



APPLICATION OF INTERMITTENT FASTING TO CHANGES IN BLOOD SUGAR LEVELS IN TYPE 2 DIABETES MELLITUS PATIENTS

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ABSTRACT

Type 2 DM is a metabolic disorder caused by a lack of insulin hormone. (Intermittent Fasting) is an effective method used to help lower and stabilize blood glucose in patients with Type II Diabetes Mellitus. This type of research is a description with a case study approach model. The sample is 2 respondents with Type II Diabetes Mellitus. The application of intermittent fasting diet to respondents with type 2 diabetes mellitus obtained different results, where the first respondent was unsuccessful in carrying out the intermittent fasting diet marked by the GDS levels before and after the intervention were still the same, namely 225 mg / dl, while the second respondent had results marked by GDS before the intermittent fasting diet was 220 mg / dl and after the intermittent fasting diet became 202 mg / dl. Conclusion of the intermittent fasting diet can be seen whether or not there is compliance in carrying out intermittent fasting to determine stable blood sugar levels. In the first respondent, there was no effectiveness because they did not comply with the existing rules in carrying out the intermittent fasting diet which resulted in no decrease in blood sugar levels, while for the second respondent there was a decrease in blood sugar levels and had effectiveness in the intermittent fasting diet, if both respondents did it optimally it would cause a decrease in blood sugar levels.

Keywords: blood sugar levels; diabetes mellitus; diet termitten fasting

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INTRODUCTION

The most common diabetes cases are type 2 diabetes mellitus, which is characterized by impaired insulin secretion or impaired insulin function (insulin resistance) in target organs, especially the liver and muscles (Minardo et al., 2022). WHO predicts an increase in the number of people with DM in Indonesia from 8.4 million in 2000 to around 21.3 million in 2030 (Gede et al., 2016). This report shows an increase in the number of people with DM by 2-3 times in 2035 (Setiati et al., 2014). According to Riskesdas, the highest prevalence of diabetes diagnosed by doctors is in DI Yogyakarta (2.6%), DKI Jakarta (2.5%), North Sulawesi (2.4%), and East Kalimantan (2.3%) (Kemenkes RI, 2018), (Riskesdas Jawa Tengah, 2018).

Type 2 diabetes mellitus that is not treated properly will cause complications in the heart, eyes and kidneys. These complications of diabetes mellitus cause a high death rate with slow and progressive symptoms. The risk of heart disease occurs most in people with diabetes mellitus compared to normal people (Saputra et al., 2020). Failure of glycemic control in diabetes mellitus (DM) requires pharmacotherapy intervention in addition to making lifestyle changes, the goal is to prevent diabetes complications or at least inhibit them ((Katuuk & Gannika, 2019). In addition to using pharmacotherapy, diabetes mellitus patients must be accompanied by exercise and diet. One diet that has been done is intermittent fasting (Katuuk & Gannika, 2019). Intermittent fasting or known as intermittent fasting is a diet pattern where a person has a time to eat on time in the eating window and fast at other times. This does not limit what

can and cannot be eaten, grains, vegetables, proteins or fruits are allowed as long as the "eating window" is open. The basic principle of intermittent fasting is to give the body time to digest food and in the process, burn excess body fat and detoxify (Bachri et al., 2022).

The role of nurses in preventing increased blood sugar levels in the community is to increase knowledge, build skills, develop attitudes that lead to improved quality of life, reduce or prevent complications. This problem aims to determine the description of the provision of intermittent fasting nursing actions to see the instability of blood glucose levels in Type 2 DM patients in the RT 001 environment, Baru Village, Pasar Rebo District.

METHOD

This study uses a case study type on the application of Intermittent Fasting to changes in blood sugar levels in patients with type 2 diabetes mellitus. This method uses a descriptive case study approach, namely the analysis of the application of Intermittent Fasting in patients with type 2 diabetes mellitus. The focus of the study that will be used as a reference point for the following case study is to carry out intermittent fasting in patients with type 2 diabetes mellitus can regulate blood sugar levels so that blood sugar levels in the body become stable. The application of intermittent fasting is done by regulating eating patterns or maintaining meal times from usual. The data that has been collected is analyzed to see the nursing problems experienced by patients to review the effectiveness of the interventions that have been carried out to solve their nursing problems. The large number of people with type 2 diabetes mellitus makes researchers interested in conducting research. Intermittent fasting is one of the alternative actions that can be carried out on patients with diabetes mellitus, especially type 2.

The first step taken by the researcher is to collect complete information with data collection procedures in the preliminary study. After obtaining the data, the data is then analyzed. Then the researcher will analyze the data obtained. The researcher will involve the role of the family in providing an intermittent fasting diet to family members who suffer from diabetes mellitus. Researchers will observe the provision of intermittent fasting and the results of patients after performing the action. After that, an evaluation of intermittent fasting in patients with type 2 diabetes mellitus was carried out. Researchers recorded the results. The researchers applied data collection methods, namely by conducting a preliminary study, carrying out a time contract with patients and families, explaining intermittent fasting, and asking for informed consent to become respondents.

Data collection used includes interviews, observations. Interviews were conducted to find out patient biodata, main complaints, current medical history experienced by the patient regarding signs and symptoms of type 2 diabetes mellitus that appear in the patient, past medical history experienced by the patient and blood sugar history and assessment related to intermittent fasting. Observations were carried out before and after carrying out nursing actions to handle blood sugar levels by doing intermittent fasting. Physical examination General condition: consciousness, normal blood sugar levels, vital signs within normal assessment limits. Blood sugar levels were measured using a new sugar checker, so they were not recalibrated. The time and place of the case study were carried out on June 26-30, 2023 and took place at Jl. Alatief RT 001 RW 07 Village, New District. Pasar Rebo, East Jakarta.

RESULT

This study used a qualitative method with interview techniques, observation and physical examination to collect data on the Implementation of Intermittent Fasting on changes in blood

sugar levels in patients with type 2 diabetes mellitus:

Respondent 1

To find out the picture of blood sugar levels after getting intermittent fasting, researchers made a table to find out whether there were changes in blood sugar levels from day to day. Here is the respondent observation table:

Tabel 1

Observation Results Of Random Blood Sugar (GDS) And Fasting Blood Sugar Respondent		
Day	Temporary blood sugar	Fasting blood sugar
1	225 mg/dl	223 mg/dl
2	225 mg/dl	224 mg/dl
3	223 mg/dl	220 mg/dl
4	224 mg/dl	222 mg/dl
5	225 mg/dl	224 mg/dl

To find out the picture of blood sugar levels after getting intermittent fasting in the second respondent, the researcher made a table to find out whether there were changes in blood sugar levels from day to day. The following is a table of respondent observations:

Tabel 2

Observation Results Of Random Blood Sugar (GDS) And Fasting Blood Sugar Respondent		
Day	Temporary blood sugar	Fasting blood sugar
1	220 mg/dl	208 mg/dl
2	210 mg/dl	205 mg/dl
3	208 mg/dl	205 mg/dl
4	205 mg/dl	203 mg/dl
5	202 mg/dl	200 mg/dl

DISCUSSION

Respondent 1

First Respondent Based on the results of the interview on June 26, 2023, the data obtained was a picture of blood sugar levels in respondents with type 2 diabetes mellitus before intermittent fasting was carried out. In 2008, respondents only found out that they had type 2 diabetes mellitus after the respondents were taken to the nearest health center. Respondents experienced symptoms such as often feeling weak, frequent urination, excessive thirst and feeling that their feet were always numb. Respondents have a habit of consuming sweet foods/drinks. From the results of the physical examination above, respondents need to do this intermittent fasting diet, the aim is to reduce or stabilize high blood sugar levels, previously respondents did not know about the intermittent fasting diet that would be carried out by the researcher. Researchers explained about intermittent fasting to respondents to keep doing it for 5 days, researchers used this intermittent fasting diet with the 16/8 hour method because this method is safe for beginners who want to do an intermittent fasting diet. Researchers left a sheet of respondents' meal schedules, a one-week meal menu sheet, and an observation sheet for respondents to do an intermittent fasting diet.

Based on the results of observations for 5 days on the first respondent, there was no decrease in blood sugar levels, where on the first day the respondent's blood sugar level was 225mg/dl and decreased on the third day to 223mg/dl, however, on the fifth day the blood sugar level remained the same as on the first day. Because the respondent was not compliant or did not follow the schedule given by the researcher. The factors that caused the respondent to be non-compliant were the respondent's habit of consuming excessive snacks and eating at times that had been given and the lack of support from the family. Based on the results of research

conducted by Nur et al., (2016), if someone does intermittent fasting obediently and regularly, it will cause blood sugar levels to decrease and body weight loss, while in respondent 1 there was no decrease in blood sugar levels due to non-compliance in implementing intermittent fasting. The results of the study conducted for 5 days showed that the respondent did not follow the schedule rules that had been given by the researcher so that this intermittent fasting diet was not followed obediently by the first respondent. Therefore, the ineffectiveness of the intermittent fasting diet in the first respondent was due to non-compliance with the recommendations given by the researcher. Compliance with diet therapy is very important because diet therapy is one of the pillars of diabetes mellitus management. Controlling compliance in diabetes patients is indeed a difficult challenge. Compliance can be influenced by several factors, including mental health problems such as eating disorders and affective disorders, family conflict, and stress (Setiani et al., 2022).

Respondent 2

The second respondent was given a picture of blood sugar levels in respondents with type 2 diabetes mellitus before intermittent fasting was carried out. In 2021, the respondent only found out that she had type 2 diabetes mellitus after her husband left her, which caused the respondent to experience stress. The respondent experienced symptoms such as frequent urination, excessive hunger, likes to sleep in the morning around 8 o'clock and feels numb feet. The respondent has a habit of consuming sweet foods/drinks. From the results of the physical examination above, it is also necessary for the second respondent to do this intermittent fasting diet, the aim is to reduce or stabilize high blood sugar levels, previously the respondent did not know about the intermittent fasting diet that would be carried out by the researcher. The researcher explained about intermittent fasting to the respondents to keep doing it for 5 days, the researcher used this intermittent fasting diet with the 16/8 hour method because this method is safe for beginners who want to do an intermittent fasting diet. The researcher left a respondent's meal schedule sheet, a one-week meal menu sheet, and an observation sheet for the respondents to do an intermittent fasting diet.

Based on the results of observations for 5 days on the second respondent, a decrease in blood sugar levels was found, where on the first day the respondent's blood sugar level was 220 mg/dl and on the fifth day the respondent's blood sugar level was 202 mg/dl. This is in line with systematic research and meta-analysis by Trisnawati et al., (2023) which found that DM patients who do intermittent fasting experience a significant decrease in body mass index and fasting blood sugar levels. Another study was conducted by Katuuk & Gannika, (2019) who studied three type 2 DM patients who did intermittent fasting for several months. During the study, blood tests that could measure the average blood sugar levels over the past 3 months were able to stop their insulin therapy within 1 month. Another study by Rasyid et al., (2020) showed that Ramadan fasting had an effect on lowering blood sugar levels in type 2 DM patients with an average decrease of 43.33 mg/dL. The results of the study conducted for 5 days obtained respondents comply with the advice given by the researcher to do intermittent fasting diet and the second respondent followed the schedule rules given by the researcher. Therefore, the effectiveness of intermittent fasting diet on the second respondent According to the existing theory Sánchez-Hernández et al., (2020) stated that the level of effectiveness of diet compliance with changes in blood sugar levels in diabetes mellitus patients was 56.14%, because diet compliance can affect changes in normal blood sugar levels, and vice versa if not compliant with the diet then blood sugar levels are not normal. The results of GDS 29 before the intervention were 220 mg / dl after the intervention was 202 mg / dl and there was a change in blood sugar levels.

CONCLUSION

Based on the results of the study using observation, interview, and documentation techniques aimed at describing the application of intermittent fasting diet to patients with type 2 diabetes mellitus. It can be concluded that in the application of intermittent fasting diet to patients with type 2 diabetes mellitus in 5 days, several conclusions were obtained, namely: The description of the blood glucose levels of the two respondents after undergoing intermittent fasting was that the first respondent did not have a decrease in blood sugar levels from before intermittent fasting was 225 mg / dl and after intermittent fasting was still the same as on the first day because the respondent was not compliant, while the second respondent had a decrease in blood sugar levels because the respondent had compliance before intermittent 220mg / dl to 202 mg / dl. The effectiveness of intermittent fasting diet to the two respondents was that the first respondent had no effectiveness because the respondent was not compliant in carrying out the intermittent fasting diet where the respondent did not eat at the specified hours, while the second respondent had effectiveness because the respondent was compliant in carrying out the intermittent fasting diet

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