TRANSPUBLIKA INTERNATIONAL RESEARCH IN EXACT SCIENCES (TIRES)

RELATIONSHIP BETWEEN DIET AND BLOOD SUGAR LEVELS DIABETES MELLITUS TYPE 2 PATIENTS

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Abstract

Incorrect eating patterns can cause an increase in blood sugar levels in patients with type 2 diabetes mellitus. This study aims to determine the relationship between diet and blood sugar levels in patients with type 2 diabetes mellitus in Lamme Village, Jaya District. The research design used was an analytical survey with a cross sectional study approach. The research location was carried out in Lamme Village, Jaya District. The population of this research is the Lamme Village Community, 41 people. The sample in this study was people suffering from type 2 diabetes mellitus who were selected as samples and were willing to be interviewed. The number of samples required is 41 people. The sampling technique uses purposive sampling technique. The research instruments needed are a questionnaire about the identity and characteristics of the respondent, a 3x24 hour food recall form, when checking blood sugar, food pictures, the SPSS program. The results obtained are that the majority of Lamme Village residents are aged 41-67 years, this age is in the late adult and elderly category, many sufferers of non-communicable diseases such as type 2 DM suffer at this age. The occupational variable itself shows that there are relatively few people with type 2 DM in the sample compared to the history of other diseases. The most variable nutritional status of type 2 DM patients is normal nutritional status.

Keywords: *Diet, Diabetes, Blood Sugar*

1. INTRODUCTION

According to WHO, Indonesia is among the ten countries with the highest number of diabetes mellitus cases in the world. Indonesia ranked fourth in 2000 with 8.4 million cases and is predicted to increase in 2030 to 21.3 million people.1 The International Diabetes Federation (IDF) states that the prevalence of DM in the world is 1.9% in all age groups, which is around 194 million people and in 2006 there were 246 million people in the world suffering from DM with a prevalence of 6% in all age groups. The threat of diabetes mellitus (DM) continues to loom large in people's lives. About 12%-20% of the world's population is estimated to have this disease and every ten seconds in the world people die from the complications caused. It is estimated that 171 million people in the world suffered from diabetes mellitus in 2000 and will increase to 366 million by 2030. In 2003, the IDF stated that the prevalence of DM in the world was 1.9% in all age groups, which is about 194 million people and in 2006 there were 246 million people in the world suffering from DM with a prevalence of 6% in all age groups. The national prevalence of diabetes mellitus in 2007 was 5.7%, ranking 6th in causes of death at all ages and 3rd in non-communicable diseases at all ages (Kurniasari et al., 2020). The prevalence of diabetes mellitus in South Sulawesi also reached 4.6%. The prevalence of diabetes mellitus increases as the number of people with diabetes increases (Hengky & Mardhatillah, 2018).

In terms of occupation, the prevalence of DM is higher among housewives (7.0%) and non-employed (6.9%) followed by employees and self-employed (5.9%) respectively. Based on the level of household expenditure per capita, the prevalence of DM increases with increasing expenditure levels. When viewed based on the number of DM cases per sub-district in 2012, five sub-districts were found to have the highest DM incidence rate, namely Makassar Sub-district with 1076 cases, Tamalate Sub-district with 910 cases, Biring Kanaya Sub-district with 700 cases, Panakukang Sub-district with 550 cases and Manggala Sub-district with 500 cases.3 Based on this description, this study was conducted to determine the relationship between diet and blood glucose levels of type 2 DM outpatients in Lamme Village, Jaya Sub-district (Aulia, 2021).

2. RESEARCH METHODS

The research design used was an analytic survey with a cross sectional study approach. The research location was carried out in Lamme Village, Jaya District. The population of this study, namely the Lamme Village Community 41 people. The sample in this study were people with type 2 diabetes mellitus who were selected as samples and willing to be interviewed. The number of samples needed is 41 people (Muhasidah & Indirawaty, 2017). Sampling technique using purposive sampling technique. The research instruments needed are questionnaires about the identity and characteristics of respondents, 3x24 hour food recall forms, when checking blood sugar, food pictures, SPSS programs, and writing instruments. The data collected included primary data including the identity and characteristics of respondents (age, gender, occupation, education, etc.), 3x24 hour food recall data, and data on the results of the Community capillary blood sugar examination (Timah, 2019).

3. RESULTS AND DISCUSSION

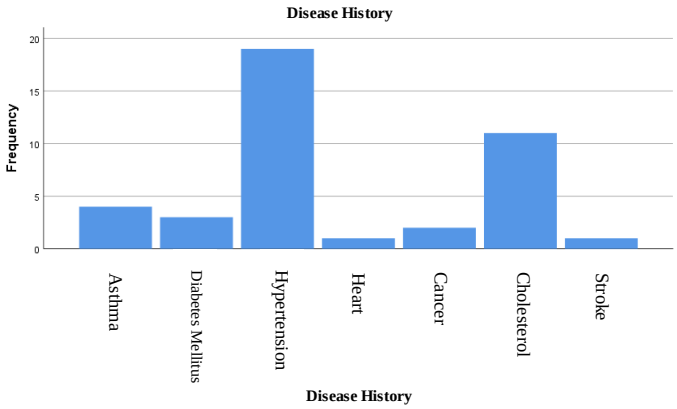

Figure 1. Disease History

The majority of people in Lamme Village are aged 41-67 years, this age is the category of late adulthood and the elderly, sufferers of non-communicable diseases such as type 2 DM are often suffered at this age. The variable of own occupation, it can be

seen that the type 2 DM community belonging to the sample is relatively small compared to the history of other diseases. As for the nutritional status variable of type 2 DM patients, most of them are in normal nutritional status (Hasanah, 2019).

Table 1. Sugar Content

Sugar Content					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal	25	61.0	61.0	61.0
	Low	10	24.4	24.4	85.4
	Hight	6	14.6	14.6	100.0
	Total	41	100.0	100.0	

Most of the people were in the good energy intake which was scattered in the category of uncontrolled blood sugar levels by 14.6%. The results of processing data on fruit and vegetable consumption showed that the majority of people sampled had an intake that was moderately distributed in the uncontrolled blood sugar level (100%). Consumption of sugar and its processed products in most communities, namely 61.0%, is in accordance with the recommended. People with controlled blood sugar levels had a good intake. The results of data collection on fruit and vegetable consumption can be explained that most people consume sufficient portions of fruit (Trilestari & Suprayitno, 2016).

Table 2. Conclusion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At Risk of PTM	36	87.8	87.8	87.8
	No Risks of PTM	5	12.2	12.2	100.0
	Total	41	100.0	100.0	

The results of this study are not in accordance with existing theory, the tendency of insufficient energy intake to uncontrolled blood sugar levels. There are still many factors that cause uncontrolled blood sugar levels in patients with type 2 diabetes mellitus such as heredity, lack of exercise, obesity, cellular aging, etc.

The results of the study prove that people with type 2 diabetes who have carbohydrate intake less than the needs tend to be unable to control blood sugar levels compared to patients whose carbohydrate intake is as needed, the amount of carbohydrates consumed from main meals and snacks is more important than the source of carbohydrates. This is because the amount of carbohydrates consumed from main and side meals affects blood sugar levels and insulin secretion (Wahyuni, 2019). The results of this study are supported by the research of Samaha et al, stating that reducing carbohydrate intake can improve insulin sensitivity in healthy individuals and reduce fasting blood sugar levels in patients with type 2 DM.4.

In theory, uncontrolled blood sugar levels in patients with type 2 diabetes whose carbohydrate intake exceeds their needs are caused by the high formation of sugar from carbohydrates and low insulin receptors, as stated by Edgren, that in patients with type 2 diabetes, the amount of insulin can be normal or more, but the number of insulin receptors found on the cell surface is less.

This is not in accordance with the existing theory because uncontrolled blood sugar levels in diabetic patients are not only caused by excessive sugar consumption but also by an unhealthy lifestyle. High fat intake, obesity, and lack of physical activity can also cause uncontrolled blood sugar levels (Idris et al., 2014a). Most patients who work as housewives mostly relax during the day until the evening after cooking, regular exercise can optimize the use of energy in the body and prevent excess energy from being stored as fat. Exercise can also improve blood circulation and increase insulin sensitivity. Vegetables are a source of vitamins, minerals and fiber. Dietary fiber is an edible part of plants or carbohydrate analogs that are resistant to digestion and absorption in the small intestine with complete or partial fermentation in the large intestine, dietary fiber includes starch, polysaccharides, oligosaccharides, lignin and other parts of the plant, physically fiber can be found in (Idris et al., 2014b).

4. CONCLUSION

Inadequate intake of energy, carbohydrate, and fat is associated with uncontrolled blood sugar levels in people with type 2 diabetes mellitus while protein intake is not associated with blood sugar levels. Consumption of sugar and processed food was not associated with blood sugar levels in people with type 2 diabetes mellitus, while poor consumption of vegetables and fruit was associated with uncontrolled blood sugar levels in people with type 2 diabetes mellitus. Meal schedule in patients with type 2 diabetes mellitus is not associated with blood sugar levels. The amount of glycemic load of food is not well associated with uncontrolled blood sugar levels in people with type 2 diabetes mellitus. Further research is needed on the factors that affect blood sugar control in patients with type 2 diabetes mellitus such as the relationship with cell age, stress factors, central obesity, micronutrient intake, etc. For people with type 2 diabetes mellitus to pay attention to diet, especially with regard to energy, carbohydrate and fat intake as well as consumption of sugar and its processed products, vegetables and fruit.

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