). This questionnaire uses multiple choice questions, namely choosing answers with 4 criteria, starting from the option always to never (15). This family support questionnaire has 12 question items covering 3 family support domains. These domains include the domains of informational support, instrumental support, and emotional support and self-esteem. The scoring in this questionnaire uses four scales worth 1-4. Values of 1 (never), 2 (rarely), 3 (often) and 4 (always). The highest total score is 48 and the lowest is 12. The validity value of this instrument is 0.4821 and the reliability value is 0.950 (14).

The instrument for measuring adherence used secondary data from Asemrowo, Kedunggoro, Tanah Kali Kedinding, Klampis Ngasem and Jagir Health Centers in the form of a list of visits by T2DM patients and what activities were carried out during routine checks which included checking blood sugar levels, taking medication, planning a diet that was appropriate will be performed, and counseling about diabetes. Score 2 for the arrival

of patients 1 time a month or more consecutively for 3 months by checking blood sugar levels, taking medication, planning a diet to be carried out, and counseling about diabetes. Score 1 for the arrival of patients less than once a month or 3 times in 3 months but not consecutively.

Data Analysis

Analyze data univariate for descriptive data and with chi square statistical correlation test with significance level <0.05 used to compare the observed results with expected results in this case family support and adherence to routine control.

Ethical considerations

The ethics of this research was conducted at the Ethics Commission of the Faculty of Nursing, Airlangga University, Surabaya, with the number 960-KEPK.

RESULTS

Demographic Characteristics of Respondents

Table I shows the demographic characteristics of the respondents showing that most of the respondents aged 46-55 years were 93 respondents (91.2%), female as many as 81 respondents (79.4%).

Table I : Distribution of demographic characteristics of respondents regarding the relationship between family support and compliance with routine control at the Primary health centre

No	Demographic characteristics of respondents	Category	F	%
1	Age	35-45 years (late adulthood)	9	8.8
		46-55 years old (early elderly)	93	91.2
2	Gender	Man	21	20.6
		Woman	81	79.4
3	Education	non-formal educated	8	7.8
		basic education	66	64.7
		Middle education	26	25.5
		higher education	2	2.0
4	Profession	Does not work	59	57.8
		Laborer	8	7.8
		entrepreneur	25	24.5
		civil servant	2	2.0
		Seller	8	7.8
5	Long time suffering from Diabetes mellitus	1-5 years	65	63.7
		6-10 years	15	14.7
		>10 years	22	21.6
6	Marital status	Not married yet	0	0
		Marry	82	80.4
		Widow or widower	20	19.6
7	Number of family members	1-5 people	70	68.6
		>5 people	32	31.4
8	Family's highest education	basic education	17	16.7
		Middle education	51	50.0
		higher education	34	33.3
9	Family income	<3.5 million	91	89.2
		3.5 million	11	10.8

Based on the data above, the basic education level is mostly owned by the respondents, namely as many as 48 respondents (47.1%), most of the respondents do not work as many as 66 respondents (64.7%). The length of time respondents suffered from diabetes was mostly in the range of 1-5 years as many as 65 respondents (63.7%). A total of 82 respondents (80.4%) had marital status, namely married. The highest number of families living in one house is 1-5 people, as many as 70 respondents (68.6%), the highest education in the family is mostly secondary education as many as 51 respondents (50.0%) and the highest family income is <3.5 million by 91 respondents (89.2%).

Table II : Frequency of visits to primary health centre

Activity	1st month	2nd month	3rd month
Check blood sugar levels			
Counseling about Diabetes mellitus	93 respondents	85 respondents	92 respondents
Diet planning			
Medication taking			

The Activities of Routine Control at Primary Health Centre

Table II. Describes the activities of respondents when routine check-ups at the primary health centre carried out several activities including checking blood sugar, counseling about diabetes, planning diet and taking medication. In the first month as many as 93 respondents, in the second month as many as 85 respondents, in the third month as many as 92 respondents. Blood sugar checks carried out at the Primary health centre include fasting blood sugar checks and blood sugar levels 2 hours PP.

Family Support And Adherence to Routine Control in Patients with T2DM

Table III shows that the level of adherence with

routine control with good family support was obtained by 70 respondents (68.6%). Respondents who received good family support with a high level of control adherence were 67 respondents (65.7%) while the other 3 (2.9%) had a low level of control adherence (non-compliant). In contrast, the level of control compliance with moderate support was obtained by 32 respondents (31.4%). Respondents who received moderate family support with a high level of control adherence (obedient) were 10 respondents (9.8%) and 22 others (21.6%) had a low level of control adherence (non-compliant). The results of statistical tests using Chi Square through SPSS obtained a significant degree of $p = 0.000$ by setting the significance degree = 0.05. The p - value in this study <0.05 so it can be said that there is a significant relationship between family support and adherence to routine control.

DISCUSSION

In this study it was found that Family support is related with adherence to carrying out routine checks every 1 month to the Primary health centre. Most people with T2DM are obedient to carry out routine controls which include checking blood sugar levels, counseling about T2DM, regulating diet and taking medication. The higher the family support provided, the higher the level of adherence of T2DM patients to carry out routine control at the Primary health centre (16,17). The family plays an important supportive role during the healing and recovery of family members, so that they can achieve optimal health status (18–21). Family support is usually received by individuals through spontaneous social interactions in life with people who are around them, in this case are family members(22–24).

However, there are some respondents with moderate family support but good in adherence to routine control. This is because the client’s motivation is high to be able to recover from his illness. On the other hand, there are also respondents with good family support but not adhere (25,26). This happens because of a lack of knowledge of complications that can occur if they are not obedient in carrying out routine controls. Individuals who get good

Table III : Relationship between family support and compliance with routine control at the Primary health centre

Family support	Routine Control Compliance Level				Total	<i>p- value</i> (chi square)
	No adherence		adherence			
Medium family support	22	21.6%	10	9.8%	32	31.4%
Good family support	3	2.9%	67	65.7%	70	68.6%
Total	25	24.5%	77	75.5%	102	100%

family support will be more optimistic about living their lives and will be easy to solve the problems they are facing (27–29).

In this study, some respondents already know the importance of carrying out routine controls for their health. However, there are some respondents who do not carry out routine control, because they think their bodies feel healthy and they tend to control only when they feel their body has increased blood sugar levels, maybe this is due to a lack of awareness about the importance of routine control for sufferers T2DM. Green's theory of health behavior, adherence is a change in individual behavior from behavior that does not obey the rules to obedient behaviour (30). The success of the treatment program is supported by the level of individual adherence in participating and believing that one's health is very valuable (31–33). This is also supported by the majority of respondents with low level of education (34,35). There are several factors that influence the level of adherence include education level, illness and treatment, family support, economic level, social support, healthy behavior, health professional support (16,27,36).

The researcher realizes that there are several limitations in this study. The researcher used a cross-sectional research design for technical reasons for collecting data in the field with the primary health center position being far apart and the limitations of data collection personnel, so that our suggestions for further research can be developed to explain the causal relationship phenomenon in this case with a cohort design. Therefore, one cannot rule out the possibility that participants with T2DM may have changed their health behavior and acquired healthier habits. Other parameters for routine control for T2DM have not been widely established and included in a more objective assessment.

CONCLUSION

Family involvement in T2DM management is very important so that primary health centers can involve families in monitoring and caring for T2DM patients. Health centers can try to maintain adherence to routine control of T2DM sufferers with curative programs such as scheduling drug administration, monitoring patient drug consumption to family and inform to family and patient for scheduled periodic checks for free blood sugar at the primary health centers, considering that this disease is an ongoing disease and cannot be cured, only good control can be carried out so that more severe complications of T2DM do not occur.

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