The Relationship Between *Diabetes Self-Management* And The Stress Level Of Diabetes Mellitus Patients Undergoing A Diet At The Puskesmas Kota Rantau Prapat

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ARTICLE INFO	ABSTRACT
Keywords: Diabetes Mellitus, diabetes self-management, Dietary Stress Levels	Diabetes Mellitus (DM) is a chronic disease characterized by blood glucose levels exceeding normal and disturbances of carbohydrate, fat and protein metabolism caused by relative or absolute deficiency of the hormone insulin. If this is left uncontrolled, it can lead to acute metabolic complications and long-term vascular complications, both microangiopathy and macroangiopathy (Darmono in Hasdianah, 2012). Knowledge is needed by DM patients to improve self diabetes management to prevent acute complications and reduce risk long term complications. People with DM must have a fairly strict diet. This can be boring and stressful because the patient has to follow the recommended diet during his lifetime. Methods: This study aims to determine the existence of The relationship between diabetes self-management and stress levels on a diet for DM patients at the Rantau Prapat Public Health Center. This study used a cross sectional design. Respondents were selected from five Puskesmas in Puskesmas Rantau Prapat using purposive sampling method. A total of 37 respondents with DM participated in the study. Data were collected using a diabetes diet knowledge questionnaire, diet self-management questionnaire, and a stress level questionnaire undergoing a DM diet, and then the data were analyzed using the Chi Square test with a significance level of <0.05. Results: The results showed that there was a relationship between diabetes self-management and the stress level of undergoing a DM diet (p=0.004). Future research is expected to be able to use respondents with a wider area and use better measuring tools.
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INTRODUCTION

Diabetes Mellitus (DM) is a chronic disease that occurs when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin produced. This usually leads to hyperglycemia in DM patients. Hyperglycemia in DM that is not well controlled can cause serious damage to body systems, especially nerves and blood vessels (World Health Organization, 2017). In addition to causing severe complications, DM also makes sufferers unable to move or work as usual, and provides a burden on the family, as well as economic harm, because it requires lifelong care and treatment. DM can be successfully managed and its complications prevented, especially when detected early. Even better, take precautions by making lifestyle changes, such as increasing diet and physical exercise (International Diabetes Federation, 2017). *The International Diabetes Federation* (IDF) in 2017 reported that the number of DM sufferers in the world in 2017 reached 425 million adults aged between 20-79 years. More than 79% of sufferers live in developing countries and it is estimated that by 2045 the number of DM sufferers will increase to 629 million people. IDF also reported that Indonesia is in the top 10 countries with the highest number of DM with 10.3 million people and is expected to increase to 16.7 million people by 2045. Regional Health Research Data (Riskesdas) shows that the prevalence of diabetics in East Java province is in the top 10 in Indonesia with a prevalence of 6.8% (Kominfo, 2015). The most important treatment of diabetes is to change lifestyle, especially managing a healthy and balanced diet. The application of diet is one of the main

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components in the success of diabetes management, but it is often an obstacle in diabetes services because it requires compliance and motivation from the patient himself (Setyorini, 2017). Compliance with DM sufferers to dietary arrangements and planning is one of the obstacles in diabetic patients. Many diabetics feel bored and stressed because they have to obey the recommended diet program during their lives (Widodo, 2012) This was experienced by the six respondents involved in stress research on patients with type-2 Diabetes mellitus in implementing a diet program at the Internal Medicine Clinic of Dr. Kariadi Hospital Semarang conducted by Widodo in 2012. The stress that arises and the duration they experience stress, is determined by various factors of difficulty experienced by sufferers, such as food restrictions, the amount of food that must be measured, and the wrong eating habits before illness. The way of handling that sufferers do in dealing with stress when running a diet can affect their success in complying with the diet program and controlling blood sugar levels (Widodo, 2012)

Actually, many DM patients already know the dietary recommendations, but many do not obey them. Many DM patients consider that diet foods tend to be unpleasant so they eat as desired if they have not shown serious symptoms (Setyorini, 2017). Therefore, knowledge is needed that must be possessed by the patient (PERKENI, 2015), because knowledge is the basis for carrying out an action, so that every patient who will perform an action is usually preceded by knowing, then has the initiative to take an action based on his knowledge. Behavior based on knowledge will be better than behavior that is not based on knowledge (Notoatmodjo, 2003). The level of knowledge is very necessary in managing DM diet, but the ability of individuals to manage daily life, control and reduce the impact of the disease they suffer is known as Self-management is needed in DM control (Lin, 2008). Self-management enables patients to develop problem-solving skills, increase self-efficacy and support real-life applications of knowledge. The existence of problem-solving skills and knowledge in DM allows patients to make decisions about the best management for themselves. Self-management is very influential on the process and results of disease management (Putri, Yudianto and Kurniawan, 2013). This is supported by Setyorini's research (2017) which states that 15 out of 19 DM patients have more knowledge and good self-management in DM diet settings, patients prefer to follow doctor's recommendations, avoid eating sweets, eat more vegetables than rice and avoid stress so as not to increase blood sugar levels.

Based on the results of a preliminary study conducted at Jagir Health Center, Kedungdoro Health Center, and Asemrowo Health Center on April 24-25, 2018, from 10 DM clients, information was obtained that five patients felt stressed by the advice given by the doctor, namely feeling confused about what foods to avoid and sometimes bored with the food consumed. In addition to stress, patient diet self-management is also still poor shown by the expression that patients still often eat foods that are outside the diet rules. Two other sufferers do not feel stress in running a diet because they have more knowledge about what foods can be consumed and completely avoid sweet foods. The other two people felt deterred because they did not comply with the dietary rules recommended by the doctor to make their sugar levels immediately soar. Both explained that in the past, natural stress carried out diet recommendations, namely feeling bored and bored, but over time they got used to it and could control themselves in diet management. Another patient felt a little stressed if he had to follow the doctor's advice. These patients find it difficult and confused if they have to follow the recommendations given. Actually, patients know what foods are allowed or not, but patients say they are sometimes tempted by certain foods but often avoid sweet foods.

Diabetics easily experience stress in carrying out a diet program so that the way of handling that sufferers do in dealing with stress when on a diet affects their success in complying with the diet program and controlling blood sugar levels. So it is expected to minimize the occurrence of complications both acute and chronic (Setyorini, 2017). In connection with the background of the above problems, the author is interested in conducting research to determine the relationship

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between the level of knowledge and self-management of diabetes with the level of stress on a diet in people with DM.

METHOD

This research is a quantitative research using this research using a correlational descriptive design, which is research that aims to reveal the correlative relationship between independent variables and dependent variables and test based on existing theories. This study uses a *cross sectional* approach that emphasizes the time of measurement or observation of data on independent variables and dependent variables carried out once at a time. A *cross-sectional approach* was taken to develop and explain the relationship between the level of knowledge and self-management of diabetes with the stress level of undergoing a diet in people with diabetes.

The research began to be carried out from the beginning of the preparation of the proposal to the preparation of research results from March to July 2022 at the Puskesmas Kota Rantau Prapat. The population is all research subjects who meet predetermined criteria (Nursalam, 2016). Nursalam (2016) population is divided into two, namely, affordable population and target population. Affordable populations are populations that meet research criteria and are usually reachable by researchers from their cohorts. While the target population is a population that meets the sampling criteria and is the target of research at the Puskesmas Kota Rantau Prapat. A total of 30 people. The sample is a portion of the overall object under study that is considered to be the entire population (Notoadmojo, 2012). In other words, the sample is the elements of the population that are selected based on their ability to represent them. The number of samples in this study was 30 people.

RESULTS AND DISCCUSION

Results
Table 1. Distribution of respondent characteristics based on the age of diabetes mellitus patients at the Rantau Prapat Health Center in 2021

No	Characteristics	Frequency	Percentage %
1	26 - 35 Years	15	50,0
2	36-45 Years	11	36,7
3	46-55 Years	4	13,3
Total		**30**	**100**

Based on table 1. Above it can be seen that the majority of respondents whose age interval is 26-35 years is 15 people (50.0%), while the minioritas of respondents whose age interval is 46-55 years are 5 people (13.3%).

Table 2 Distribution of Respondents' Characteristics Based on Gender of Diabetes Mellitus Patients at Puskesmas Rantau Prapat in 2021

No	Characteristics	Frequency	Percentage %
1	Man	24	80,0
2	Woman	6	20,0
	Total	**30**	**100**

Based on table 2. Above it can be seen that the majority of respondents' gender is male as many as 24 people (80%)

Table 3. Distribution of respondent characteristics based on the work of diabetes mellitus patients at the Rantau Prapat Health Center in 2021

No	Characteristics	Frequency	Percentage %
1	Civil servant	13	43,3
2	Wiraswasta	11	36,7
3	Farmer	6	20,0
	Total	**30**	**100**

Based on the 3 above, it can be seen that the majority of respondents based on civil servant jobs are 13 people (43.3%) while the minority are farmers as many as 6 people (20%).

Table 4. Distribution of respondents' characteristics based on the length of suffering from diabetes mellitus patients at the Rantau Prapat Health Center in 2021

No	Characteristics	Frequency	Percentage %
1	2 Years	15	50,0
2	3 Years	6	20,0
3	4 Years	7	23,3
4	5 Years	2	6,7
	Total	**30**	**100**

Based on 4. Above it can be seen that the majority of respondents based on the length of suffering for 2 years as many as 15 people (50%) while the minority is 5 years as many as 2 people (6.7%).

Table 5. Distribution of Respondents' Characteristics towards Running Diabetes *Self-Management* in DM Patients at Puskesmas Rantau Prapat in 2021

No	Diabetes *Self – Management*	Frequency	Percentage %
1	Good	17	56.7
2	not good	13	43.3
	Total	**30**	**100**

Based on table 5, above can be seen Diabetes Self *Management* is good 17 people (56.7%) and Diabetes *Self Management* is not good 13 people (43.3%)

Table 6. Distribution of Respondents' Characteristics on the Stress Level of Diabetes Mellitus Patients on Diet in Diabetes Mellitus Patients at the Rantau Prapat Health Center in 2021

No	Stress Level of DM Patients	Frequency	Percentage %
1	Keep	14	46.7
2	Light	16	53,3
	Total	**30**	**100**

Based on table 6 above, it can be seen that respondents who are Stress Level of Diabetes Mellitus Patients Who Undergo a Moderate Diet Category as many as 14 people (46.7%) and moderate respondents as many as 16 people (53.3%).

Bivariate Results

Table 7. The relationship between diabetes self-management and the stress level of diabetes mellitus patients undergoing a diet in diabetes mellitus patients at the Rantau Prapat Health Center in 2021

Diabetes *Self – Management*	Stress Level of Diabetes Mellitus Patients		Total	Chi-Suare
	Light	Keep		
Good	12	5	17	0.004
Not Good	2	11	13	
Total	14	16	30	

From the results of the analysis using the SPSS system Chi-Square test shows that there is a positive and significant relationship between Diabetes Self-Management and the Stress Level of Diabetes Mellitus Patients Who Undergo Diet at Puskesmas Rantau Prapat result $p = 0.004$, so it can be concluded that Ha accepted that there is a significant relationship between Diabetes Self-Management and the Stress Level of Diabetes Mellitus Patients Who Undergo Diet at Puskesmas Rantau Prapat.

Discussion

After the author conducted a study by collecting data through correlation test tests and conducting data analysis techniques conducted on respondents about the relationship between *diabetes self-management* and the stress level of diabetes mellitus patients who underwent a diet at the Rantau Prapat Health Center in 2021. Then the author will discuss the results of research that have been found as follows

1. **Diabetes Self – Management of DM Patients at Puskesmas Rantau Prapat**
   Based on data analysis that Diabetes Self Management is good as many as 17 people (56.7%) and Diabetes Self Management is not good 13 people (43.3%).

2. **Stress Level of Diabetes Mellitus Patients on Diet at Puskesmas Rantau Prapat**
   Based on data analysis, it can be seen that respondents who are stressed by diabetes mellitus patients who are on a moderate diet as many as 14 people (46.7%) and mild respondents as many as 16 people (53.3%). DM sufferers have high levels of stress and anxiety, which are related to treatment that must be undergone to prevent serious complications. Stress experienced by sufferers is related to treatment that must be undertaken such as diet or eating arrangements, blood sugar control, drug consumption, exercise and others that must be carried out throughout his life. In addition, the risk of disease complications that can be experienced by sufferers will also increase stress in DM sufferers (Shahab, 2006). DM sufferers have to change their lifestyle and diet, this is a difficult thing to do because it is the same as changing the habits they have done for decades, then must be changed drastically. Changes in diet and dietary doses recommended by doctors are a threat to people with DM, and do not rule out the possibility of experiencing stress in carrying out a healthy lifestyle and diet.

3. **The relationship between diabetes self-management and the stress level of diabetes mellitus patients who undergo a diet at the Rantau Prapat Health Center.**
   From the results of the analysis using the SPSS system Chi-Square test shows that there is a positive and significant relationship between Diabetes Self-Management and the Stress Level of

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Diabetes Mellitus Patients Undergoing Diet in Diabetes Mellitus Patients at the Rantau Prapat Health Center the result p = 0.004, so it can be concluded that Ha is accepted that there is a significant relationship between the relationship between Diabetes Self-Management and the stress level of Diabetes Mellitus patients who undergo a diet at the Rantau Health Center Prapat.

The most important treatment of diabetes is to change lifestyle, especially managing a healthy and balanced diet. The application of diet is one of the main components in the successful management of diabetes, but it is often an obstacle in Diabetes services because it requires compliance and motivation from the patient himself. Changes in lifestyle and diet are difficult things to do because they are tantamount to changing the habits that patients have done for decades. For people with DM, changes in lifestyle and diet are not easy things and can make individuals experience stress, and can cause boredom because they have to adhere to the recommended diet program during their lives.

According to Widodo (2012) Stress is the inability to overcome threats faced by mental, physical, emotional and spiritual humans, which at some point can affect the physical health of these humans. This situation is experienced by patients when undergoing the recommended diet program. Stress experienced by DM sufferers in the long term can worsen health conditions. Stress can produce changes in the psychological, physiological and emotional aspects of such human beings. This situation is experienced by patients when undergoing the recommended diet program. Stress experienced by DM sufferers in the long term can worsen health conditions. Stress can generate alterations in psychological, physiological and emotional aspects. Diabetics easily experience stress in carrying out a diet program so that the way patients handle stress when on a diet can affect their success in complying with the diet program and controlling blood sugar levels (Setyorini, 2017). From the data of this study it can be concluded that most DM sufferers have moderate self-management and have a high level of stress in carrying out DM diet recommendations. High stress in people with DM in addition to being caused by troublesome dietary recommendations that cause a lot of eating or choosing unhealthy foods, difficulty resisting the temptation to eat unhealthy foods and stress causes patients to tend not to be punctual in the meal schedule.

Stress is twice as easy to strike people with diabetes compared to people who don't have diabetes. The stress that arises and the duration of stress is determined by the various difficulties experienced by diabetic patients during the diet, especially related to the amount of food that must be measured, restrictions on food types, wrong eating habits before illness and during diabetes. The results of this study are in accordance with Aikens' (2012) research which states that there is a significant relationship between self-management and diabetes distress, which is indicated by an increase in HbA1c, non-adherence to drug consumption, and non-adherence to diet and physical activity. Also supported by Gonzalez's research (2008) which states that there is a negative relationship between depressive symptoms and diabetes self-care, where the lower the patient's self-care, the greater the stress level of DM sufferers. Judging from the four domains in diabetes self-management, namely recognizing the need for calorie count, choosing healthy foods, setting schedules or meal planning, and managing dietary behavior challenges showed results that each domain had a different total score. Where the highest total score in the domain of setting a schedule or meal planning. So this study shows that diabetes self-management of DM sufferers regarding schedule management or meal planning is better than other domains. Many respondents know the interval between eating large meals and snacks, because most of the respondents are more careful in adjusting their diet to maintain sugar levels, especially in reducing snacks or snacks.

Research by Phitri, Herlena and Widyaningsih (2013) shows that the results of respondents' compliance with a diabetes diet based on a schedule are because respondents know it is important in maintaining blood sugar levels so as not to soar, and respondents' non-compliance in running a

DM diet based on schedule occurs due to the respondent's busy factor in working and carrying out daily activities. The results of this study are contrary to research conducted by Kurnia, Amatayakul and Karuncharernpanit (2017) which states that there is no significant relationship between diabetes self-management and diabetes distress. This is due to situational influences in carrying out diet therapy that must be undertaken. All existing situations can directly affect the behavior taken by DM sufferers. People with DM with greater influence on the situation had higher self-management scores. Thus, in the study, more than half of the respondents had poor levels of diabetes self-management. Respondents reported that this was because the number of food stalls or shops selling food according to the diabetic diet was difficult to find, and also because health workers did not conduct regular home visits for DM patients who could not go to the Puskesmas.

CONCLUSION

The majority of Diabetes *Self-Management* responses were good as much as not good 17 0rang (43.3%), the majority of stress levels of diabetes mellitus patients who were on a diet were good as many as 16 people (53.3%) and there was a relationship between *diabetes self-management* and the stress level of diabetes mellitus patients who were on a diet at the Rantau Prapat Health Center in 2021.

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