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Association Between Dietary Patterns and Glycemic Control in Type 2 Diabetes Patients at Margajaya Community Health Center, Bekasi

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Abstract

Background: The prevalence of diabetes in Indonesia has increased rapidly from 6.9% of cases in 2013 to 8.5% of cases in 2018. In fact, according to WHO, the estimate of people with diabetes in Indonesia will increase rapidly to 21.3% in 2030. One of the risk factors for increased blood sugar levels is poor diet.
Objective: To determine the relationship between dietary patterns and blood glucose levels in patients with type 2 diabetes mellitus in the Margajaya Health Center Area, Bekasi City.
Method: This study is a quantitative study with a cross-sectional approach. The sample in this study were all patients with type 2 diabetes mellitus who routinely undergo treatment at the Margajaya Health Center in Bekasi City, totaling 60 respondents. The sampling technique used total sampling. The instruments used were questionnaires and blood sugar testing tools.
Results: Research using the chi-square test was calculated using SPSS version 26, the results obtained were a P Value of 0.021<0.05.
Conclusion: There is a relationship between the patterns eating on blood sugar levels in type 2 DM sufferers

Background

Diabetes mellitusis a disease characterized by the occurrence of hyperglycemia and disorders of carbohydrate, fat, and protein metabolism associated with absolute or relative deficiency of insulin work and/or secretion. Symptoms complained of in patients with Diabetes Mellitus are polydipsia, polyuria, polyphagia, weight loss, tingling (Bhatt et al., 2016). Diabetes Mellitus (DM) disease increases every year with age. It is estimated that in 2015 worldwide there were 415 million adults suffering from Diabetes Mellitus (DM). In Indonesia itself, according to the 2018 Riskesdas, diabetes is one of the four priority non-communicable diseases. Indonesia is ranked 7th in the world for the largest number of diabetes cases (International Diabetes Federation, 2016). The prevalence of diabetes in Indonesia has increased rapidly from 6.9% of cases in 2013 to 8.5% of cases in 2018. Based on data from the West Java Health Office in 2020, the number of DM sufferers in West Java Province was 1,078,857 people, and in Bekasi City itself it was at 44,714 diabetes mellitus sufferers (West Java Health Office, 2020).

Most of the risk factors for diabetes mellitus are unhealthy lifestyles such as lack of physical activity, unhealthy and unbalanced diets, and obesity. Therefore, the most important thing in controlling diabetes mellitus is controlling risk factors. The important goal of managing diabetes mellitus is to restore metabolic disorder so that all metabolic processes return to normal (Arisman, 2011 in Paramitha, 2014). According to Sulistyoningsih (2011), an imbalance between nutritional intake or nutritional adequacy will cause nutritional problems, either in the form of overnutrition or undernutrition. Factors that cause nutritional problems include incorrect eating patterns. Observable eating patterns include eating frequency, eating time and consumption levels.

Diabetes mellitus is a degenerative disease that can be controlled with four pillars of management, one of which is diet. Diet plays an important role in helping diabetes mellitus patients control blood sugar. Patients who do not pay attention to a balanced food intake can increase their blood sugar, so that it can cause an imbalance in the amount of insulin (Soegondo, 2015). Controlling blood sugar levels to reach normal limits requires good and correct DM diet management. Motivation and support from a nutrition counselor are also needed. This can be done with good diet planning. Eating patterns are habits that are carried out and can affect a person's health. A person's eating patterns are reflected in the food consumed daily which is done to balance the nutritional intake obtained by the body so that it does not accumulate in the body. In people with DM and in healthy people, it is important to regulate food consisting of food composition, calorie needs, types and choices of food, and meal schedules (Kurniasari et al., 2020).

Food plays an important role in increasing blood sugar levels. In the process of eating, the food eaten will be digested in the digestive tract and then converted into glucose. Furthermore, glucose is absorbed by the intestines and circulates in the bloodstream. Glucose absorption causes an increase in blood sugar levels and increases insulin secretion. Insufficient insulin secretion and insulin resistance that occurs in Type II DM cause inhibition of the process of glucose use by tissues so that glucose in the blood increases. This causes an increase in blood sugar levels after eating, then distributed to the body's cells (Kurniasari et al., 2020).

For people with diabetes, implementing a regular and healthy diet is a must. The reason is, choosing the wrong food or consuming food carelessly, especially those with high sugar content, will make the disease worse. For people with Type II Diabetes, the following is the recommended diet: the foundation of the diet is consuming foods rich in nutrients, consuming foods rich in healthy fats, consuming foods rich in protein, complex carbohydrates. And foods that should be avoided for people with Type II Diabetes: high cholesterol, high saturated fat, high in artificial sweeteners (Kelvin Halim, S. Gz, 2021).

Complications that occur due to DM can be disorders of the blood vessels, both macrovascular and microvascular, as well as disorders of the nervous system or neuropathy. These disorders can occur in Type II DM patients who have had the disease for a long time or Type II DM who have just been diagnosed. Macrovascular complications generally affect the heart, brain and blood vessels, while microvascular disorders can occur in the eyes and kidneys. Neuropathy complaints are also common in DM patients, both motor, sensory, or autonomic neuropathy. Research by Kurniasari et al. (2020) showed that there was a relationship between diet and blood glucose levels in Type II Diabetes Mellitus sufferers. Research by Susanti & Bistara (2018) also showed the same results that there was a relationship between diet and blood sugar levels in Diabetes Mellitus sufferers at the Tembok Dukuh Community Health Center, Surabaya. A preliminary study conducted by researchers at the Margajaya Health Center in Bekasi City found that 9 out of 10 patients said they had poor eating patterns, namely

2 of them said they still ate rice after 9 pm, 4 people said they still liked to consume instant and sweet foods, and 3 of them did not regulate their eating patterns & there were no foods that were prohibited.

Method

This study is a quantitative research type using a descriptive design with a cross-sectional approach. The sample in this study were all patients with type 2 diabetes mellitus who routinely undergo treatment at the Margajaya Health Center in Bekasi City, totaling 60 respondents. The sampling technique used in this study was total sampling. The instruments used in this study were 3 instruments, namely the respondent characteristics instrument consisting of age, education, and occupation. Furthermore, the dietary pattern instrument consisting of 20 statements. This instrument was adopted from previous studies that had been tested for validity and reliability, and the last was an observation instrument related to blood sugar examination. editing, coding, data entry, cleaning and tabulation. And the analysis used was univariate analysis and bivariate analysis. In this study, the statistical test used was the ChiSquare test.

Results

Table 1. Frequency Distribution of Respondent Characteristics (n=60)

No	Respondent Characteristics	N	%
1	**Age**		
	<26 years	0	0
	26-40 years	0	0
	41-45 years	9	15.0
	46-70 years	47	78.3
	>70 years	4	6.7
2	**Education**		
	elementary school	12	43.3
	Junior High School	8	23.3
	Senior High School	26	43.3
	College	14	23.3
3	**Work**		
	Doesn't work	30	50.0
	Service	5	8.3
	Government employees	8	13.3
	Self-employed	14	23.3
	Other	3	5.0
	Amount	**60**	**100**

Based on the table above, it is known that the majority of respondents are in the age category of 46-70 years as many as 47 people (78.3%). Diabetes mellitus is at risk of increasing with age, especially at the age of over 40 years (Setyorogo & Trisnawati, 2013). In the education category, it is known that the majority of respondents have a high school education of 26 people (43.3%). And in terms of work characteristics, the majority of respondents are unemployed, namely 30 people (50%).

Table 2. Frequency Distribution Based on Eating Pattern (n=60)

No	Dietary habit	N	%
1	Good	33	55.0
2	Not good	27	45.0
	Total	**60**	**100.0**

Most respondents had a good diet, as many as 33 people (55%), and a small number of respondents had a poor diet, as many as 27 people (45%).

Table 3. Frequency Distribution Based on Blood Sugar Levels (n=60)

No	Blood Sugar Levels	N	%
1	Normal	11	18.3
2	Tall	46	81.7
	Total	**60**	**100.0**

Most of the type 2 diabetes mellitus patients had high blood sugar levels, as many as 49 people (81.7%) and a small number of respondents had normal GDP category, as many as 11 people (18.3%).

A. Bivariate Analysis

Table 4
Relationship between Diet Patterns and Blood Glucose Levels in Type 2 DM Patients (n=60)

Dietary habit	Blood Sugar Levels				Amount		OR (95%CI)	*P value*
	Normal		High					
	N	%	N	%	n	%		
Good	10	16.7	23	38.3	33	100	11,304 (1,342 – 95,202)	0.021
Not good	1	1.7	26	43.3	27	100		
Amount	11	18.3	49	81.7	60	100		

Based on the table above, it is found that Type 2 Diabetes Mellitus sufferers who have poor diets mostly have high fasting blood sugar levels, which is 26 people (43.3%). Based on statistical analysis using the Chi Square test on SPSS version 26, a significance value with a P Value of 0.021 was obtained. This value is less than 0.05, so it can be concluded that there is a significant relationship between the Relationship between Diet and Blood Glucose Levels in Type 2 Diabetes Mellitus sufferers (p value = 0.021). The results of the analysis obtained an Odds Ratio value = 11,304 (95% CI: 1,342 - 95,202) which means that type 2 diabetes mellitus sufferers who have poor diets are at risk of having blood sugar levels 11,304 times higher.

Discussion

Based on the results of the study, it was found that of the 60 respondents who participated, most were aged 46-70 years, as many as 47 people (78.3%). Kurniasari et al., (2020) in their study used respondents with an age range of 44-85 years, the results showed that the majority of respondents were aged 51-60 years, as many as 48 respondents (40.1%). Previous research conducted by (Susanti & Bistara, 2018) showed that most diabetes mellitus sufferers at the Tembok Dukuh Surabaya Health Center were aged 46-55 years, amounting to 15 (38%). Type II diabetes mellitus usually occurs after the age of 30 years and occurs more frequently after the age of 40 years, then continues to increase in old age. Around 6% of individuals aged 45-64 years and 11% of individuals over 65 years suffer from type II DM (Ignativius & Workman, 2006 in Amtira, 2016).

According to PERKENI, (2021) the risk of suffering from glucose intolerance increases with age. Pahlawati & Nugroho, (2019) also stated that age is related to diabetes mellitus (p value 0.000). (Setyorogo & Trisnawati, 2013) in their research reported that age and the incidence of diabetes mellitus have a significant relationship. Based on the theory put forward by (Sunjaya, 2009) in the research (Setyorogo & Trisnawati, 2013) diabetes mellitus is at risk of increasing with age, especially at the age of over 40 years, because at that age there is an increase in glucose intolerance.

The majority of respondents' education was high school (43.3%). In line with the research of Kurniasari et al., (2020), but different from the research of Susanti & Bistara, (2018) which showed

that the majority were elementary school. Higher education is associated with the ability to receive better health information (Pahlawati & Nugroho, 2019). The majority of respondents are unemployed (50%). Low physical activity affects blood sugar levels (Godu, 2019). The variable of work is related to physical activity that affects blood sugar control (Alfiani et al., 2017).
Most respondents have a good diet (55%). In line with research by Susanti & Bistara, (2018), but different from Kurniasari et al., (2020) which show.the majority of diets are not good. According to researchers, the majority of respondents' diets are good because they are patients registered at the health center who routinely check and receive education. The majority of respondents have high blood sugar levels (81.7%). In accordance with the results of the study by Susanti & Bistara, (2018) which showed that most experienced hyperglycemia. Failure of the pancreas to produce insulin is one of the main causes.

There is a significant relationship between diet and blood sugar levels (p=0.021). Type 2 DM patients with poor diet are at risk of having blood sugar levels 11,304 times higher than those with good diets (OR = 11,304; 95% CI: 1,342 - 95,202). These results are in line with Kurniasari et al., (2020). Poor diet such as high consumption of carbohydrates, fat, and excessive sugar triggers an increase in blood sugar levels. Reducing carbohydrate intake increases insulin sensitivity and lowers fasting blood sugar levels (Idris et al., 2014; Samaha et al).

Conclusion

The conclusion of this study is that the majority of respondents are aged 46-70 years as many as 47 people (78.3%), most of whom have a high school education as many as 26 people (43.3%) and most of whom are unemployed as many as 30 people (50%). The majority of respondents have a good diet as many as 33 people (55%), and the majority of type 2 diabetes mellitus patients have fasting blood sugar levels (FBS) in the high category as many as 49 people (81.7%). There is a significant relationship between the Relationship between Diet and Blood Glucose Levels in Type 2 Diabetes Mellitus Patients in the Margajaya Health Center Work Area, Bekasi City (p value = 0.021). Type 2 diabetes mellitus patients who have poor diets are at risk of having blood sugar levels 11,304 times higher than those who have good diets.

Reference

Alfiani, N., Yulifah, R., & Sutriningsih, A. (2017). The Relationship between Knowledge of Diabetes Mellitus and the Lifestyle of Diabetes Mellitus Patients at Dr. Soepraoen Malang Level II Hospital. Nursing News, 2(2),390-402.

Amtira, R. (2016). The Relationship of Diet Patterns with Blood Sugar Levels of Type II Diabetes Mellitus Patients in the Internal Medicine Polyclinic of DR. H. ABDUL MOELOEK Regional Hospital, Lampung Province in 2015. Medical Education Study Program, Faculty of Medicine, University of Lampung.

Amtiria. (2017). Relationship between Physical Activity Patterns and Diet Patterns with Blood Sugar Levels in Diabetes Mellitus Patients Kasih Gmim Manado. E-Journal of Nursing, 5(1), 2.

Arikunto, S. (2019). Research Procedures: A Practical Approach. Rineka Cipta.

Andas, A. M., Sansuwito, T., Said, F. M., Wada, F. H., Purnamasari, A., Prima, A., & Andas, N. H. (2024). The Influence of Sleep Hygiene on the Sleep Disorders of Elderly at Integrated Long Term Care. *Malaysian Journal of Nursing*, *15*(4), 109–117. https://doi.org/10.31674/mjn.2024.v15i04.013

Andas, A. M., Wada, F. H., Dewi, F., Sopiah, N., Shoaliha, M., Puspitasari, I., & Prima, A. (2022). *Pelatihan Senam Otak Pada Lansia Untuk Meningkatkan Fungsi Kognitif Pada Lansia Di Ruang Rawat Inap Rumah Sakit Daerah Bekasi Brain Gym Training in the Elderly to Improve Cognitive Function in the Elderly in the Bekasi Regional Hospital*. *1*(2), 1–6. https://doi.org/https://doi.org/10.54883/jakmw.v1i2.30

Bhatt, H., Saklani, S., & Upadhayay, K. (2016). Anti-oxidant and anti-diabetic activities of ethanolic

extract of Primula Denticulata Flowers. Indonesian Journal of Pharmacy, 27(2), 74-79.
Dewi, A. (2013). 30 Days Healthy Menu to Prevent and Overcome Diabetes Agro. Jakarta: Media Pusaka.
fahrudini. (2015). Relationship Between Age, Family History and Diet with the Incidence of Type 2 Diabetes Mellitus in the Flamboyan Ward of Abdul Wahab Sjahranie Hospital Samarinda. Muhammadiyah Health Sciences College Samarinda.
Felea, M. G., Covrig, M., Mircea, I., & Naghi, L. (2014). Socioeconomic status and risk of type 2 diabetes mellitus among an elderly group population in Romania. Procedia Economics and Finance, 10, 61-67.
Godu, YK (2019). Description of Diet, Physical Activity and Blood Sugar Levels in Type 2 Diabetes Mellitus Patients at Prof.DR.WZ Johannes Kupang Regional Hospital. Health Polytechnic, Ministry of Health, Kupang.
Idris, AM, Jafar, N., & Indriasari, R. (2014). Dietary Patterns with Blood Sugar Levels of Type 2 Diabetes Patients. MKMI Journal, 10(4), 211-218.
Ignativius, D. D., & Workman, M. L. (2006). Medical-Surgical Nursing: Critical Thinking For Collaborative Care., St. Louis, Missouri: Elsevier Saunders.
Ministry of Health of the Republic of Indonesia. (2020). Stay Productive, Prevent and Overcome Diabetes Mellitus. In the data and information center of the Indonesian Ministry of Health.
Kurniasari, S., Sari, NN, & Warmi, H. (2020). Dietary Patterns with Blood Glucose Levels in Type 2 Diabetes Mellitus Patients. Nursing Media Research, 3(1), 30-35.
Masturoh, I., & Anggita, N. (2018). Medical Records and Health Information (RMIK) Teaching Materials Health Research Methodology (print pe). Health Education Resource Center.http://bppsdmk.kemkes.go.id/pusdiksdmk/wp- content/uploads/2018/09/Health-Research-Methodology_SC.pdf
Mortin Andas, A., Puspitasari, I., Reskiadin, L. O., Romantika, I. W., Andas, N. H., & Shoaliha, M. (2025). The Role of Cognitive Behavioural Therapy in Enhancing Mental Health and Reducing Loneliness among Nursing Home Residents. *The Malaysian Journal of Nursing (MJN)*, *16*(4 SE-), 102–111. https://doi.org/10.31674/mjn.2025.v16i04.010
Mulyana, Z. A., Andas, A. M., & Astuti, P. (2022). Prevalensi Kualitas Tidur Keluarga di Ruang Rawat Inap RS Izza Karawang di Masa Pandemi Covid-19. *Jurnal Surya Medika*, *7*(2), 190–198. https://doi.org/10.33084/jsm.v7i2.2815
Nurcahya, D. (2017). The Relationship between Knowledge of Diabetes Mellitus and Quality of Life of Type 2 Diabetes Mellitus Patients at Haji Adam Malik General Hospital, Medan. University of North Sumatra, Medan.
Pahlawati, A., & Nugroho, PS (2019). Relationship between Education Level and Age with the Incidence of Diabetes Mellitus in the Palaran Health Center Work Area, Samarinda City in 2019. Borneo Student Research (BSR), 1(1), 1-5.
PERKENI. (2021). Guidelines for the Management and Prevention of Type 2 Diabetes Mellitus in Adults in Indonesia. In PB PERKENI. PB PERKENI.www.ginasthma.org.
Setyorogo, S., & Trisnawati, S. . (2013). Risk Factors for the Incidence of Type II Diabetes Mellitus at the Cengkareng District Health Center, West Jakarta in 2012. Scientific Journal of Health, 5(1), 6- 11.
Sucipto, Cecep Dani. (2020). Health Research Methodology (1st ed.). Gosyen Publishing.
Susanti, & Bistara, difran N. (2018). Relationship between Diet Patterns and Blood Sugar Levels in Diabetes Mellitus Patients. Journal of Vocational Health, 3(1), 29.
Susanto, T. (2013). Diabetes, Detection, Prevention and Treatment. Jakarta: Smart Book.
Yanti, Dwi Rahma Febri. (2016). The Relationship Between Sedentary Behavior and Diet with the Incidence of Diabetes Mellitus at the Fish Market Health Center, Bengkulu City in 2016 [DEHASAN HEALTH COLLEGE, BENGKULU]. In Dehasen Health College, Bengkulu.