Original Article

Family Support in Adherence to Oral Anti-Diabetic Medications among Patients with Type 2 Diabetes Mellitus

Dini Hilyah,[1] Kuswinarti,[2] Julia Ramadhanti[2]
[1]Faculty of Medicine, Universitas Padjadjaran, Indonesia
[2]Department of Biomedical Sciences, Faculty of Medicine Universitas Padjadjaran, Indonesia

Abstract

Background: Adherence to medication is an important aspect in the type 2 diabetes mellitus management. One of the factors that determines medication adherence is family support. This study aimed to analyze the relationship between family support and adherence to oral anti-diabetic medications in patients with type 2 diabetes mellitus.

Methods: This study was a quantitative, non-experimental correlational study with a cross-sectional method conducted in December 2022–January 2023 on patients with type 2 diabetes mellitus at the Pasirkaliki Public Health Center, Bandung City, Indonesia. The study used a minimal sampling method. Data collection analysis was performed using the SPSS program with the Chi-square test.

Results: In total, 50 respondents were included, of whom the majority (n=30; 60%) had good family support, whereas 17 (34%) had sufficient family support, and only 3 (6%) had poor family support. A good level of medication adherence was indicated by 39 (78%) respondents. There was a significant relationship between family support and adherence to oral anti-diabetic medications in type 2 diabetes mellitus (p=0.003).

Conclusion: A good relationship between family support and adherence to oral anti-diabetic medications is crucial in enhancing quality of life and wellness among patients with type 2 diabetes mellitus. Research related to other factors that affect adherence to oral anti-diabetic medications warrant further studies.

Keywords: Adherence, family support, oral anti-diabetic medications, type 2 diabetes mellitus

Introduction

Type 2 diabetes mellitus is a metabolic disease characterized by hyperglycemia, caused by two main things related to insulin; insulin resistance and beta cell dysfunction.[1] Approximately 90–95% of the total cases of diabetes mellitus are patients with type 2 diabetes mellitus.[2] The high number of people with diabetes mellitus, especially type 2 diabetes mellitus, is one of the biggest concerns in the world of health.[3] In some countries, especially developing countries, type 2 diabetes mellitus is becoming a serious problem at an alarming rate.[4,5] In Indonesia, the number of diabetes mellitus patients aged 15 years and over is estimated to reach 8.5% of the total population or around 14 million people.[6] Meanwhile, the number of diabetes mellitus cases in West Java, Indonesia in 2019 was 848,455 and increased to 1,012,622 in 2020. In Bandung City as the capital of West Java Province, there were 38,627 cases of diabetes mellitus in 2018 and 45,430 cases in 2019.[7] The type 2 diabetes mellitus patients require treatment intervention that has three main goals such as to relieve symptoms associated with hyperglycemia, to reduce the risk of complications from hyperglycemia, and to improve the quality of life.[8] Therefore, patient adherence in carrying out treatment is necessary.[9,10]

According to the Indonesian Society of Endocrinology (*Perkumpulan Endokrinologi Indonesia*, PERKENI) in 2021, the management of type 2 diabetes consists of 4 things, which are

education, medical nutrition therapy, physical exercise, and pharmacological interventions.[11] Pharmacological interventions that will be administered to type 2 diabetes patients are oral antidiabetic drugs (OAD), which function to maximize insulin action in the body so that later it will reduce blood sugar levels.[12] Patients need to take these medications regularly so that the patients' condition of hyperglycemia can be controlled.[13] To be able to maintain good glycemic control, patients must have a high level of adherence to following self-management regimens, one of which is in using drugs.[5,13] The high number of individuals with type 2 diabetes mellitus in the world indicates that adherence to using OAD is still low and needs to be improved, thus, the diabetes cases do not increase or the complications would not even occur.[14,15] The main cause of complications is the patient's non-adherence behavior.[16] Some of these behaviors are unhealthy eating habits, lack of physical activity, lack of regular blood glucose monitoring, and especially non-adherence to medication.[17] These non-adherent behaviors need to be understood and avoided so that we can improve one's adherence.

There are several influencing factors to improve the patient's adherence, including collaboration between health care providers, support from family members, the patient's lifestyle, and many others.[9,18] Family support is an important factor in increasing the success of treatment.[17] Family member is the closest person who can influence the patient's behavior, therefore, support from the family members can affect the patient's adherence to treatment.[17] With emotional support from the family members, patients can feel the care of the family and feel to be understood by those around them. The family members can also help calm the patient whose blood sugar rises and remind patients about diet and medication.[19] This study aimed to analyze the relationship between family support and the adherence to oral anti-diabetic medications of patients with type 2 diabetes mellitus in Bandung City, Indonesia. This research might provide insight

Table 1 Characteristics of Patients with Type 2 Diabetes Mellitus at the Pasarkaliki Public Health Center, Bandung, Indonesia

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	12	24
Female	38	76
Age (year)		
18–25	0	0
26–35	0	0
36–45	0	0
46–55	4	8
56–65	23	46
66–75	21	42
75–85	2	4
Level of education completed		
Elementary school	18	36
Junior high school	10	20
Senior high school	9	18
University	13	26
Occupational status		
Unemployed	43	86
Worker	7	14
Duration of type 2 diabetes mellitus		
<5 years	23	46
5 years or more	27	54
Relations with family		
Husband/wife	28	56
Parents	4	8
Child	31	62
Sibling	6	12

to health workers and contribute to improving OAD treatment adherence and reducing the number of complications in type 2 diabetes mellitus patients.

Methods

This study was a quantitative non-experimental correlational study with a cross-sectional method by distributing questionnaires directly to type 2 diabetes mellitus patients, who visited Pasirkaliki Public Health Center, Bandung City, Indonesia from December 2022 to January 2023. The ethical approval was obtained from the Health Research Ethics Committee, Faculty of Medicine, Universitas Padjadjaran, with the ethical clearance number 1258/UN6.KEP/EC/2022.

Type 2 diabetes mellitus patients aged ≥18 years who used anti-diabetic drugs for their treatment were included. After signing an informed consent form, patients were asked to fill in the questionnaire. The exclusion criteria were patients with type 2 diabetes mellitus who were in a state of unconsciousness or coma. The study used the minimal sampling method, calculated with a $Z\alpha$ of 1.64, $Z\beta$ of 0.84, and a correlation coefficient of 0.360,[20] resulting in a minimum sample size of 46 subjects.

The research instrument used in this study was a validated questionnaire consisting of four parts, including informed consent, demographics, family support (Cronbach's alpha 0.935), and medication adherence (Cronbach's alpha 0.880).

The family support part consisted of 12 questions related to emotional support, assessment support, instrumental support, and informational support. The answer to each question was in the form of 4 options, which were scored as strongly agree with score 4, agree with score 3, disagree with score 2, and strongly disagree with score 1, and were further categorized into good (76-100%), enough (56–75%), poor (<56%). The medication adherence part was sorted into 13 questions related to measuring patient adherence with the use of oral anti-diabetic drugs, which consisted of the ability to control themselves, disrupted antidiabetic medication schedules, effectiveness and side effects of oral anti-diabetic drugs, and other influencing factors with the answer to each question was in the form of 4 options, which were scored as Yes with score 1 and No with score 0, and were further categorized into good (>50%) and poor (<50%).

The data analysis was carried out using the SPSS statistical program. The relationship between the independent and dependent variables was analyzed using Chi-square.

Results

Out of 170 type 2 diabetes mellitus patients registered in the Pasirkaliki Public Health Center, Bandung City, 50 patients were

Table 2 Family Support and Adherence of Type 2 Diabetes Mellitus Treatment

Variable	Category	Frequency (n)	Percentage (%)
Family support	Good	30	60
	Enough	17	34
Adherence to using oral anti-diabetic drugs	Poor	3	6
	Good	39	78
	Poor	11	22

Table 3 Relationship between Family Support and Adherence to Oral Anti-diabetic Medications of Type 2 Diabetes Mellitus Treatment

Family Support	Adherence to Oral Anti-diabetic Drugs		Total n(%)	P-value*
	Good n (%)	Poor n (%)		
Good	26 (52)	4 (8)	30 (60)	0.003
Enough	13 (26)	4 (8)	17 (34)	
Poor	0 (0)	3 (6)	3 (6)	
Total	39 (78)	11 (22)	50 (100)	

Note: *Chi-Square test

included, with female predominantly prevalent (76%). Most patients in this study were in the age category of 56–65 years (46%), had a primary school level of education completed (36%) and were unemployed (86%). Most patients had type 2 diabetes mellitus for >5 years (54%) and had mother/father and child relations with their family (62%) (Table 1).

Most patients had good family support (60%) (Table 2). In addition, most patients also had a good adherence to using oral anti-diabetic drugs (78%) (Table 2). This study showed that there was a relationship between family support and adherence to oral anti-diabetic drugs (p=0.003) (Table 3).

Discussion

This study has shown that there is a relationship between family support and medication adherence of patients with type 2 diabetes mellitus. This result is in accordance with other findings which state that family support can affect treatment adherence.[21]

In this study, there are more female patients than male, in line with the prevalence of type 2 diabetes mellitus that is more in females. Furthermore, the prevalence of type 2 diabetes mellitus is higher in older patients in the age category of 45 years old and older. It is most likely because the estimated prevalence of diagnosed type 2 diabetes mellitus increases with age,[22] and age 45 years or older is an unmodifiable risk factor for type 2 diabetes mellitus.[23]

Most of the respondents have low education, are unemployed, live with their child, and have type 2 diabetes mellitus for more than 5 years. The level of education can affect the ability and knowledge of the patients to implement healthy life behaviors. Patients with higher education will have broader knowledge than those with lower levels of education. The higher the level of education, the greater the ability of the patients to maintain a healthy lifestyle. Patients with low education can behave well, which they gain from their experience undergoing the treatment process.[24]

Interestingly, the results show that the highest score on family support is an assessment of the emotional support aspect, followed by informational support, appraisal support, and instrumental support. Most of the respondents have received support from their children, and this emotional support is an essential part of family support because it involves trust, attention, listening, and being heard.[25] When the family is involved in every step of the care of a type 2 diabetes mellitus patient, the patient will feel more comfortable and safe, which will ultimately make them more willing to take medication and eat according to the doctor's instructions.[26] The appreciation from the family provides positive value and comes in the form of encouragement to improve dietary adherence for people with type 2 diabetes mellitus. The environment will make patients with type 2 diabetes mellitus feel appreciated and accepted so that the sufferer feels that he/she is still meaningful to the family.[25,26] Family support is very influential in the implementation of treatment programs for type 2 diabetes mellitus.[27] Family support and care from people closest to diabetes mellitus patients provide a sense of comfort and motivation to achieve recovery with an attitude of accepting the condition.[28]

The study also shows that the highest score on medication adherence is an assessment of the aspects of self-satisfaction when successfully taking medication, easy rules of use, and drugs that are always available, followed by aspects of effectiveness and side effects, self-control ability, and disruption of medication taking schedules.

Patients with supportive families are 8.17 times more compliant in taking medication.[24] Family support is an attitude, action, and acceptance of the family toward the family member who is sick. Diabetes mellitus requires lifelong treatment, therefore, support from others while undergoing treatment is necessary. Lack of family support can cause the patients to forget when to take medication. Moreover, family support encourages the patients to comply with taking medication. The willingness of family members to accompany the patients to visit the medical doctors has been indicated as a form of family support. In addition, the family environment can affect the patient's behavior, and family support has an impact on medication adherence. The greater the family support is given, the higher the level of medication adherence.[24]

Limitation of this study is the study location, leading to a small number of patients. The primary health center Pasirkaliki is close to the tertiary general hospital.

In conclusion, family support has a significant relationship with patient adherence in using oral anti-diabetic drugs. Family member needs to provide support to patients who are undergoing type 2 diabetes mellitus treatment; thus, the patient's adherence may increase and treatment can be successful as well as complication rates can be reduced.

It is recommended that healthcare providers help convey information to patients about the importance of family support in improving treatment adherence. In addition, this research can also provide information to the public about the influence of family support on patients to seek treatment.

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