The Relationship between Participation in the Chronic Disease Management Program and Dietary Adherence of Diabetes Mellitus Patients

Case Study at Jemursari Empat Clinic Surabaya

Salma Mumtaz Almuntaha[1], Mardiana Mardiana [1]*, Safrina Oksidriyani[1]

[1]Program Studi Gizi, Fakultas Kedokteran, Universitas Negeri Semarang, Semarang, 50237, Indonesia
*mardiana.ikm@mail.unnes.ac.id

Abstract. Dietary compliance is crucial for managing diabetes mellitus. Diabetes prevalence is rising yearly, especially in Surabaya. The Indonesia Social Insurance Administration Organization established the Chronic Disease Management Program, but participant visits to primary healthcare remain low. Program participation is expected to prevent complications. This research aim to determine the relationship between active Chronic Disease Management Program participation and dietary compliance among diabetes mellitus patients at Jemursari Empat Surabaya Clinic. This cross-sectional study used simple random sampling to select 43 patients. Participation and PDAQ questionnaires measured dietary compliance. Data analysis employed the chi-square test. 58.1% of patients were active participants, while 74.4% showed high dietary compliance. Chi-square test results revealed a strong link between active program participation and dietary adherence ($p = 0.031$; PR = 3.704). There is a significant relationship between active Chronic Disease Management Program participation and dietary compliance among diabetes mellitus patients at Jemursari Empat Surabaya Clinic.

Keywords: Chronic Disease Management Program, dietary compliance, diabetes mellitus

1 Introduction

One of the health problems that is currently a concern worldwide is non-communicable diseases (NCDs). The World Health Organization (WHO) reported that non-communicable diseases, including diabetes, accounted for seven of the top 10 causes of death in 2019. Diabetes Melitus (DM) is a disease in which the pancreas does not produce enough insulin or the body cannot utilize the insulin produced effectively [1]. DM is a health threat because it is known as a silent and deadly disease that often goes unnoticed by patients and causes complications once recognized. The International Diabetes Federation (IDF) predicts that DM will impact approximately 537 million adults in 2021, with a projected increase to 700 million by 2045 [2].

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In 2019, Indonesia ranked 7th out of 10 countries with the highest prevalence of DM, with 10 million people with DM [3]. Indonesia Basic Health Research (Riskesdas) indicates that DM in East Java rises with age or diagnosis, reaching 2.6% [4]. Due to rising DM rates in urban and rural areas, DM morbidity and mortality may increase. According to Syam's research, type 2 DM prevalence is higher in urban areas than in rural areas [5].

According to the Surabaya City Health Department, the number of people with DM in Surabaya increased from 94,076 to 94,624 between 2019 and 2020. In the South Surabaya area, the highest number of people with DM throughout 2020 was in Sawahan District, with 6,525 people. Although we cannot cure DM, we can control it to avoid high blood sugar levels and their complications. Dietary adherence is one of the primary keys to preventing elevated blood sugar levels in people with DM. However, this remains a challenge because long-term changes in consumption habits and food preparation are often required [6]. The government is also trying to reduce the increase in DM rates, primarily through the Indonesian National Health Insurance Card (JKN KIS) by the Health Social Insurance Administration Organization (BPJS Kesehatan).

The Chronic Disease Management Program (Prolanis) is an integrated program between BPJS Kesehatan and primary healthcare. This program aims to maintain the health of healthy participants and prevent the deterioration of sick participants through support and prevention, especially targeting DM and hypertension participants. We expect the introduction of Prolanis to motivate participants with chronic diseases, particularly those with DM, to attain an optimal quality of life. The hope is to provide medical services that help maintain stable blood sugar levels. Glycemic control management guides this activity, encompassing education, medical nutrition therapy (MNT), exercise, and pharmacotherapy [7].

DM patients' compliance influences this program's success in carrying out treatment. The measure of Prolanis success is to ensure that 75% of Prolanis participants attend primary care visits [7]. Jemursari Empat Surabaya Clinic has been registered as a primary care affiliated with BPJS Kesehatan since 2014, with the second-highest number of DM patients at 129. As a primary care provider, Jemursari Empat Surabaya Clinic must implement Prolanis, which BPJS Kesehatan initiated. The participation of DM patients registered with Prolanis amounted to 66 people. At the Jemursari Empat Surabaya Clinic, prolanis activities include medical consultation, health education, reminders via chat or telephone, club activities (gymnastics), health monitoring, drug services, and home visits [8].

Aspects of compliance with the DM diet are the right amount, type, and schedule (3J). Interviews conducted during the initial observation of patients with type 2 DM at the Jemusari Empat Surabaya Clinic revealed that 6 out of 10 patients were still not adhering to the essential aspects of DM diet compliance, precisely the correct type and amount. Factors that influence a person's non-adherence to DM dietary compliance are knowledge, perceptions, self-motivation, family support, and participation in nutrition counseling [9].

The background and scope of the problem above indicate the need for more research on the connection between patients with DM at the Jemursari Empat Surabaya Clinic's active participation in Prolanis activities and their dietary compliance.

2 Method

We conducted the study on Prolanis participants with DM at Jemursari Empat Surabaya Clinic, collecting data from January to February 2024. The Semarang State University Ethics Commission issued Ethical Clearance No. 131/KEPK.FK/KLE/2024, which guided the conduct of the research. This type of research is observational-analytic, with a cross-sectional approach. In this study, the independent variable is the level of activeness in participating in Prolanis activities, and the dependent variable is the level of dietary compliance of DM patients. We used a simple random sampling technique to sample a total of 43 patients. The inclusion criteria for this study were age over 25 years and registration as a member of Prolanis. The study also excludes patients with hearing loss, using data collection techniques such as questionnaires and interviews.

We measured the level of dietary adherence, specifically for patients with type 2 diabetes mellitus, using the PDAQ (Perceived Dietary Adherence Questionaire) questionnaire. On the other hand, a questionnaire measuring patient participation in Prolanis activities assessed the level of Prolanis activeness. We used both univariate and bivariate data analysis. We used the chi-square test to test the hypothesis and determine the relationship between the independent and dependent variables. We used the SPSS 23 statistical application to process the data analysis.

3 Result and Discussion

The results of the univariate analysis showed that the age range of respondents was 46 years to over 65 years, with the majority aged over 65 years, as many as 20 patients (46.5%). In this study, most respondents were female patients, accounting for as many as 26 patients (60.5%). According to their education level, most respondents were college graduates, with as many as 24 patients (55.8). In implementing Prolanis activities, most respondents had an active level, with an active category of as many as 25 patients (58.1%). In addition, based on respondents' dietary compliance level, 32 patients (74.4%) had high dietary compliance.

Table 1. Frequency distribution of respondent characteristics

Respondent Characteristics		Frequency (n)	Percentage (%)
Age	46-55 years old	14	32,6
	56-65 years old	9	20,9
	>65 years old	20	46,5
	Total	43	100
Gender	Male	17	39,5
	Female	26	60,5
	Total	43	100
Level of education	No attending school	2	4,7
	Primary school	2	4,7
	Middle School	2	4,7
	High school	13	30,2
	University	24	55,8

	Total	43	100
Level of participation	Not actively participated	18	41,9
	Actively participated	25	58,1
	Total	43	100
Dietary adherence	Low	11	25,6
	High	32	74,4
	Total	43	100

Table 2 shows that 88.0% of patients in the active category following Prolanis activities have a high level of dietary compliance, while 12.0% have a low level of dietary compliance. It is then known that 55.6% of patients who do not actively participate in Prolanis activities have a high level of dietary compliance, and 44.4% have a low level of dietary compliance. The results of the bivariate test using the chi-square test showed a p-value of 0.031 <0.05, so it can be concluded that there is a significant relationship between activeness in participating in Prolanis activities and dietary compliance of patients with diabetes mellitus. The calculation of the PR value = 3.704 shows that patients with inactivity in Prolanis activities are likely to have a low level of dietary compliance of 3.709, or 3 times greater than patients who are active in participating in Prolanis activities.

Prolanis is one of the programs carried out in collaboration with BPJS Kesehatan to guide people with chronic diseases [8]. Participants in the Prolanis program are actively involved in the clinic's monthly routine activities. Attendance, extension, and participation are indicators of active involvement in an activity. Through active involvement in these support group activities, participants receive social support from fellow participants, thus increasing their level of participation [10]. By utilizing the Prolanis, they can monitor their health regularly and help prevent more severe complications. This result is in line with research [11], which shows that the activeness of the elderly affects the stability of blood sugar levels and can help the elderly with DM control their health status.

Dietary adherence is one way to help maintain stable blood sugar levels. Dietary compliance is adherence to a predetermined meal schedule, including regular eating habits and avoiding eating off schedule [12]. Regular timing of main meals can help the digestion and absorption of carbohydrates more stably and slowly, increasing insulin sensitivity and body metabolism [13]. Puspita and Rakhma revealed a significant correlation between Prolanis membership and the dietary compliance of diabetic patients at the Gilingan Surakarta Health Center, with a p-value ranging from 0.002 to 0.005 [14]. The study by Muchsina et al also found a significant relationship between the Prolanis program's activities, such as medical consultation, group education, SMS reminders, and health status monitoring, and the dietary compliance of DM patients at Puskesmas Rejosari Pekanbaru City in 2020 [15].

Table 2. Relationship between active participation in Prolanis and dietary adherence

Level of participation	Dietary Adherence				Total		*p-value*	*Prevalence Ratio* (PR)
	Low		High					
	N	%	n	%	N	%		

Not actively participated	8	44,4	10	55,6	18	100	0,031	3,704
Actively participated	3	12,0	22	88,0	25	100		

4 Conclusion

The research results show a significant relationship between active participation in Prolanis activities and the dietary compliance of patients with DM at the Jemursari Empat Surabaya Clinic. Suggestions indicate that Prolanis patients with DM should improve and maintain good dietary compliance. Additionally, we expect the clinic to enhance the implementation and service of Prolanis while also providing patients with high motivation and support to participate actively in Prolanis. We anticipate that future researchers will investigate other variables or factors associated with Prolanis activity or dietary compliance.

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