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Analysis of dietary pattern, physical activity and medication adherence on glycemic stability among patients with type 2 diabetes mellitus

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Abstract

Background: Diabetes is a non-communicable disease. The number of diabetes cases and the prevalence of the disease have increased continuously in recent decades. Diet and physical activity are considered to be determining factors and are closely linked to the development of diabetes.
Purpose: To analyze dietary patterns, physical activity, and medication adherence to glycemic stability in a community with type 2 diabetes mellitus.
Method: This quantitative study employed analytical observation with a cross-sectional approach. The population comprised all patients with type 2 diabetes mellitus in the Montong Betok Community Health Center in December 2023. Sample inclusion criteria included residents aged 40 years and above who were willing to participate and had suffered from type 2 diabetes mellitus for more than 1 year and had been taking medication according to the recommended dosage with random blood sugar levels between 100 and 400 mg/dL. Simple random sampling was used to select 199 respondents. The analysis conducted in this study included univariate analysis, bivariate chi-square with SPPS version 20 for Windows, and multivariate analysis using logistic regression test.
Results: The logistic regression analysis obtained a significance level of <0.05 for the variables of diet, physical activity, and medication adherence. This indicates that diet, physical activity, and medication adherence significantly influence respondents' blood sugar stability. Of the three variables analyzed, medication adherence had the largest Exp (B) coefficient, namely 1.346. This indicates that medication adherence is the variable that most dominantly influences blood sugar stability compared to diet and physical activity.
Conclusion: Eating habits, physical activity, and medication adherence have a significant impact on blood sugar stability in type 2 diabetes mellitus patients. However, medication adherence variables are an important factor that influences type 2 diabetes mellitus patients.

Keywords: Dietary Pattern; Glycemic Stability; Medication Adherence; Physical Activity; Type 2 Diabetes Mellitus.

INTRODUCTION

Non-communicable diseases (NCDs) are chronic diseases that are not transmitted from person to person. Non-communicable diseases include heart disease, stroke, cancer, diabetes, and chronic obstructive pulmonary disease (COPD). NCDs are the cause of death in nearly 70% of people worldwide (Iseki, 1995). Non-communicable diseases have become part of the world's dual epidemiological burden in recent decades. Unlike infectious diseases, these diseases are not caused by infection with microorganisms such as protozoa, bacteria, fungi, or viruses. The World Health Organization (WHO) estimates that these diseases cause at least 40 million deaths worldwide each

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year. This figure represents 70% of all causes of death worldwide (Ministry of Health of the Republic of Indonesia, 2021).

Diabetes is a chronic disease caused by a lack of insulin production by the pancreas or ineffective use of the hormone insulin by the body (Asyumdah, 2020). Diabetes is a health problem with increasing incidence. There is a high risk of severe and often fatal complications. Some common symptoms in diabetes patients include polyuria, increased thirst, increased appetite, weight loss, and blurred vision (Izza, 2019). Diabetes mellitus is a chronic disease in which the pancreas does not produce enough insulin or the body does not use insulin effectively. The most common consequence of uncontrolled diabetes is hyperglycemia (high blood sugar), which causes severe damage to various body systems, especially blood vessels and nerves (Jasmine, Wahyuningsih, & Thadeus, 2020).

Diabetes mellitus has become the most common metabolic disease in recent years, especially in the childbearing age group. The main cause is a disorder of insulin secretion in the pancreatic cells and inefficient use of insulin in the body. To meet metabolic needs, insulin consumption and action must be balanced. Therefore, the molecular systems involved in insulin synthesis and insulin degradation, as well as the amount of insulin in tissues, must be carefully monitored. Errors in some processes in the workplace can cause metabolic disorders and subsequently lead to the pathological condition of diabetes (Jasmine et al., 2020).

Diabetes is a public health problem and one of the four priority non-communicable diseases monitored by world leaders. The number of diabetes cases and prevalence have been increasing continuously over the past decades. Diabetes is caused by uncontrolled blood sugar levels, lack of physical activity and lack of dietary control, which negatively impacts the quality of life as it is difficult to maintain a balanced diet (Qodir, 2022).

According to basic health research data from 2013 and 2018, the incidence of diabetes in Indonesia increased from 6.9% to 8.5%, and the incidence of diabetes based on medical diagnosis increased from 1.2% to 2%. In 2022, data on diabetes in West Nusa Tenggara (NTB) totaled 64,544 people affected. Of these, 9,366 people were in West Lombok, 10,017 in Central Lombok, 14,162 in East Lombok, 5,917 in Sumbawa, 3,699 in Dompu, 5,285 in Bima, 1,540 in West Sumbawa, 2,329 in North Lombok, 8,741 in Mataram, and 3,609 in Bima City.

Diabetes is not the only cause of premature death worldwide. This disease is also a leading cause of blindness, heart disease and kidney failure. The International Diabetes Federation (IDF) estimates that in 2019 there will be at least 463 million people worldwide between the ages of 20 and 79, which represents an incidence rate of 9.3% of the total population in this age group (Ministry of Health of the Republic of Indonesia, 2021).

In 2020, according to the East Lombok Health Profile, the number of people with diabetes mellitus was recorded at 3,352. Meanwhile, the prevalence of diabetes mellitus in East Lombok Regency in 2021 showed that 7,962 people (56.92%) of the 13,987 patients had received standard medical care. The latest data on the prevalence of diabetes mellitus in East Lombok is 10,367 people, with 398 of them coming from the Montong Betok Community Health Center working area.

The prevalence of diabetes mellitus, if left untreated, can lead to various complications. These complications include heart disease, stroke, nerve disorders, stomach ulcers, and kidney failure. According to the 2022 ADA, diabetes is responsible for 65% of all deaths from heart disease and stroke. Furthermore, adults with diabetes are two to four times more likely to develop heart disease than those without diabetes (Fortuna, Karuniawati, Purnamasari, & Purlinda, 2023).

To address this issue, diabetes mellitus staff at the Montong Betok Community Health Center consistently provide education to diabetes mellitus patients, both those receiving treatment at the community health center and those receiving treatment at the community health center. These complications can be reduced by controlling patients' blood sugar levels. Blood sugar control can be achieved through regular pharmacological treatment, which is achieved by maintaining medication adherence (Wibowo, Fitri, Yasin, Kristina, & Prabandari, 2021).

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RESEARCH METHOD

This quantitative study employed analytical observation with a cross-sectional approach. The population comprised all patients with type 2 diabetes mellitus in the Montong Betok Community Health Center in December 2023. Sample inclusion criteria included residents aged 40 years and above who were willing to participate and had suffered from type 2 diabetes mellitus for more than 1 year and had been taking medication according to the recommended dosage with random blood sugar levels between 100 and 400 mg/dL. Simple random sampling was used to select 199 respondents.

The independent variables in this study were diet, physical activity, and medication adherence. The dependent variable was blood sugar stability in type 2 diabetes patients. The research instrument used was a questionnaire about diet, physical activity, and medication adherence. Primary data was obtained from respondents or the general public with type 2 diabetes mellitus by providing them with questionnaires to complete directly, while secondary data came from reports from those responsible for diabetes mellitus in the study area.

Dietary pattern variables are divided into three categories: good if the score is >47, adequate if the score is 34-4, and inadequate if the score is <34. Dietary pattern relates to the frequency and type of food consumed by people with type 2 diabetes, namely the schedule and consumption of food and drinks according to doctor's recommendations. Physical activity variables are divided into three categories: good if the score is >30, adequate if the score is 22-30, and inadequate if the score is <22. Physical activity includes daily activities carried out by people with type 2 diabetes, including independent exercise or following an exercise program programmed by the community health center. Medication adherence variables are divided into three categories: high if the score is >23, medium if the score is 17-23, and low if the score is <17. The adherence variable relates to whether the patient has taken medication regularly and according to the dosage for one month (blood sugar during 100-400 mg/dL). Blood sugar during level variables are divided into 2, namely unstable if the blood sugar during level is ≥ 200 and stable if the blood sugar during level is < 200. Blood sugar stability is a condition where the blood sugar level is always within normal limits every time an examination is carried out.

The analysis conducted in this study included univariate analysis, bivariate chi-square with SPPS version 20 for Windows, and multivariate analysis using logistic regression test.

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RESEARCH RESULTS

Table 1. Distribution of Respondent Characteristics (N=199)

Variables	Results	The Consistency of Blood Sugar Levels	
		Stable (n=94)	Unstable (n=105)
Age (n/%)			
Age (Mean±SD)(Range)(Years)	(54.619±0.241)(40-70)		
< 50	30/5.1		
50-60	108/54.3		
> 60	61/30.6		
Gender (n/%)			
Male	31/15.6		
Female	168/84.4		
Age of Onset (n/%) (Years)			
< 5	75/37.7		
5-10	97/48.7		
> 10	27/13.6		
Dietary Pattern (n/%)			
Good	84/42.1	47/56.0	37/44.0
Adequate	79/37.8	35/44.3	44/55.7
Inadequate	36/18.1		
Activity Physically (n/%)			
Good	85/42.7	48/56.5	37/43.5
Adequate	78/39.2	37/47.4	41/52.6
Inadequate	36/18.1	9/25.0	27/75.0
Medication Adherence (n/%)			
High	91/45.7	58/63.7	33/36.3
Medium	87/43.7	33/37.9	54/62.1
Low	21/10.6	3/14.3	18/85.7

Based on Table 1, it is known that half of the respondents examined were aged between 50-60 years, namely 108 respondents (54.27%), dominated by female, namely 168 respondents (84.42%), and the longest duration of suffering from DM was mostly in the 5-10 years category, namely 97 respondents (48.7%). Most of the respondents had a good diet (84 respondents (42.1%) with a stable blood sugar percentage of 56.0%). Most of the physical activity was good (85 respondents (42.7%) with a stable blood sugar during percentage of 56.5%. The majority of respondents (45.7%) had high adherence in taking medication, with a stable blood sugar percentage of 63.7%.

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Table 2. Analysis Results Logistic Regression

	Variables	B	IT	Forest	Df	Sig.	Exp(B)
Step 1 [a]	Dietary Patern	.180	.080	5.099	1	.024	1.197
	Activity Anatomy	.192	.055	12.244	1	.000	1.212
	Compliance Taking Medication	.298	.083	12.703	1	.000	1.346
	constant	-16.478	3.551	21.534	1	.000	.000

Based on Table 2, the logistic regression analysis obtained a significance level of <0.05 for the variables of diet, physical activity, and medication adherence. This indicates that diet, physical activity, and medication adherence significantly influence respondents' blood sugar stability. Of the three variables analyzed, medication adherence had the largest Exp(B) coefficient, namely 1.346. This indicates that medication adherence is the variable that most dominantly influences blood sugar stability compared to diet and physical activity.

DISCUSSION

Dietary patterns are the habits of consistently consuming staple foods, protein sources, fruits, vegetables, and other foods daily, weekly, or not at all, which can affect various aspects of the body (Cena & Calder, 2020). The results showed that most respondents had good eating habits (meal frequency). Previous research indicated that most respondents in the blood sugar stability category had unstable blood sugar levels.

Based on the research results, 105 of the 199 respondents had unstable blood sugar levels. A chi-square analysis revealed that dietary patterns significantly impacted blood sugar stability (p-value = 0.000). These findings support previous research suggesting that diet is a triggering factor and is associated with the development of various diseases, one of which is diabetes (Kolb & Martin, 2017).

The relationship between diet and glycemic stability in individuals with type 2 diabetes is complex and multifaceted. Research suggests that certain dietary habits can significantly impact glycemic control, weight management, and overall health in patients with type 2 diabetes. After adjusting for potential confounders, subjects with the highest intake of foods to prevent hypertension were 84% less likely to develop diabetes than those with the lowest intake (OR = 0.16, 95% CI = 0.07–0.34, P < 0.001). Among the DASH dietary subcategories, consumption of vegetables (80%), fruits (88%), nuts (87%), and low-fat dairy products (73%) reduced the risk of diabetes after adjusting for confounders (p < 0.001) (Mirzababaei, Abaj, Hajishizari, Bahrampour, Noori, Barekzai, & Mirzaei, 2023; Petroni, Brodosi, Marchignoli, Sasdelli, Caraceni, Marchesini, & Ravaioli, 2021).

Adherence to a nutritious diet and physical activity can improve glycemic control parameters and positively impact body composition, thus preventing the development of type 2 diabetes mellitus (Cangelosi, Mancin, Pantanetti, Sguanci, Morales Palomares, De Luca, & Petrelli, 2024). One study found that low adherence to a specific diet correlated with lower fasting plasma glucose and HbA1c levels, suggesting that adherence to a diet is crucial for blood sugar stability (Iatcu, Gal, & Covasa, 2023).

Positive eating habits, such as controlled eating patterns, are associated with better diet quality and improved glycemic control. However, emotional eating can negatively impact blood sugar levels (Gal, Arhire, Gherasim, Graur, Nita, Dumitrascu, & Mihalache, 2024). In summary, implementing specific eating patterns and promoting healthy eating behaviors are important strategies for controlling blood sugar levels in individuals with type 2 diabetes. The importance of a community-based approach in diabetes mellitus management cannot be overstated, as strong social support and community involvement can significantly improve health outcomes. Research shows that educational programs involving patients' families and friends can improve adherence to healthy eating and physical activity patterns and reduce the risk of diabetes-related complications (Wardatu, Kurniati, Rasyid, Husin, Liniyanti, & Oswari, 2019).

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Regular physical activity, such as walking, is highly effective in lowering blood sugar levels. This exercise helps increase insulin sensitivity and improve glucose levels. As a key factor in diabetes management, walking also improves heart health and mood, making it an ideal choice for people with diabetes (Qodir, 2022). The relationship between physical activity and blood sugar stability in individuals with type 2 diabetes is multifaceted and involves several physiological mechanisms. This study has shown that physical activity can affect blood sugar stability. This is evident from the significant effect of physical activity on blood sugar stability (p-value = 0.001, α-value <0.05). Previous research has shown that exercise improves insulin sensitivity, regulates glucose metabolism, and reduces endoplasmic reticulum stress, all of which contribute to improved blood sugar control (Chen, Zhao, Xu, & Liu, 2024). Regular physical activity improves insulin sensitivity, which helps cells absorb glucose more effectively and lowers blood sugar levels.

Physical activity or exercise increases the use of glucose stored in muscles, which helps lower blood sugar levels (Amirudin, 2023). Physical activity or exercise can also reduce endoplasmic reticulum stress, a factor in insulin resistance, thereby improving overall metabolic health (Chen et al., 2024). It was reported that more than 60% of participants who participated in physical activity counseling experienced a more than threefold increase in physical activity compared to 1% of participants who only attended one counseling session. Of all groups, participants who increased their physical activity experienced the greatest weight loss. Age, gender, and initial motivation did not influence changes in physical activity (Martiskainen, Lamidi, Venojärvi, Tikkanen, & Laatikainen, 2023).

Physical activity not only stabilizes blood sugar but also reduces cardiovascular risk factors, thereby improving the overall health of type 2 diabetes patients (Domingues, Reis, Ferreira, Abreu, Perez, & Neiva, 2024). Increased physical activity is correlated with improved quality of life and well-being in individuals with type 2 diabetes (Hamasaki, 2016). Although the benefits of physical activity are well-documented, several studies have shown variability in glycemic control responses. This suggests that individual factors such as diet and genetic predisposition may also play a significant role in the management of type 2 diabetes. Therefore, a holistic and personalized approach to diabetes management is crucial for achieving optimal outcomes. Furthermore, it is important to consider how a holistic approach to managing type 2 diabetes can enhance the effectiveness of physical interventions. For example, the combination of regular physical activity and a healthy diet has been shown to control blood sugar levels more effectively than either factor alone. Research shows that a balanced diet rich in fiber and with a low glycemic index contributes significantly to diabetes management, highlighting the importance of physical activity as part of a comprehensive strategy (Mavroeidi, Manta, Asimakopoulou, Syrigos, Paschou, Vlachaki, & Peppa, 2024).

Physical activity is important for maintaining physical fitness and preventing various diseases, including diabetes. However, lack of physical activity or lack of exercise can increase the risk of diabetes, especially if you have type 2 diabetes. Lack of physical activity prevents the body from burning enough calories, so excess glucose in the blood is used as fat instead of energy. This can lead to insulin resistance, a condition in which the body cannot use insulin effectively, which ultimately leads to diabetes. When a person lacks exercise, their metabolism tends to slow down. This condition not only causes fat accumulation in the body, especially in the abdominal area, but also interferes with the body's ability to regulate blood sugar levels (Colberg, Sigal, Yardley, Riddell, Dunstan, Dempsey, & Tate, 2016).

Patient adherence to treatment is crucial for successful therapy. By following doctor's recommendations, patients can maintain blood sugar and blood pressure levels within the normal range, thereby reducing the risk of serious complications and improving quality of life. Education and support from medical personnel also help improve patient adherence (Chew, Hassan, & Sherina, 2015). The analysis of the relationship between medication adherence and glycemic stability in patients with type 2 diabetes mellitus in this study was highly

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significant, as higher adherence correlated with improved glycemic control (p-value = 0.000, less than α < 0.05). This relationship is supported by several studies highlighting the importance of medication adherence for effective diabetes management. One study found a strong negative correlation (r: -0.597, p < 0.001) between medication adherence and fasting blood glucose levels, indicating that increased medication adherence leads to lower blood glucose levels (Syaukani, Jariono, Susanto, & Setyawan, 2024).

Other studies have shown that patients with good family support have higher medication adherence, which in turn has a positive impact on their blood sugar stability. Mobile health interventions such as SMS reminders significantly improved medication adherence and blood sugar control, demonstrating how effective technology is in improving patient adherence (Adesokun, Ilori, Afolabi, Ihekoronye, & Osemene, 2024).

A comparative study showed that education and follow-up can improve adherence, which is crucial for maintaining stable blood sugar levels (Maheshwari, Mirudulaa, Sriram, Sakthivel, Saravanan, & Rodrigues, 2024). While strong evidence supports the positive effect of medication adherence on blood sugar stability, it is important to consider that factors such as socioeconomic status and education also play a significant role in adherence (Suratman, Armijn, & Nur, 2023).

Multivariate analysis using logistic regression showed that medication adherence, with a coefficient value of Exp(B) = 1.346, had the greatest influence on blood sugar stability, among diet, physical activity, and medication adherence. Adherence is a personal characteristic (e.g., taking medication, following dietary guidelines, or implementing lifestyle changes) determined by healthcare professionals. The quality of adherence can range from adhering to all aspects of recommendations to fully following them. If a person with type 2 diabetes mellitus shows high compliance, this is a positive impact and is an expected success, especially in terms of reducing blood sugar levels in the population of type 2 diabetes mellitus sufferers.

Based on a previous study on medication adherence with controlled blood sugar levels, it was found that of the 90 participants involved in the study, those who managed medication intake within a good range were the most prominent, namely 60 participants (92.3%) (Zulfhi & Mufbayarin, 2020). Another study also reported a positive correlation in the moderate category (r=0.294) between medication adherence and blood glucose levels, indicating that adherence plays an important role in achieving target blood glucose levels (Mpila, Wiyono, & Lolo, 2024).

CONCLUSION

Eating habits, physical activity, and medication adherence have a significant impact on blood sugar stability in type 2 diabetes mellitus patients. However, medication adherence variables are an important factor that influences type 2 diabetes mellitus patients.

REFERENCES

Adesokun, O. O., Ilori, M. O., Afolabi, M. O., Ihekoronye, M. R., & Osemene, K. P. (2024). Application of Mobile Telephony to Improve Medication Adherence in Type 2 Diabetes Patients. *Koozakar Festschrift, 1*: 16 – 29.

Amirudin, I. (2023). Physical Activity and Blood Glucose Levels in Diabetes Mellitus Patients. *International Journal of Nursing and Midwifery*, *7*(2).

Asyumdah, A. (2020). *Analisis pengaruh pola konsumsi makan, status gizi dan faktor genetik terhadap kejadian diabetes mellitus tipe II di Kabupaten Kulon Progo D.I Yogyakarta. Respository Unnes*.

Cangelosi, G., Mancin, S., Pantanetti, P., Sguanci, M., Morales Palomares, S., De Luca, A., & Petrelli, F. (2024). Impact of the COVID-19 pandemic on lifestyle behavior and clinical care pathway management in type 2 diabetes: A retrospective Cross-Sectional study. *Medicina*, *60*(10), 1624.

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DOI: https://doi.org/10.33024/minh.v8i5.744

Cena, H., & Calder, P. C. (2020). Defining a healthy diet: evidence for the role of contemporary dietary patterns in health and disease. *Nutrients*, *12*(2), 334.

Chen, Q., Zhao, X., Xu, Z., & Liu, Y. (2024). Endoplasmic reticulum stress mechanisms and exercise intervention in type 2 diabetes mellitus. *Biomed Pharmacother.* 177(117-122).

Chew, B. H., Hassan, N. H., & Sherina, M. S. (2015). Determinants of medication adherence among adults with type 2 diabetes mellitus in three Malaysian public health clinics: a cross-sectional study. *Patient preference and adherence*, 639-648.

Colberg, S. R., Sigal, R. J., Yardley, J. E., Riddell, M. C., Dunstan, D. W., Dempsey, P. C., & Tate, D. F. (2016). Physical activity/exercise and diabetes: a position statement of the American Diabetes Association. *Diabetes care*, *39*(11), 2065.

Domingues, D. L., Reis, R. S. B., Ferreira, P. R. D., Abreu, R. S. B., Perez, C. M. L., & Neiva, M. (2024). Physical exercise in health promotion among individuals with type 2 diabetes. *J Diabetes Metab Disord Control.11*(1): 22-25.

Fortuna, T. A., Karuniawati, H., Purnamasari, D., & Purlinda, D. E. (2023). Faktor–Faktor yang Mempengaruhi Komplikasi pada Pasien Diabetes Mellitus di RSUD Dr. Moewardi. *Pharmacon: Jurnal Farmasi Indonesia*, *20*(1), 27-35.

Gal, A. M., Arhire, L. I., Gherasim, A., Graur, M., Nita, O., Dumitrascu, O., & Mihalache, L. (2024). Association between diet quality and eating behavior in type 2 diabetes adults: A Cross-Sectional study. *Nutrients*, *16*(13), 2047.

Hamasaki, H. (2016). Daily physical activity and type 2 diabetes: A review. *World journal of diabetes*, *7*(12), 243.

Iatcu, C. O., Gal, A. M., & Covasa, M. (2023). Dietary Patterns of Patients with Prediabetes and Type 2 Diabetes. *Metabolites*, *13*(4), 532.

Iseki, S. (1995). IP Image Profiling-2D Inversion of Resistivity and Chargeability. In *57th EAGE Conference and Exhibition* (pp. cp-90). European Association of Geoscientists & Engineers.

Izza, E. L. (2019). *Kepatuhan Penderita Diabetes Mellitus Tipe-2 Yang Menjalani Terapi Diet Ditinjau Dari Theory of Planned Behaviour* (Doctoral dissertation, Universitas Airlangga).

Jasmine, N. S., Wahyuningsih, S., & Thadeus, M. S. (2020). Analisis Faktor Tingkat Kepatuhan Minum Obat Pasien Diabetes Melitus di Puskesmas Pancoran Mas Periode Maret–April 2019. *Jurnal Manajemen Kesehatan Indonesia*, *8*(1), 61-66.

Kolb, H., & Martin, S. (2017). Environmental/lifestyle factors in the pathogenesis and prevention of type 2 diabetes. *BMC medicine*, *15*(1), 131.

Maheshwari, M., Mirudulaa, M. M., Sriram, A., Sakthivel, P., Saravanan, T., & Rodrigues, P. A. (2024). Comparison of medication adherence in patients with type 2 diabetes mellitus: a pre and post study. *International Journal of Basic & Clinical Pharmacology*, *13*(1), 107-111.

Martiskainen, T., Lamidi, M. L., Venojärvi, M., Tikkanen, H., & Laatikainen, T. (2023). Factors affecting the effectiveness of the physical activity counselling intervention implemented in primary health care in adults with type 2 diabetes. *BMC endocrine disorders*, *23*(1), 166.

Mavroeidi, I., Manta, A., Asimakopoulou, A., Syrigos, A., Paschou, S. A., Vlachaki, E., & Peppa, M. (2024). The role of the glycemic index and glycemic load in the dietary approach of gestational diabetes mellitus. *Nutrients*, *16*(3), 399.

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Corresponding author: *E-mail: nurwahida1606@gmail.com

DOI: https://doi.org/10.33024/minh.v8i5.744

Ministry of Health of the Republic of Indonesia. (2021). Profil Kesehatan Indonesia 2021. Retrieved from: https://kemkes.go.id/id/profil-kesehatan-indonesia-2021

Mirzababaei, A., Abaj, F., Hajishizari, S., Bahrampour, N., Noori, S., Barekzai, A. M., & Mirzaei, K. (2023). The association of dietary approaches to stop hypertension (DASH) with the odds of diabetic nephropathy and metabolic markers in women: a case–control study. *BMC Women's Health*, *23*(1), 63.

Mpila, D. A., Wiyono, W. I., & Lolo, W. A. (2024). Hubungan tingkat kepatuhan minum obat dengan kadar gula darah dan kualitas hidup pasien diabetes melitus tipe 2 di Klinik Imanuel Manado. *Medical Scope Journal*, *6*(1), 116-123.

Petroni, M. L., Brodosi, L., Marchignoli, F., Sasdelli, A. S., Caraceni, P., Marchesini, G., & Ravaioli, F. (2021). Nutrition in patients with type 2 diabetes: present knowledge and remaining challenges. *Nutrients*, *13*(8), 2748.

Qodir, A. (2022). Pengaruh aktivitas fisik dan pola makan terhadap kadar gula darah pada pasien diabetes mellitus. *Media Husada Journal Of Nursing Science*, *3*(1), 83-92.

Suratman, N., Armijn, L., & Nur, A. (2023). The level of compliance of type II diabetes mellitus patients in controlling blood sugar. *Jurnal Ilmiah Kesehatan Sandi Husada*, *12*(2), 481-487.

Syaukani, A. A., Jariono, G., Susanto, N., & Setyawan, H. (2024). Perception on health and exercise among indonesian older adults: a sequential exploratory study in javanese rural communities. *Retos*, *59*, 156-164.

Wardatu, A., Kurniati, A. M., Rasyid, R. S. P., Husin, S., Liniyanti, D., & Oswari, L. D. (2019). Hubungan Tingkat Pengetahuan tentang Makronutrien dengan Kecukupan dan Keseimbangan Asupan Makronutrien Pasien Diabetes Melitus Tipe 2. *Sriwijaya Journal of Medicine*, *2*(2), 94-98.

Wibowo, M. I. N. A., Fitri, F. M., Yasin, N. M., Kristina, S. A., & Prabandari, Y. S. (2021). Kepatuhan minum obat pada pasien diabetes melitus tipe 2 di beberapa Puskesmas Kabupaten Banyumas. *Jurnal Kefarmasian Indonesia*, 98-108.

Zulfhi, H., & Muflihatin, S. K. (2020). Hubungan kepatuhan minum obat dengan terkendalinya kadar gula darah pada pasien dm tipe ii di irna rsud abdul wahab sjahranie samarinda. *Borneo Studies and Research*, *1*(3), 1679-1686.

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