



Description of Dietary Compliance of Type 2 Diabetes Mellitus Patients at The Sorendiwari Health Center, Supiori Regency

Maay, Jems. K.R¹, Blestina, M², Nasrah³, Kismiyati⁴, Utami, Theresia FCT⁵, Jarona, Marlin⁶ & Suweni, Korinus⁷

Health Polytechnic of the Ministry of Health Jayapura, 99351 Jayapura, Papua, INDONESIA

*Corresponding Author: jemskrmaay@yahoo.co.id

To Cite This Article: Maay, J. K., Blestina, M., Nasrah, Kismiyati, Utami, T. F., Jarona, M., & Suweni, K. (2022). Description of Dietary Compliance of Type 2 Diabetes Mellitus Patients at The Sorendiwari Health Center, Supiori Regency. *Fitness, Performance and Health Journal*, 1(1), 52–58. <https://doi.org/10.53797/fphj.v1i1.8.2022>

Abstract. Diabetes mellitus (DM) is a type of degenerative disease that increases every year in countries around the world. Based on data from the International Diabetes Federation (IDF) the global prevalence of DM in 2019 is estimated at 9.3% (463 million people), In 2015. Based on riskesdas papua provision that in 2015 the general prevalence in Papua, diabetes mellitus (DM), was 0.8%. The purpose of the study: This study was conducted to determine the description of dietary compliance of Type 2 Diabetes Mellitus patients at the Sorendiwari Health Center, Supiori Regency. The research design used in this study is descriptive with a cross sectional study approach, the number of samples is 47 respondents. Compliance with the Amount of Food According to the Diet of Type 2 Diabetes Mellitus Patients as measured using the real form, the amount of energy was most appropriate as many as 34 people or 72.3%, while those who did not match were 13 respondents or 27.7%. most of the respondents adhered to the number of foods according to the diet of type 2 diabetes mellitus patients as many as 25 people or 53.2%, while those who did not comply were 22 respondents or 46.8%. Compliance with The Type of Food According to the Diet of Type 2 Diabetes Mellitus Patients, most respondents adhered to the type of food according to the diet of type 2 diabetes mellitus patients as many as 27 (57.4%) people, while those who did not comply were 20 (42.6%) respondents. Compliance with the Eating Schedule According to the Diet of Type 2 Diabetes Mellitus Patients, most respondents adhered to the eating schedule according to the diet of type 2 diabetes mellitus patients as many as 26 (55.3%) people, while those who did not comply were 21 (44.7%). Based on the results of a study conducted at the Sorendiwari Health Center, researchers can conclude that respondents who are obedient to the amount of food according to the diet of type 2 diabetes mellitus patients are 53.2%, and respondents who comply with the type of food according to the diet of type 2 diabetes mellitus patients are 57.4%, respondents who comply with the eating schedule according to the diet of type 2 diabetes mellitus patients as much as 55.3%.

Keywords: Diabetes Mellitus, Type 2, Dietary Compliance

1 Introduction

Diabetes mellitus (DM) is a type of degenerative disease that increases every year in countries around the world. Diabetes Mellitus always increases every year and is a threat to world health. The prevalence of type 2 Diabetes Mellitus accounts for 90% of all diabetes and is one of the most worldwide. World Health Organization (WHO) data estimates 2.2 million deaths from diabetes mellitus (Saeedi et al., 2019). They argues in the International Diabetes Federation (IDF) the global prevalence of DM in 2019 is estimated at 9.3% (463 million people), In 2015, Indonesia ranked 7th as the country with the most DM in the world, and is expected to rise to rank 6 in 2040 (Indonesian Endocrinology Association, 2015).

Type 2 DM occurs because cells β the pancreas produce small amounts of insulin or experience insulin resistance. The number of dm type 1 sufferers is 5-10% and type 2 DM is 90-95% of dm sufferers worldwide (Fauziah et al., 2021). Indonesia is ranked fourth in cases of type 2 diabetes mellitus with a prevalence of 8.6% of the total population, the results of basic

health research in 2018 show that the prevalence of diabetes mellitus is 2.0%, obtained based on the results of blood sugar tests in the population aged ≥ 15 years. The results of the Basic Health Research (Riskesdas) Papua Provision in 2015 the prevalence of Diabetes Mellitus (DM) was 0.8%, and in 2018 it increased to 1.20% (Riskesdas, 2018).

Diabetes Mellitus management is known as four main pillars, namely education, medical/dietary nutrition therapy, and physical and pharmacological therapy. The four management pillars can be applied to all types of Diabetes Mellitus including Type 2 Diabetes Mellitus. Control of blood sugar levels in DM patients is related to dietary factors or eating planning because nutrition is related to DM disease (Indonesian Endocrinology Association, 2015)

DM disease cannot be cured, but control through the management of the DM diet can prevent complications (Pardede et al., 2022). Dietary adherence is one of the keys to success in the management of DM disease. This is because meal planning is one of the 4 main pillars in the management of DM (Indonesian Endocrinology Association, 2015). The main obstacle to the management of the Diabetes Mellitus diet is the patient's saturation in following the diet (Rasmussen et al, 2020). The main keys to dieting in DM are the number of calories, the type of food, and the food schedule (3J).

The types of food consumed are derived from carbohydrates, proteins, and fats. The use of dietary fiber in people with DM is also important to influence the decrease in levels of total cholesterol and LDL (low-density lipoprotein) cholesterol in the blood. The increase in fiber content in the diet can also improve blood glucose levels so that the need for insulin from outside can be reduced (Smeltzer et al., 2008).

Obedience is a person's obedience in carrying out a predetermined activity, as well as an impulse from within a person to obey or obey what has been ordered. One way to overcome the further consequences of Diabetes Mellitus is by applying a DM diet (Pratiwi et al., 2021). Based on the data above, researchers are interested in researching the description of dietary compliance of Type 2 Diabetes Mellitus patients at the Sorendiwari Health Center, Supiori Regency in 2021.

2 Research Methods

The research design used in this study was descriptive with a cross-sectional study approach, namely to describe the diet compliance of Type 2 Diabetes Mellitus patients at the Sorendiwari Health Center, Supiori Regency. This study aims to provide an overview of the object under study, namely adherence to the diet of Type 2 Diabetes Mellitus patients. The population in this study was all Diabetes Mellitus patients recorded at the Sorendiwari Health Center, Supiori Regency. The sample from this study was 47 people.

3 Results

3.1 Characteristics of Respondents

Based on Table 1, it is known that respondents are mostly <50 years old as many as 31 people or 66%, and ≤ 50 years old as many as 16 people (34%) and the respondents with the most male sex are 27 people or 57.4% and female sex as many as 20 people or 42.6%, based on the most respondent education with a high school education level of 18 or 38.3% and at least respondents with S1 education as many as 4 people or 8.5%, while based on the work of the respondents, the most were private as many as 12 people or 25.5% and the least were retired civil servants and honors as many as 4 people or 8.5%.

Table 1. Characteristics of respondents based on Age, Gender, Education, and Occupation in Type 2 Diabetes Mellitus at the Sorendiwari Health Center, Supiori Regency in 2021

Characteristic	Frequency (n)	Percent (%)
Age		
≤ 50 years	16	34
>50 years	31	66
Gender		
Man	27	57.4
Women	20	42.6
Education		
Primary school (SD)	6	12.8
Junior high school (SMP)	14	29.8
High school (SMA)	18	38.3
Diploma (D3)	5	10.6
Bachelor (S1)	4	8.5
Work		
Farmer	10	21.3
private	12	25.5
Housewife (IRT)	10	21.3
Civil servants	7	14.9
Civil servants retired	4	8.5
Honorary	4	8.5
Total	47	100.0

Source: Primary Data 2021

3.2 Patient Diet Compliance Data

Compliance with the Amount of Food According to the Diet of Type 2 Diabetes Mellitus Patients.

Table 2 show, it is known that respondents' adherence to the amount of food according to the diet of type 2 diabetes mellitus patients measured using the rectal form, the amount of energy was most appropriate for as many as 34 people or 72.3%, while those that were not suitable were 13 respondents or 27.7%. Protein intake is mostly according to the diet of diabetes mellitus patients as many as 26 people or 55.3%, which is not suitable for as much as 44.7%. Fat intake as mostly according to the diet of diabetes mellitus patients as many as 26 people or 55.3%, which was not appropriate for as much as 44.7%.

Table 2. Distribution of Frequency of food intake according to the Diet of Type 2 Diabetes Mellitus Patients at the Sorendiwari Health Center, East Supiori District in 2021

Number of Meals	Frequency (n)	Percent (%)
Energy		
Not Appropriate	13	27.7
Appropriate	34	72.3
Proteins		
Not Appropriate	21	44.7
Appropriate	26	55.3
Fat		
Not Appropriate	21	44.7
Appropriate	26	55.3
Total	47	100.0

Source: Primary Data 2021

Based on Table 3, it is known that most respondents adhered to the amount of food according to the diet of type 2 diabetes mellitus patients as many as 25 people or 53.2%, while those who did not comply were 22 respondents or 46.8%.

Table 3. Distribution of Frequency of Compliance with The Amount of Food According to the Diet of Type 2 Diabetes Mellitus Patients at the Sorendiwari Health Center, East Supiori District in 2021

Amount of food	Frequency (n)	Percent (%)
Disobedient	22	46.8
Obedient	25	53.2
Total	47	100.0

Source: Primary Data 2021

3.3 Compliance with The Type of Food According to the Diet of Type 2 Diabetes Mellitus Patients

Based on Table 4, it is known that most respondents adhered to the type of food according to the diet of type 2 diabetes mellitus patients as many as 27 people or 57.4%, while those who did not comply were 20 respondents or 42.6%.

Table 4. Distribution of Frequency of Food Type Compliance According to the Diet of Type 2 Diabetes Mellitus Patients at the Sorendiwari Health Center, East Supiori District in 2021

Types of Food	Frequency (n)	Percent (%)
Disobedient	20	42.6
Obedient	27	57.4
Total	47	100

Source: Primary Data 2021

3.4 Compliance with the Eating Schedule According to the Diet of Type 2 Diabetes Mellitus Patients

According to Table 5, it is known that most respondents adhered to the eating schedule according to the diet of type 2 diabetes mellitus patients as many as 26 people or 55.3%, while those who did not comply were 21 respondents or 44.7%.

Table 5. Distribution of Frequency of Eating Schedule Compliance According to the Diet of Type 2 Diabetes Mellitus Patients at the Sorendiwari Health Center, East Supiori District in 2021

Meal Schedule	Frequency (n)	Percent (%)
Disobedient	21	44.7
Obedient	26	55.3
Total	47	100.0

Source: Primary Data 2021

4 Discussion

4.1 Compliance with the Amount of Food According to the Diet of Type 2 Diabetes Mellitus Patients

The results showed that respondents' adherence to the amount of food according to the diet of type 2 diabetes mellitus patients who were glued using the form recall form the amount of energy was mostly appropriate as many as 34 people or 72.3%, while those who did not match

were 13 respondents or 27.7%. Protein intake is mostly according to the diet of diabetes mellitus patients as many as 26 people or 55.3%, which is not suitable as much as 44.7%. Fat intake was mostly according to the diet of diabetes mellitus patients as many as 26 people or 55.3%, which was not appropriate as much as 44.7%. Diabetes Nutrition Study Group (DNSG) recommendations for the amount and quality of food include protein intake of 10% - 20% of energy intake or about 0.8 - 1.3 g/kg of body weight in people under the age of 65 years, and 15% - 20% in people over the age of 65 years appear safe in stable weight conditions (Pfeiffer et al., 2020).

Reduced carbohydrate intake may increase insulin sensitivity in healthy individuals and decrease fasting blood sugar levels in type 2 DM patients. In theory, the uncontrolled blood sugar levels in type 2 DM patients whose carbohydrate intake exceeds the needs is due to the high formation of sugar sourced from carbohydrates and low insulin receptors.

According to Baldwin et al. (2012), in dm type 2 patients, the amount of insulin can be normal or more, but the number of insulin receptors present on the cell surface is less. The deficiency of essential amino acids will weaken the performance of cells in charge of processing sugars. In addition, the healing process will last a long time due to the absence of important amino acids that the body needs to regenerate cells damaged by high blood sugar levels. Amino acid deficiency also causes an increase in insulin levels associated with stress caused by the non-fulfillment of amino acids that work as neurotransmitters in the brain.

Patient compliance in controlling the amount of food will be useful for patients to avoid an increase in blood glucose levels to increase, so it is necessary to have the role of community health center officers to provide information to Diabetes Mellitus patients on the importance of complying with the amount of food consumed so that there is no sudden and uncontrolled increase in blood glucose will interfere with their health conditions for activities.

4.2 Compliance with The Type of Food According to the Diet of Type 2 Diabetes Mellitus Patients

The results showed that most respondents adhered to the type of food according to the diet of type 2 diabetes mellitus patients as many as 27 people or 57.4%, while those who did not comply were 20 respondents or 42.6%. A more individualized approach to nutritional therapy should be considered for Type 2 DM patients and clinical guidelines should pay attention to this. A lot of research, it's needed to look at the impact of diet on different health problems. Such studies should be prioritized due to the high prevalence of Type 2 DM and the increase due to dietary changes may have greater benefits than previously thought. In addition, studies focusing on the patient's adherence to different types of diets, as well as personal and environmental factors that can influence compliance are indispensable (Magnusdottir et al., 2017).

Some developed countries issue diabetic dietary guidelines that focus on low-fat diets. This is an important consideration especially maintaining the quality of macronutrients (i.e., type versus quantity of macronutrients), avoidance of processed foods (especially starch and processed sugars), and overall dietary patterns. Evidence suggests a high dietary intake pattern of vegetables, fruit, whole grains, legumes, beans, and dairy products such as yogurt, but with some caution. First, some dietary approaches (e.g. low-carb diets) recommend limiting the intake of fruits, whole grains, and legumes due to their sugar or starch content in them. For fruit intake, especially among those suffering from diabetes, opinions are divided between scientists and doctors (Forouhi et al., 2018).

4.3 Compliance with the Eating Schedule According to the Diet of Type 2 Diabetes Mellitus Patients

The results showed that most respondents adhered to the eating schedule according to the diet of type 2 diabetes mellitus patients as many as 26 people or 55.3%, while those who did not comply were 21 respondents or 44.7%. Meal schedule management is considered a big step in assessing patient knowledge related to nutritional aspects, treatment, and complications of diabetes. Diabetic patients often have difficulty identifying the recommended foods, including their quality and quantity. The Kingdom of Saudi Arabia (KSA)'s sedentary lifestyle with the thought of food choices and portion sizes has increased considerably and resulted in an increased risk of type 2 diabetes patients in KSA (Sami et al., 2020). Moreover, talking to patients about nutrition is time to eat, there are many places outside special diabetes centers where trained officers have a supply of media facilities about nutrition for diabetes such as printed nutrition menu paper given to patients (Forouhi et al., 2018).

DM patients who carry out DM management properly, including in terms of eating arrangements in accordance with the recommendations will be able to control blood sugar (Idris et al., 2016). Eating schedule regulation is very important for people with type 2 DM because by dividing the meal time into small but frequent portions, carbohydrates are digested and absorbed more slowly and stably. In addition, insulin needs also become lower and insulin sensitivity increases so that the body's metabolism can run better. According to Indonesian Endocrinology Association (2015), dividing food into small portions with a more frequent frequency of large foods and interludes are more effective at keeping blood sugar at normal limits. The longer the distance between meals, the greater the amount of food consumed (Magdalena, 2016).

5 Conclusion

Based on the results of a study conducted at the Sorendiwari Health Center, researchers can conclude that respondents who are obedient to the amount of food according to the diet of type 2 diabetes mellitus patients are 53.2%, respondents who are obedient to the type of food according to the diet of type 2 diabetes mellitus patients are 57.4%, respondents who comply with the eating schedule according to the diet of type 2 diabetes mellitus patients as much as 55.3%.

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