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RESEARCH

RELATIONSHIP BETWEEN DIETARY PATTERN AND BLOOD GLUCOSE LEVELS IN PATIENTS WITH DIABETES MELLITUS IN WONOAYU VILLAGE

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ABSTRACT

Diabetes mellitus (DM) is a chronic metabolic condition characterized by elevated blood glucose levels caused by problems with insulin secretion and function. Proper nutritional management is a key component in controlling blood glucose. Stable blood sugar levels can be maintained with a nutritious diet and avoiding unhealthy foods. This study used a cross-sectional methodology and a descriptive analytical strategy. Thirty-four people with diabetes mellitus in Wonoayu Village were sampled using a purposive sampling technique. Data were collected through a 24-hour food recall form and blood glucose measurements using a glucometer. Data were analyzed using the Chi-Square test. The study findings showed a strong correlation between dietary habits and blood glucose levels (p = 0.000). Compared with patients with poor dietary habits, individuals with good dietary habits tended to have normal blood glucose levels. This study demonstrates the importance of dietary habits in regulating blood glucose levels, including the type, amount, and timing of meals. To improve adherence to the recommended diet for people with diabetes mellitus, education about healthy eating is crucial

Keywords : Diabetes Mellitus, Dietary Pattern, Blood Glucose

INTRODUCTION

Hyperglycemia due to limited pancreatic insulin production or low cell sensitivity to the hormone is a hallmark of diabetes mellitus (DM). This disease can result from various problems associated with a significant risk of death and mortality. The World Health Organization (WHO) defines diabetes mellitus as a condition of chronic hyperglycemia resulting from a combination of environmental and genetic factors. This condition is characterized by persistent hyperglycemia that can be controlled but cannot be cured (Fitriana & Rachmawati, 2021).

By 2022, diabetes mellitus will be highly prevalent in Indonesia, according to the International Diabetes Federation (IDF). This is reinforced by the fact that 463 million people worldwide suffer from diabetes, representing an international case rate of 9.3%. However, the fact that 50.1% of diabetes sufferers do not receive treatment is a dangerous situation, including 19.47 million people in Indonesia, placing this country in the fifth highest prevalence. As many as 44% of adults are undiagnosed, and 6.7 million people die annually from diabetes complications. In East Java, there are 929,535 recorded DM sufferers (East Java Health Office, 2022), while in Wonoayu Village, there are 50 sufferers from 6 neighborhood units (RT), according to data from the Wonoayu Community Health Center (Puskesmas) in 2024.

DM is divided into four types: type 1, type 2, gestational diabetes, and other types with different characteristics and causes. Type 1 diabetes is usually influenced by age, environmental factors, and genetics, while type 2 diabetes is more commonly caused by excess body mass, lack of exercise, an unhealthy diet, and advanced age. In type 2, the pancreas still produces insulin, but its effectiveness decreases, resulting in increased blood glucose levels (Mardiyanti & Kurniawati, 2023).

Diet plays a crucial role in managing DM. Diet plays a crucial role in managing diabetes. A regular and balanced diet can help maintain stable blood sugar levels, prevent complications, and support overall health. This includes mealtimes (breakfast, lunch, dinner, and healthy snacks), food choices, and consumption amounts. Carbohydrates, proteins, fats, and micronutrients such as magnesium, chromium,

vitamin C, and vitamin D must be considered, especially in those with type 2 diabetes, as they can affect blood glucose regulation. (Istiqomah & Mally, 2024; Anasril et al., 2024; Anastasya et al., 2024). Based on this background, the aim of this study was to examine the relationship between blood glucose levels and dietary habits in diabetes mellitus patients in Wonoayu Village in 2025.

RESEARCH METHODS

This study used a descriptive analytical design with a cross-sectional approach to analyze the relationship between dietary patterns and blood glucose levels in people with diabetes mellitus in Wonoayu Village. The population consisted of 50 patients, with a purposively selected sample of 34 individuals. The independent variable was dietary patterns, and the dependent variable was blood glucose levels. Data were collected through a 24-hour Food Recall form and blood glucose measurements using a glucometer. Data analysis was performed using the chi-square test to examine the relationship between the two variables. This research also adheres to ethical principles, including informed consent, anonymity, confidentiality, and protection of respondents.

RESULT

Table 1
Respondent Characteristics by Age in Wonoayu Village in 2025

Variable	f	%
Age		
40- 50 Years	5	15%
51 – 60 Years	5	15%
61-70 Years	24	71%
Gender		
Male	12	35%
Female	22	65%
Education		
Elementary School	6	18%
Junior High School	13	38%
Senior High School	14	41%
Bachelor's Degree	1	3%
Occupation		
Businessman	7	21 %
Self-employed	8	24%
Housewife	18	53%
Civil Servant	1	3%
Duration of Diabetes		
< 1 years	7	21%
>1 years	27	79%

Source: (Primary Data, 2025)

Based on the data above, the general data of respondents can be described, namely that those aged 61-70 years were the largest respondents with a total of 24 people (71%), with the highest education being high school for 14 people (41%), occupations dominated by housewives for 18 people (53%), and duration of suffering > 1 year for 27 people (79%).

Table 2
Distribution of Dietary Patterns among Diabetes Mellitus Patients in Wonoayu Village in 2025.

Dietary Pattern	Frequency	Percentage %
Good	21	61,8
Poor	13	38,2
Total	34	100

Source : (Primary Data, 2025)

The results of a study on the eating habits of diabetes mellitus sufferers in Wonoayu Village, involving 34 respondents, are shown in the table above. Thirteen (38.2%) of the total, while the majority (21 respondents) had excellent eating habits, several respondents had poor eating habits.

Table 3
Distribution of eating habits and blood glucose levels in 2025 diabetes mellitus patients in Wonoayu Village

Blood glucose level	Frequency	Percentage %
Normal	19	55,9
Tinggi	15	44,1
Total	34	100

Source : Primary Data 2025

Fasting blood glucose levels were measured in 19 respondents (55.9%) and 15 respondents (44.1%) still had high blood glucose levels.

Table 4
Distribution of eating habits and blood glucose levels in 2025 diabetes mellitus patients in Wonoayu Village.

		Dietary Patterns					
		Good		Poor		total	
		N	%	N	%	N	%
GDP	Good	17	47,2%	2	5,6%	19	52,8%
	Poor	4	11,1%	11	30,6%	15	41,7%
Total		21	58,3%	13	36,1%	34	100,0%

Source: Primary Data, 2025

Based on the test results, the significance value of Pearson Chi-Square (Asymp. Sig 2-sided) is 0.000, which is smaller than $\alpha = 0.05$. Therefore, it can be said that blood glucose levels and diet have a substantial relationship.

Descriptively, participants who emphasized a "good" diet were more likely to have "very good" blood glucose readings than those who emphasized a "poor" diet.

DISCUSSION

According to research findings, 13 respondents, or 38.2%, exhibited unhealthy eating habits, characterized by excessive consumption of sweet foods, carbohydrates, and fast food. This eating pattern has been shown to contribute to increased blood glucose levels, as emphasized by Susanti (2018) and Maria (2024), who emphasized the importance of implementing the 3J principle (type, quantity, schedule) to maintain glucose stability. The low nutritional awareness of the Wonoayu Village community indicates the need for ongoing education so that diabetes mellitus sufferers can maintain a balanced diet.

Based on the results, 15 respondents (44.1%) had high blood glucose levels. This condition indicates that diabetes control is still suboptimal. Influencing factors include diet, medication adherence, physical activity, family support, and stress management. Therefore, health education, regular blood sugar checks, and environmental support are essential in diabetes management.

Blood glucose levels and diet correlated significantly, according to a chi-square analysis ($p = 0.000$). Although other factors such as age, stress, and medication adherence also play a role, diet remains the primary factor in maintaining stable blood glucose levels. These findings support research by Fitriana & Rachmawati (2021) and Maria (2024), which states that a balanced diet that adheres to nutritional principles can help prevent diabetes complications. Therefore, simple but consistent changes in diet, accompanied by support from family and healthcare professionals, can significantly impact the quality of life of people with diabetes mellitus.

CONCLUSSION

The findings of the data processing research form the basis for the following conclusions in this study:

1. The dietary patterns of people with diabetes mellitus in Wonoayu Village are mostly in the unhealthy category.
2. Blood glucose levels of people with diabetes mellitus in Wonoayu Village are predominantly in the unhealthy or uncontrolled category.
3. Diet and blood glucose levels are significantly correlated..

SUGGESTIONS

1. For Respondents

   Diabetes sufferers are advised to maintain a balanced and healthy diet, avoid foods high in sugar and simple carbohydrates, and exercise regularly. Furthermore, respondents are advised to have regular blood glucose tests.
2. For the Research Site

   It is hoped that medical professionals in Wonoayu Village will provide education on the causal factors that can impact blood glucose levels in diabetes sufferers.
3. For Nursing

   Nursing cadres are expected to be able to enhance their role as counselors and participate in community counselling. They can participate in health center activities such as integrated health posts and elderly posts.
4. For Researchers

   It is hoped that researchers can increase public knowledge and understanding of appropriate dietary patterns for people with diabetes mellitus and disseminate the results of this research to promote a healthy lifestyle.

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