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Research Article

The Relationship Between Fast Food Consumpition and Blood Glucose Instability in Type 2 Diabetes Melitus Prolanis Patients at Purbaratu Public Health Center

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ABSTRACT

Diabetes Mellitus (DM) is a chronic disease characterized by increased blood glucose levels due to metabolic disorders. One of the factors that may affect blood glucose instability in patients with type 2 DM is dietary patterns, particularly the consumption of fast food, which is generally high in fat, sugar, and salt. This study aims to determine the relationship between fast food consumption and blood glucose instability among patients with type 2 DM enrolled in the Prolanis program at Purbaratu Public Health Center. This research employed an observational analytic design with a cross-sectional approach. The study population consisted of all type 2 DM Prolanis patients, with a total of 57 respondents selected using purposive sampling. The research instruments included a questionnaire on fast food consumption patterns and blood glucose test results. The findings revealed a significant relationship between fast food consumption and blood glucose instability in type 2 DM Prolanis patients at Purbaratu Public Health Center (p-value = 0.000 < α = 0.05). In conclusion, a higher level of fast food consumption is associated with a higher risk of blood glucose instability among patients with type 2 DM. This study is expected to serve as a reference for healthcare providers in delivering nutritional education and encouraging type 2 DM patients to reduce fast food consumption.

INTRODUCTION

Diabetes Mellitus is a metabolic disorder that varies clinically and genetically, characterized by decreased glucose tolerance in its manifestations (Dianti et al., 2025). Diabetes mellitus is generally caused by uncontrolled

food consumption or as a side effect of certain medications. Diabetes mellitus is caused by insufficient insulin production by the pancreas to neutralize blood sugar in the body. As a result, the pancreas cannot produce enough insulin to neutralize blood sugar. (Suryati, 2021).

The International Diabetes Federation said that there are around 589 million adults in the world who suffer from DM, and it is estimated that there will be 853 million DM sufferers worldwide by 2050. In Indonesia in 2024, there were 19.5 million people suffering from diabetes mellitus and it is predicted that there will be an increase of 28.6 million people in 2045 (Gan, n.d.)

Daily food intake and lifestyle are the main causes of the rapid increase in the incidence of diabetes mellitus in developing countries. Energy intake and macronutrient composition are thought to play a major role in the instability of blood sugar in patients with type 2 diabetes mellitus(Sami, W. et al., 2015).

Energy intake beyond the required level can lead to an increase in fat mass and changes in body composition, which negatively impacts glucose metabolism, particularly oxidation, glucose storage, and insulin secretion. Blood glucose levels are primarily influenced by dietary carbohydrates, but uncontrolled consumption of protein, fat, and fiber can also affect blood glucose levels. High intake of fast food, carbonated drinks, red meat, sweet foods, and excessive consumption of white rice are also thought to contribute to an increased risk of insulin resistance in type 2 diabetes mellitus. (Arya et al., 2023).

Based on the description above, the author has conducted research on the relationship between fast food intake and blood sugar instability in type 2 diabetes mellitus patients. So that type 2 diabetes mellitus patients can pay attention to healthy intake and eating patterns to improve the quality of health and reduce the risk of various diseases, especially complications due to diabetes mellitus.

METHOD

This study is a quantitative study using a descriptive correlational approach. It aims to determine the relationship between fast food consumption and unstable blood sugar levels in patients with type II diabetes mellitus.

The method used is cross-sectional, meaning data is collected at a single point in time without intervention or treatment of variables.

RESULTS

Research characteristics

Table 1. Frequency distribution of demographic data by age

No	Age	F	%
1.	26-35	3	5,3
2.	35-45	26	45,6
3.	>46	28	49,1
	Total	57	100

Source: Primary Data 2025

Based on Table 1, the frequency distribution of Pronalis Type 2 Diabetes Mellitus patients in the Purbaratu Health Center working area in 2025 shows that most respondents were in the age group >46 years, namely 28 people (49.1%), followed by the 35–45 years age group as many as 26 people (45.6%), and the 26–35 years age group as many as 3 people (5.3%).

Table 2. Frequency Distribution of Demographic Data by Gender in Prolanis Type 2 Diabetes Mellitus Patients

No	Gender	Frequency	%
1.	Male	9	15,8
2.	Female	48	84,2
	Total	57	100

Source: Primary Data 2025

Based on Table 2, the respondents were predominantly female, at 48 (84.2%), while 9 (15.8%) were male. The high number of female sufferers aligns with previous research indicating that women have a higher risk of developing Type 2 Diabetes Mellitus after menopause due to hormonal

changes that affect glucose metabolism (WHO, 2022). Furthermore, women who work as housewives often have limited physical activity at home, which can increase the risk of developing Diabetes Mellitus.

Univariate Analysis

Table 3. Frequency Distribution of Knowledge Level of Prolanis Type 2 Diabetes Mellitus Patients

No	Level of Knowledge	F	%
1.	Good	42	73,7
2.	Pretty Good	15	36,3
	Total	57	100

Source: Primary Data 2025

Based on Table 3, it is known that the majority of respondents have a level of knowledge in the good category, namely 42 people (73.7%), followed by the sufficient category of 15 people (26.3%), and no respondents have a poor level of knowledge.

Table 4. Descriptive Min-Max

Variabel	N	Mean	Min-Max	Modus	Standar Deviasi
Fast Food	57	1.26	1-2	1	444
Instability of Blood Glucose Level	57	1.14	1-2	1	350

Table 4, illustrates the descriptive distribution of the variables. The average fast food consumption score for respondents was 1.26, with a minimum score of 1 and a maximum score of 2, a mode of 1, and a standard deviation of 0.444. Meanwhile, the average blood glucose instability score was 1.14, with a minimum score of 1 and a maximum score of 2, a mode of 1, and a standard deviation of 0.350. These data indicate that most respondents had low to moderate fast food consumption and tended to experience relatively stable blood sugar levels.

Table 5. The Relationship Between Fast Food Consumption and Blood Sugar Instability in Type 2 Diabetes Mellitus Patients

		Fast Food				
		GDS	GDP	Total	X^2	p
Fast Food	Good	34	8	42	3.324 [a]	0.001
	%	81,0	19	100		
	Pretty	15	0	15		
	%	100	0	100		
Total	f	48	8	57		
	%	86	14	100		

Based on Table 5, it shows the results of the analysis of the relationship between fast food consumption and unstable blood sugar levels in Pronalis Type 2 Diabetes Mellitus patients in the Purbaratu Community Health Center work area in 2025.

DISCUSSION

Overview of Fast Food Consumption in DM Patients

The results of the study showed a significant relationship between fast food consumption and unstable blood sugar levels in Pronalis Type 2 Diabetes Mellitus patients in the Purbaratu Community Health Center work area. This is indicated by the Chi-Square test value with $X^2 = 3.324$ and a significance value of $p = 0.001$ ($p < 0.05$), which means the alternative hypothesis (Ha) is accepted. Thus, fast food consumption is proven to affect the stability of blood sugar levels in Type 2 DM patients. Respondents with fast food consumption in the good category, the majority (81.0%) have stable blood sugar levels (GDS), but there are still 19.0% who experience instability (GDP). Interestingly, in the group of respondents with fast food consumption in the sufficient category, all (100%) have stable blood sugar levels.

This indicates that the more frequently a person consumes fast food, the higher the risk of fluctuating blood sugar levels. Fast food is generally high in saturated fat, simple carbohydrates, salt, and low in fiber. These contents can accelerate the rise in blood glucose levels and worsen insulin resistance in people with Type 2 Diabetes (Alianatasya & Khoiroh, 2020)

Excessive consumption of trans fats and sugar also triggers systemic inflammation associated with decreased insulin sensitivity (Liu et al., 2020). Furthermore, a high-energy diet from fast food will increase body mass index (BMI), which is a major risk factor for unstable blood sugar levels. The results of this study align with those of (Taha et al., 2025) who found that the frequency of fast food consumption was significantly associated with blood sugar levels in Type 2 DM patients at the Karanganyar Community Health Center, where respondents with a habit of eating fast food ≥3 times/week had a 2.5-fold greater risk of developing hyperglycemia. Similarly, research by (Alfora Denisa, 2023) showed that unhealthy dietary patterns, including fast food, significantly increase the risk of diabetes complications. Therefore, controlling fast food consumption is crucial in the dietary management of Type 2 DM patients. Nutrition education and lifestyle changes are key factors in preventing unstable blood sugar levels and long-term complications.

Identifying Blood Sugar Levels in Type 2 Diabetes Patients

1. Random Blood Sugar
   The majority of respondents had FBS levels ≥ 200 mg/dL, indicating uncontrolled hyperglycemia. Only a small proportion of respondents with FBS < 200 mg/dL demonstrated improved blood sugar control.
2. Fasting Blood Sugar
   Most respondents had FBS values ≥ 126 mg/dL, which meets the diagnostic criteria for Type 2 Diabetes. Only a few respondents had FBS < 126 mg/dL, indicating more stable metabolic control.
3. Average Blood Sugar Levels
   The average FBS and FBS levels of respondents indicate that disease management is still suboptimal, requiring further education and monitoring.

The Relationship Between Fast Food Consumption and Instability of Blood Sugar Levels in Prolanis Type 2 Diabetes Mellitus Patients

The results of the study showed a significant relationship between fast food consumption and unstable blood sugar levels in Pronalis Type 2 Diabetes Mellitus patients in the Purbaratu Community Health Center work area. This is indicated by the Chi-Square test value with $X^2 = 3.324$ and a significance value of $p = 0.001$ ($p < 0.05$), which means the alternative hypothesis (Ha) is accepted. Thus, fast food consumption is proven to affect the stability of blood sugar levels in Type 2 DM patients. Respondents with fast food consumption in the good category, the majority (81.0%) have stable blood sugar levels (GDS), but there are still 19.0% who experience instability (GDP). Interestingly, in the group of respondents with fast food consumption in the sufficient category, all (100%) have stable blood sugar levels.

This indicates that the more frequently a person consumes fast food, the higher the risk of fluctuating blood sugar levels. Fast food is generally high in saturated fat, simple carbohydrates, salt, and low in fiber. These contents can accelerate the rise in blood glucose levels and worsen insulin resistance in people with Type 2 Diabetes (Kusuma et al., 2022)

Excessive consumption of trans fats and sugar also triggers systemic inflammation associated with decreased insulin sensitivity (Ma et al., 2022). Furthermore, a high-energy diet from fast food will increase body mass index (BMI), which is a major risk factor for unstable blood sugar levels. The results of this study align with those of (Sami, W. et al., 2015) who found that the frequency of fast food consumption was significantly associated with blood sugar levels in Type 2 DM patients at the Karanganyar Community Health Center, where respondents with a habit of eating fast food ≥3 times/week had a 2.5-fold greater risk of developing hyperglycemia.

Similarly, research by (Widianingtyas et al., 2021) showed that unhealthy dietary patterns, including fast food, significantly increase the risk of diabetes complications. Therefore, controlling fast food consumption is crucial in the dietary management of Type 2 DM patients. Nutrition education and lifestyle changes are key factors in preventing unstable blood sugar levels and long-term complications.

Researcher Analysis

The results showed that the majority of respondents were over 46 years old (49.1%), followed by those aged 35–45 (45.6%), and only a small proportion were aged 26–35 (5.3%). This finding suggests that Type 2 DM not only affects the elderly but is also increasingly being found in those of productive age.

Report that an unhealthy lifestyle (high-calorie diet, lack of activity, and stress) is a major risk factor. Consequently, sufferers of productive age are at risk of reducing family productivity and increasing the burden of medical costs (Kemenkes, 2023).

In terms of education, the majority of respondents only had a basic education (elementary school, 64.9%). This indicates low health literacy, which impacts respondents' understanding of how to manage their diabetes.

Low education correlates with limited access to nutritional information and complication prevention. Respondents were predominantly housewives (84.2%), followed by laborers (12.3%), and self-employed (3.5%). This confirms that groups with low physical activity and domestic roles are at higher risk of developing Type 2 Diabetes. The majority of respondents were women (84.2%), while only 15.8% were men. Women, especially postmenopausal women, are at higher risk of developing Diabetes due to hormonal changes that increase insulin resistance and decrease glucose sensitivity. Most respondents had a good level of knowledge (73.7%), while the remainder had a fair level (26.3%).

No respondents were classified as poor. This means that knowledge alone does not always directly correlate with behavioral changes, as there were still respondents with unstable blood sugar levels despite having good knowledge. Bivariate analysis showed a significant association between fast food consumption and unstable blood sugar levels ($X^2 = 3.324$; $p = 0.001$). These results support the hypothesis that higher fast food consumption, the greater the risk of fluctuating blood sugar levels.

Fast food is generally high in saturated fat, sugar, and sodium, which can increase insulin resistance, worsen glycemic control, and increase the risk of long-term complications. These findings align with research by Alfora et al. (2023) and Susanti & Bistara (2018) stated that unhealthy eating patterns are closely related to Type 2 DM.

The results of the descriptive analysis showed that the average fast food consumption score for respondents was 1.26 (low to moderate category), while the average blood sugar instability score was 1.14. This means that the majority of respondents do not consume fast food frequently, but its effects on blood sugar are still visible in some respondents.

These results emphasize the importance of nutrition education and lifestyle changes for Type 2 DM patients, particularly in limiting fast food consumption. Furthermore, support from healthcare professionals is needed to regularly monitor blood sugar levels and provide easy-to-understand counseling, especially for respondents with low education.

This study is in line with the research of (Wang et al., 2022) on modern dietary patterns and fruit-milk dietary patterns. Modern dietary patterns characterized by high intake of red meat and fast food are positively associated with high blood glucose levels among adults in Jiangsu Province, China, while the fruit-milk dietary pattern is not significantly associated with high blood glucose levels.

CONCLUSIONS AND RECOMMENDATION

The average fast food consumption among respondents was in the low to moderate category, with a mean value of 1.26. This indicates that most respondents do not consume fast food frequently.

Blood glucose levels were relatively stable in the majority of respondents, with a mean value of 1.14. However, some respondents still experienced unstable blood sugar levels.

Chi-square test results showed a significant association between fast food consumption and unstable blood glucose levels in Pronalis Type 2 Diabetes Mellitus patients in the Purbaratu Community Health Center ($p = 0.001 < 0.05$). Therefore, the higher the fast food consumption, the greater the risk of unstable blood glucose levels.

It is hoped that patients will limit their consumption of fast food and replace it with healthy foods that are high in fiber, low in saturated fat, and have a low glycemic index, as well as regularly monitor their blood sugar levels and maintain a diet according to the 3J principles (Amount, Type, and Schedule).

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