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The Relationship Between Dietary Patterns And The Incidence Of Diabetes Mellitus At The Pereumeu Public Health Center, West Aceh Regency In 2026

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Abstract

Diabetes Mellitus (DM) is a chronic metabolic disease characterized by increased blood glucose levels due to impaired insulin secretion. One of the main modifiable risk factors is an unhealthy diet. In the working area of the Pereumeu Community Health Center, West Aceh Regency, the number of DM patient visits shows a fluctuating but still significant trend every year. To determine the relationship between diet and the incidence of Diabetes Mellitus at the Pereumeu Community Health Center, West Aceh Regency in 2026. Quantitative research with a correlational design using a cross-sectional approach. The study was conducted in March-April 2026 with a population of patients who checked themselves. The research sample was obtained as many as 42 respondents selected using a purposive sampling technique. Data collection was carried out using a diet questionnaire and an observation sheet for blood glucose laboratory results. Data analysis used descriptive analysis for univariate and the Chi-Square test for bivariate (p = 0.05). The results of univariate analysis showed that the majority of respondents were male (61.9%), worked as self-employed (52.4%), had a good diet as many as 26 respondents (61.9%), and respondents who did not experience DM as many as 26 people (61.9%). The results of the Chi-Square bivariate test showed a p-value = 0.001 (p <0.05), which means there is a statistically significant relationship between diet and the incidence of Diabetes Mellitus. Diet has a significant relationship with the incidence of Diabetes Mellitus at the Pereumeu Community Health Center. It is hoped that health agencies will improve healthy diet management education programs for local communities in order to reduce the mortality rate of DM.

Keywords: Diabetes Mellitus, Correlational, Diet, Pereumeu Community Health Center.

INTRODUCTION

Diabetes is a metabolic disease characterized by hyperglycemia and caused by impaired insulin secretion (Budianto et al., 2022). Diabetes is an endocrine system disorder that occurs when the pancreas does not produce sufficient insulin or when the body cannot effectively utilize the insulin it produces. According to the 2018 Basic Health Research Survey (Riskesdas), the prevalence of diabetes in Indonesia increased from 6.9% in 2013 to 8.5% in 2018. This figure is higher than in previous years (Ritonga, 2019). The World Health Organization (WHO) predicts that the number of people with diabetes will continue to increase in the coming years (WHO, 2019). Risk factors for diabetes include non-modifiable factors such as age, sex, genetics, and family history. Modifiable factors include lifestyle-related factors such as dietary habits, high-fat diets, lack of physical activity, and uncontrolled stress, all of which may contribute to the development of diabetes (Hartien-Dodd, 2019). Age increases the risk of developing diabetes, particularly between 45 and 60 years, due to increased glucose intolerance. The aging process can reduce the ability of pancreatic cells to produce insulin. In terms of gender, the incidence of type 2 diabetes is higher among women than men. Individuals with a family history of diabetes mellitus are also at a greater risk of developing the disease (Imelda, 2019).

Signs and symptoms of diabetes mellitus include burning sensations in the hands and feet, excessive thirst, frequent urination, nocturia that may disturb sleep patterns, delayed wound healing, significant weight loss, and excessive hunger (Arnavati, 2019). If left untreated, diabetes mellitus can lead to both acute and chronic complications. Acute complications include hypoglycemia (blood glucose levels below normal) and hyperglycemia (excessively high blood glucose levels). Chronic complications include stroke, cardiovascular disease, chronic kidney disease, glaucoma, and cataracts.

Individuals with diabetes may experience more than one complication simultaneously (Pranata et al., 2019).

The International Diabetes Federation (IDF) estimated that the number of diabetes mellitus cases would continue to rise in 2019. Globally, the prevalence of diabetes mellitus was estimated at 9.3%, equivalent to 463 million people, and is projected to increase to 578 million people (10.2%) (Fatimah, 2015). The prevalence of diabetes mellitus in the Middle East and North Africa region reached 12.2%, while the prevalence in Europe and Africa was 6.3% and 4.7%, respectively (Ministry of Health of the Republic of Indonesia, 2019). Indonesia ranked seventh among countries with the highest number of diabetes cases in 2019, with approximately 10.7 million people affected (Bingga, 2021). Data from Riskesdas 2018 showed that the prevalence of diabetes mellitus in West Java was 1.74% (52,511 individuals), while the prevalence in Bekasi City reached 2.26% (3,238 individuals) (Hidayat et al., 2021).

Risk factors for diabetes mellitus can be classified into non-modifiable and modifiable factors. Non-modifiable risk factors include race and ethnicity, age, gender, family history of diabetes mellitus, a history of giving birth to infants weighing more than 4,000 grams, and a history of low birth weight. Modifiable risk factors are closely associated with unhealthy lifestyles, including overweight, abdominal or central obesity, physical inactivity, hypertension, dyslipidemia, unhealthy or unbalanced diets, impaired glucose tolerance (IGT), impaired fasting glucose (IFG), and smoking (Ritonga, 2019).

Dietary pattern refers to the quantity and types of food consumed by an individual. Dietary habits encompass lifestyle choices related to food selection and portion sizes. Changes in dietary patterns may result from economic development, the availability of a wide variety of foods, busy work schedules, and insufficient knowledge regarding healthy eating practices. Modern lifestyles have brought significant changes among both young people and adults. Fast food and instant food have become increasingly popular. Excessive sugar consumption may lead to various diseases, including diabetes mellitus. Managing meal timing and portion sizes is important for controlling blood glucose levels. Reducing food portions can help maintain blood glucose levels, whereas excessive portion sizes may increase the risk of diabetes-related complications (Susilowati & Waskita, 2019).

Diabetes can be controlled by quitting smoking and maintaining a healthy body weight. If lifestyle modifications are insufficient, pharmacological treatment is often initiated. Metformin is commonly used as the first-line therapy because it lowers blood glucose levels and improves glucose utilization. If oral antidiabetic medications are ineffective, combination therapy may be administered, including alpha-glucosidase inhibitors, thiazolidinediones, and sulfonylureas. Insulin injections may also be used to control hyperglycemia and maintain blood glucose levels within an acceptable range (Ramatullah et al., 2022).

Based on preliminary observations, several diabetic patients experienced frequent urination, excessive thirst, and weight loss. They also reported feelings of depression related to their condition, social withdrawal, frequent fatigue, irritability, restlessness, difficulty concentrating, rapid mood changes, reluctance to participate in community activities, and a lack of energy to cope with daily challenges. These findings provided the basis for conducting a study entitle**d** “The Relationship Between Dietary Patterns and the Incidence of Diabetes at Perumio Community Health Center, West Aceh Regency.”

RESEARCH OBJECTIVE

This study aims to examine the relationship between dietary patterns and the incidence of diabetes at Perumio Community Health Center, West Aceh Regency.

RESEARCH METHODS

This study employed a descriptive analytical approach, in which the independent variable (dietary pattern) and the dependent variable (incidence of diabetes mellitus) were observed and measured simultaneously. The study was conducted in the working area of Perumio Community Health Center, West Aceh Regency, from March to April 2026. The sampling technique used was purposive sampling, whereby participants were selected based on specific criteria established by the researchers to ensure their relevance to the study objectives. A total of 42 respondents met the inclusion criteria and were included in the study.

The inclusion criteria consisted of patients diagnosed with diabetes mellitus or those who had undergone blood glucose testing at Perumio Community Health Center, were willing to participate by signing an informed consent form, were able to read and write, and were permanent residents within the health center's service area. Exclusion criteria included patients who withdrew from the study before data collection was completed, patients with severe complications that prevented communication, and patients who were uncooperative during questionnaire completion.

Data were collected using a questionnaire to assess respondents' dietary habits and a recording form to document fasting or random blood glucose test results as indicators of diabetes. Following data collection, data processing procedures were conducted, including editing, coding, entry, and cleaning. Data analysis consisted of two stages. Univariate analysis was used to describe respondent characteristics, dietary patterns, and the frequency of diabetes incidence. Bivariate analysis was performed using the Chi-Square statistical test ($\alpha = 0.05$) to examine the relationship between dietary patterns and the incidence of diabetes at Perumio Community Health Center.

RESULTS AND DISCUSSION

Univariate Analysis

The results of the study on the relationship between dietary patterns and the incidence of diabetes mellitus at the Pereumeu Community Health Center, West Aceh Regency, show that the characteristics of the respondents are shown in the following table:

Table 1. Respondent Characteristics: Gender, Age, Occupation, Education

	(f)	**(%)**
Gender Male	26	61,9
Female	16	38,1
Total	**42**	**100,0**
Age		
20-30 Years	4	9,5
31-50 Years	15	35,8
51-65 Years	19	45,2
66-72 Years	4	9,5
Total	**42**	**100,0**
Occupations		
Housewife	11	26,2
Self-employed	22	52,4
Private employee	4	9,5

Not Working	5	11,9
Total	**42**	**100,0**
Education		
SD	8	19,0
SMP	8	19,0
SMA	22	52,5
College	4	9,5
Total	**42**	**100,0**

Based on the results obtained in Table 1, the characteristics of respondents by gender are as follows: the majority were male (26 respondents, 61.9%), and the minority were female (14 respondents, 38.1%).

Based on age, the majority were aged 51-65 (45.2%), and the minority were aged 20-30 and 66-72 (8 respondents, 19.0%). Based on occupation, the majority were self-employed (22 respondents, 52.5%), and the minority were unemployed (5 respondents, 11.9%). Based on education, the majority were high school graduates (22 respondents, 52.5%), and the minority were junior high school and college graduates (12 respondents, 28.5%).

Dietary Patterns

Dietary patterns were categorized into two categories: poor diet (if the total score was ≤790) and good diet (if the total score was ≥790). The score of 790 was obtained from the median of all scores.

Variabel	**n**	**%**
Diet Status Good Diet	26	61,9%
Bad Diet	16	38,1%

Table 2. shows that 42 respondents (26%) made the right food choices based on their food preferences. Only 16 respondents (38.1%) reported having an inadequate diet.

Diabetes Mellitus Incidence

Diabetes mellitus incidence is categorized into two categories: diabetes mellitus if blood sugar levels are >126 mg/dl and non-diabetes mellitus if fasting blood sugar levels are <126 mg/dl.

Diabetes	
Mellitus Incidence	12
No diabetes	
28.57%	
Diabetes mellitus	30
71.43%	

Table 3. Distribution of Respondents with Diabetes Mellitus at the Pereumeu Community Health Center, West Aceh Regency.

Based on Table 3, the analysis shows that the majority of respondents (30 respondents) had diabetes mellitus, while 12 respondents (28.57%) did not have diabetes mellitus.

Bivariate Analysis Results

Relationship between Dietary Patterns and the Incidence of Diabetes Mellitus at the Pereumeu Community Health Center, West Aceh Regency

Table 4. Distribution of the Relationship between Dietary Patterns and the Incidence of Diabetes Mellitus

Dietary habit	Incidence of Diabetes Mellitus				Total		Or (95% CI)	p- value
	No Diabetes		Diabetes Melitus					
	n	%	n	%	n	%		
Good	12	6,2%	21	26,8%	26	100%	0,636	0,000
Bad	0	5,8%	16	25,2%	16	100%	(0,492-0,824)	

Based on Table 4, the analysis results show that 12 respondents (6.2%) with a good diet did not develop diabetes mellitus. 26 respondents (26.8%) with a good diet did not develop diabetes mellitus. 0 respondents (5.8%) with a poor diet did not develop diabetes mellitus. 16 respondents (25.2%) with a poor diet developed diabetes mellitus.

The statistical test results showed a P-value of 0.000 < 0.05, indicating a significant relationship between diet and the incidence of diabetes mellitus in adults at the Pereumeu Community Health Center in West Aceh Regency. The analysis yielded an OR of 0.635, indicating that respondents with a poor diet had a 0.635 times greater risk of developing diabetes mellitus compared to respondents with a good diet.

Discussion

Relationship Between Dietary Patterns and the Incidence of Diabetes Mellitus

The frequency distribution table presents the findings regarding the dietary patterns of 42 respondents who were patients at Pereumeu Community Health Center. Only 12 respondents (28.57%) had poor dietary habits, while the majority, 30 respondents (71.43%), reported healthy dietary habits. The analysis revealed a significant relationship between dietary patterns and the incidence of diabetes mellitus, with a p-value of 0.000.

This finding is consistent with the study conducted by Wahyuni et al. (2019), which reported that diabetes mellitus is closely associated with dietary habits. Excessive consumption of sugar, protein, fat, carbohydrates, or total energy intake can increase the risk of developing diabetes mellitus. The greater the amount of food consumed, the higher the likelihood of developing diabetes mellitus.

Based on the results of the bivariate analysis, these findings indicate that maintaining a healthy dietary pattern plays an important role in controlling blood glucose levels. Therefore, efforts are needed to increase patients' awareness of the importance of adhering to healthy dietary habits as part of diabetes mellitus management.

Incidence of Diabetes Mellitus

Based on the statistical analysis, all 42 respondents were identified as having diabetes mellitus. These findings are consistent with the study by Riset et al. (n.d.) on the relationship between dietary patterns, physical activity, and blood glucose levels among diabetes mellitus patients at Pereumeu Community Health Center, which found that the majority of respondents, namely 30 out of 42 individuals, had diabetes mellitus.

This condition may be influenced by several factors, including dietary habits, weight gain, and physical activity levels. Pharmacological treatment for diabetes mellitus is generally recommended only when dietary management alone is insufficient to control blood glucose levels effectively. If individuals with diabetes mellitus fail to adhere to prescribed treatment regimens and dietary recommendations provided by physicians or healthcare professionals, their health condition may deteriorate further (Tarihoran et al., 2021).

Relationship Between Dietary Patterns and the Incidence of Diabetes Mellitus at Pereumeu Community Health Center, West Aceh Regency

The results of the statistical analysis showed a p-value of 0.000, which is lower than α = 0.05, indicating a significant relationship between dietary patterns and the incidence of diabetes mellitus among adults at Pereumeu Community Health Center, West Aceh Regency. Respondents with poor dietary habits were found to have a 0.636 times greater risk of developing diabetes mellitus compared to those with healthy dietary habits.

These findings are in line with the study conducted by Doru et al. (2023) regarding the relationship between dietary patterns and physical activity and the incidence of diabetes mellitus in the working area of the Birobuli Community Health Center, Palu City. The study reported a significant relationship between dietary patterns and diabetes mellitus incidence, with a p-value of 0.005 (α < 0.05).

Similarly, Latifah et al. (2020) found a significant relationship between dietary habits and the incidence of diabetes mellitus among pre-elderly individuals at the Regional General Hospital of Padangsidimpuan City. Their study reported a p-value of 0.001 (α < 0.05) based on a total sample of 90 respondents.

However, these findings differ from those reported by Wigatiasari (n.d.), who investigated the influence of knowledge, behavior, and dietary patterns on the incidence of diabetes mellitus at Kait-Kait Community Health Center, Bati-Bati District, Tanah Laut Regency. The study found no significant relationship between dietary patterns and diabetes mellitus incidence. According to the study, diabetes mellitus is not solely influenced by dietary habits but is also associated with other factors such as low levels of physical activity, smoking, and alcohol consumption.

Dietary patterns are closely related to diabetes mellitus because individual behavior influences lifestyle choices, including eating habits. Individuals who are unable to regulate their daily food intake are more susceptible to disease than those who carefully select their food. Poor dietary habits may lead to both malnutrition and overweight conditions. These conditions can increase the risk of diabetes mellitus because nutritional imbalance may impair pancreatic function and disrupt insulin secretion (Wigatiasari, n.d.).

CONCLUSIONS

Based on the results of the study entitled "The Relationship Between Diet and Diabetes Incidence at the Pereumeu Community Health Center, West Aceh Regency, 2026," the following conclusions can be drawn:

1. Diabetes patients at the Pereumeu Community Health Center, West Aceh Regency, were predominantly women, aged 35-59. Most respondents had a high school education, and most of the women worked from home.
2. Most respondents at the Pereumeu Community Health Center, West Aceh Regency, had diabetes (81.25%), while 18.75% did not have diabetes.
3. Most patients at the Pereumeu Community Health Center, West Aceh Regency, had diabetes, including those with poor eating habits (48.43%), respondents with good eating habits (32.81%), and those with good eating habits (18.75%) who did not have diabetes.

Based on the chi-square test, the P value of 0.001 <α 0.05 indicates that there is a significant relationship between eating habits and the incidence of diabetes in adults at the Pereumeu Community Health Center, West Aceh Regency, and the OR value is 0.636, which means that respondents with poor eating habits have an incidence of diabetes 3 times higher than respondents with good eating habits.

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