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Research article

Diabetic Self-Management and Correlated Factors: A Cross-Sectional Study

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Abstract

Prevention of diabetes complications has an important role in decreasing mortality and morbidity in diabetes patients. Self-management in diabetic patients (DSM) is a recommended strategy to increase the quality of life in diabetes patients. Several factors are related to self-management in diabetic patients. This study aims to discover factors related to self-management in diabetic patients. This is a cross-sectional study performed on 42 diabetic patients. Respondents were given a Diabetes Knowledge Questionnaire (DKQ-24) and a self-management behavior questionnaire in Diabetes Mellitus (SMDM). Data was analyzed using SPSS version 26. This study had no significant relation between age and self-management (p = 0.987). There was also no statistically significant relationship between gender, education level, and knowledge level with p-value of 0.651, 0.559, and 0.558, respectively. Moreover, there was no correlation between participation in chronic disease management programs and self-management with p = 0.559. This study concluded no correlation between age, gender, education level, knowledge level, and participation in chronic disease management programs with self-management of diabetic patients.

INTRODUCTION

Diabetes is a non-communicable disease with a high prevalence of mortality and morbidity worldwide. Data from the International Diabetes Federation (IDF) in 2021 revealed that an estimation of 537 million people had diabetes, and the number kept increasing until 2045.[1] Age, sedentary lifestyle, family history, a high carbohydrate and fat diet, and a low protein diet were some factors causing an increase in diabetes incidence.[2] Those factors have an impact on insulin secretion in pancreatic ß cells, even causing disfunction of the cell through the inflammation process.[3] The most precarious behavior is untreated diabetes, which may cause several complications, such as diabetic kidney disease, retinopathy, neuropathy, cardiac arrest, and coronary heart disease.[4–6] To prevent complications, patients with diabetes mellitus need to perform routine blood glucose tests and change their lifestyles, such as avoiding high-cholesterol diets and regular exercise.[7] The American Diabetes Association (ADA) recommended that one of the complication prevention strategies be good self-management.[8] One study shows that DM patients have good self-management, but other studies show that DM patients have poor self-

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management,[9,10] so contributing factors need to be looked for.

Diabetic self-management (DSM) is defined as a strategy to minimize complications by increasing the ability of diabetic patients to perform healthy behaviors such as diet adjustment, exercise, and routine follow-up.[11] The DSM target was how diabetic patients can control their blood glucose levels comprehensively.[12] Several studies showed that good self-management can help increase the quality of life in diabetic patients.[13,14] Several studies also proved that poor self-management can affect blood glucose levels. Approximately 13% and 26% of new diabetic patients know that they have diabetes mellitus. [13] Another study from Mexico revealed that 12% of patients did not comply with all good self-management recommendations, 60% only kept up with one or two behaviors (blood glucose level monitoring, physical activity, and diet adjustment), and only 28% adhered to all self-management recommendations. [15,16]

This involved three primary factors: the personal factor (patients' knowledge, attitude, manner, and demography), the environmental factor (social support, history of admission, medical knowledge), and the behavioral factor (confidence). [11] Several studies showed that knowledge was significantly related to diabetic patients visits to health facilities,[17,18] however, other studies stated different conclusions. We found several studies that stated that knowledge was unrelated to blood glucose level control. [19,20] This study aims to discover factors related to the self-management of diabetes mellitus patients.

METHOD

This is an analytical study with a cross-sectional approach performed in Karangayu village, Semarang. The population of this study was 87 respondents. Respondents who are willing to take part in the study will be included. Respondents who did not fill out the questionnaire completely and are traveling will be excluded, so the sample size for this study was 42 respondents. Samples were taken using the total sampling technique. This study used two questionnaires, which were the Diabetes Knowledge Questionnaire (DKQ-24) and the self-management behavior in diabetes mellitus patients' questionnaire (SMDM). DKQ-24 evaluated respondents' knowledge from 24 question items. Scores ≥ 76 were interpreted as good knowledge, scores 56–75 were fair, and scores ≤ 55 were poor knowledge. The SMDM questionnaire had 29 question items, and the results were divided into three categories: poor (29–57), fair (58–86), and good (87–116). Validation and reliability tests were done on both questionnaires. All data was analyzed using SPSS version 26. This research was conducted after obtaining ethical clearance.

RESULTS

Our study was predominated by females (69%) and those aged ≥ 60 years old (54.8%). Twenty-six respondents (61.9%) did not join the program for the elderly. Poor knowledge was detected in 59.5% of patients, and poor self-management was concluded in 73.8% of patients. Complete respondent characteristics are shown in Table 1.

Data was analyzed using Pearson chi-square, and there was no statistically significant relation between knowledge level and diabetic patients' self-management ($p = 0.558$). Nineteen respondents had poor knowledge levels and self-management, while 10 respondents had a fair knowledge level but poor self-management. We also analyzed the correlation between age, education level, gender, and chronic disease management program (Prolanis) with diabetic patients' self-management. Of all these variables, there were no significant relationships.

Table 1
Respondent Characteristics

Indicators	f	%
Age		
<60-year-old	19	45.2
≥60-year-old	23	54.8
Gender		
Male	13	31
Female	29	69
Education level		
Uneducated	1	2.4
Elementary school	17	40.5
Junior high school	2	4.8
Senior high school	19	45.2
University graduate	3	7.1
Chronic Disease Management		
Participate	26	61.9
Did not participate	16	38.1
Knowledge Level		
Poor	25	59.5
Fair	15	35.7
Good	2	4.8
Diabetic Patients Self-Management		
Poor	31	73.8
Fair	11	26.2
Good	0	0

Table 2
Analysis results of factors correlated with diabetic self-management

Indicators	Self-management of diabetic patients			p
	Poor (%)	Fair (%)	Good (%)	
Age				
<60-year-old	14 (33.3)	5 (11.9)	0 (0)	0.987
≥60-year-old	17 (40.5)	6 (14.3)	0 (0)	
Gender				
Male	9 (21.4)	4 (9.5)	0 (0)	0.651
Female	22 (52.4)	7 (16.7)	0 (0)	
Education level				
Uneducated	1 (2.4)	0 (0)	0 (0)	
Elementary school	11 (26.2)	6 (14.3)	0 (0)	
Junior high school	1 (2.4)	1 (2.4)	0 (0)	0.559
Senior high school	15 (35.7)	4 (9.5)	0 (0)	
University graduate	3 (7.1)	0 (0)	0 (0)	
Chronic Disease Management				
Participate	20 (47.6)	6 (14.3)	0 (0)	0.559
Did not participate	11 (26.2)	5 (11.9)	0 (0)	
Knowledge Level				
Poor	19 (45.2)	6 (14.3)	0 (0)	0.558
Fair	10 (23.8)	5 (11.9)	0 (0)	
Good	2 (4.8)	0 (0)	0 (0)	

DISCUSSION

Our study showed that age, gender, education level, knowledge level, and participation in a chronic disease management program (prolanis) did not correlate with diabetic patients' self-management.

This result was similar to other studies, which concluded that there was no relation between gender and diabetic patients' self-management,[19,21] although the above data showed that more than 50% of female subjects had poor self-management. Several factors may play a role, including the fact that female patients know how to make

healthy food and are supported by good information and social support.[22]

Our result stated that education and knowledge level were not related to diabetic patients' self-management. This is contrary to Sahile's 2021 conclusion that there is a significant relationship between knowledge and diabetic patients' self-management. [23] This significant correlation was due to the role of health facilities in providing education, supervision, and care. Diabetic patients knew that uncontrolled health conditions led to new diseases.[24,25] Poor diabetic patients' self-management was also associated with misconceptions about diabetes therapy. There were still some populations in Indonesia who thought that diabetes medication would damage the kidneys, one of which was using insulin. There were also those who argued that consuming cold rice was better than hot ones. Others also said that consuming palm sugar did not increase blood glucose levels. These beliefs can cause an increase in the prevalence of diabetes and its complications.[26] Poor communication between health personnel and patients may worsen the situation. A study concluded that patients with a low level of knowledge refused to use insulin. Poor communication caused misunderstandings when receiving information. Improving health personnel's communication skills by considering patients' education level was a crucial factor. [27]

We also analyzed participation in prolanis activities with self-management and found no statistically significant relation. This result was in contrast to research conducted by Ahmad in 2017, which stated that prolanis activities could effectively control blood glucose, HbA1c, and total cholesterol levels in patients with type 2 diabetes mellitus. [28] The Prolanis programs were issued by the government with the goal of managing chronic diseases in first-level health facilities. One of the programs was Diabetes Mellitus Management. The activities carried out in the program aimed to increase knowledge about health and improve health status. [29] Diabetic patients' non-participation was due to a lack of awareness, the distance to health facilities, and their socioeconomic status. [30] Some patients also prefer to come to health facilities when they are feeling ill but not for routine check-ups, even though there are no complaints. This was a misunderstanding regarding diabetes management. [26]

The main limitation of this study is the small sample size. Moreover, we did not assess other factors, including social factors like sociodemography and family and health care supports. Other factors that need to be considered are the culture, including the belief that palm sugar consumption does not increase blood glucose levels. Culture and beliefs were very important influencing factors, although each region had a different culture.

CONCLUSION

This research concluded that there was no statistically significant relation between age, gender, education and knowledge levels, and participation in Prolanis with diabetic patients' self-management. However, the importance of diabetic patients' self-management was in diabetes complications prevention in order to reduce morbidity and mortality rates. Future research needs to investigate the role of cultural factors in affecting diabetic patients' self-management.

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CONFLICTS OF INTEREST

Neither of the authors has any conflicts of interest that would bias the findings presented here.

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