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The Influence of Diabetic Exercise on Decreasing Blood Sugar Levels in Diabetes Mellitus Patients at Bah Kapul Health Center, Pematangsiantar

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ABSTRACT

Diabetic gymnastics is physical exercise that is designed according to age and physical status and is part of the treatment of diabetes mellitus. The diabetes exercise used is low impact aerobic exercise which can increase the use of glucose by active muscles so that it can directly lower blood glucose. This study aims to determine the effect of diabetes exercise on reducing blood sugar levels in diabetic patients at the Bahkapul Health Center , Pematangsiantar . This research was conducted in June - August 2017, the research design was comparative. The number of samples in this study were 21 respondents who were obtained by taking the total sample method . Data were obtained through questionnaires, interviews and direct sampling of the respondent's capillary blood and then measuring their blood sugar levels using a glucose meter. Data analysis was carried out in stages including univariate analysis and bivariate analysis using paired t-tests . The results of this study indicate that before doing gymnastics in the first week the average respondent's blood sugar level was 272.4 mg /dl and after doing gymnastics in the fourth week the average respondent's blood sugar level was 257.04 mg/dl. blood sugar of 15.36 mg/dl. The results of the analysis using the paired t-test significantly decreased blood sugar levels in respondents with a p value <0.05 , namely 0.041. This means that there is an effect of diabetes exercise on reducing blood sugar levels in diabetic patients. It is hoped that health services can become a motivator and provide intensive counseling for people with diabetes mellitus to do routine diabetes exercise to lower blood sugar levels and prevent complications of diabetes mellitus.

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INTRODUCTION

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia that occurs due to defects in insulin secretion, insulin action or both (ADA, 2010), is chronic and accompanied by chronic or acute complications.

Diabetes mellitus is a degenerative disease that requires proper and serious treatment. The disease will bring some! serious complications such as heart disease, stroke, erectile dysfunction, kidney failure and nervous system damage. According to the International Diabetes Federation (IDF) estimates, there were 194 million Indonesians suffering from Diabetes Mellitus in 2003. WHO predicts Diabetes Mellitus data will increase to 333 million in the next 25 years (Soegondo & Sidartawan, 2009).

Management of diabetes mellitus includes 4 pillars and physical activity is one of the four pillars. Physical activity with diabetes can reduce pz : : cardiovascular risk and increase life expectancy. Physical activity will increase the feeling of comfort both physically, psychologically and socially and look healthy. One way to control blood sugar is by exercising, including gymnastics. The diabetes exercise used is aerobic exercise which can increase the use of glucose by active muscles so that it can directly reduce blood glucose levels (Sudirman, 2009).

Gymnastics is an activity that is carried out to increase joint strength and body beauty with the aim of forming and developing & personal harmony. Diabetes mellitus gymnastics aims to improve cardiovascular fitness, namely the heart, blood vessels , breathing, and blood circulation.

Cases of diabetes mellitus in Pematangsiantar City have also increased every year. While the initial survey was conducted at the Health Service in Pematangsiantar City from January to June 2017 there were 1155 Diabetes Mellitus sufferers consisting of 259 Diabetes Mellitus Type I, Type II Diabetes Mellitus as many as 896 people. At the time of the initial survey at the Bahkapul Health Center with Diabetes Mellitus cases of 61 people until June 2017, the researchers wanted to find out whether the effect of diabetes exercise can reduce blood sugar levels in Diabetes Mellitus patients.

The Bah Kapul Health Center is located on Jalan Cadika 3, Bah Kapul Village, Siantar Sitalasari Pematangsiantar District. The Bah Kapul Health Center is one of the main Community Health Centers that provides outpatient care in Pematangsiantar which has the motto: if you are sick, believe you will recover and be comfortable in our care. Bah Kapul Health Center consisting of 3 general doctors, 25 nurses, 15 midwives, 2 nutritionists, 1 assistant pharmacist, 1 analyst and 1 head of administration.

Formulation of the problem, Based on the background above, the formulation of the problem that was determined in this study was "Is there an Effect of Diabetes Gymnastics on Reducing Blood Sugar Levels in Patients with Diabetes Mellitus at the Bahkapul Health Center?"

RESEARCH METHOD

Research Design Research design is a strategy in identifying problems before planning the final data collection (Nursalam, 2008). The research design used in this study is comparative which aims to identify the effect of diabetes exercise on reducing blood sugar levels in diabetic patients at the Bahkapul Health Center. 42 Location and Time of Research This research was conducted at the Bahkapul Health Center which will be held in June – August 2017. The research location was chosen because it is one of the health centers that has a routine diabetes exercise program and is the only Community Health Center that runs the program for the Bahkapul area.

RESULTS AND DISCUSSIONS

Based on the results of the research above, researchers can answer questions regarding the effect of diabetes exercise on reducing blood sugar levels in diabetic patients. From the results of checking blood sugar levels before doing and after doing gymnastics every week there are changes in blood sugar levels. In the first week, of the 21 respondents who did gymnastics, 14 respondents experienced a decrease in blood sugar levels with an average decrease of 9 mg/dl and 7 other respondents experienced an increase in blood sugar levels with an average of 4 mg/dl. Based on

the results of the paired t-test, there was a significant decrease in blood sugar levels after exercising in respondents with a p value <0.05 , which is 0.01.

Excessive body weight can cause high diabetes. Discussion Based on the results of the research above, researchers can answer questions about the effect of diabetes exercise on reducing blood sugar levels in diabetic patients. From the results of checking blood sugar levels before doing and after doing gymnastics every week there are changes in blood sugar levels. In the first week, of the 21 respondents who did gymnastics, 14 respondents experienced a decrease in blood sugar levels with an average decrease of 9 mg/dl and 7 other respondents experienced an increase in blood sugar levels with an average of 4 mg/dl. Based on the results of the paired t-test, there was a significant decrease in blood sugar levels after exercising in respondents with a p value <0.05 , which is 0.01.

Excessive body weight can cause Diabetes, high blood sugar levels, because the insulin pathway that wants to spread sugar into the cells is blocked so that sugar just accumulates (Ratno, 2012). The high blood sugar level in people with diabetes mellitus is influenced by several factors such as age, level of education and especially uncontrolled diet which causes uncontrolled blood sugar levels in diabetics. The effect of diabetes exercise on the muscles will affect the decrease in blood glucose levels, because the insulin receptors increase with the increase in the muscles, which ultimately does not occur excessive accumulation of sugar in the blood.

The results of this study are almost the same as the research conducted by Wiwit (2011) on the effects of diabetes exercise on reducing blood sugar levels in type 2 diabetes mellitus patients. The results of his research showed that of the 24 DM respondents who had done exercise, there were 20 respondents who experienced a decrease in blood sugar levels . and only 4 respondents experienced increased blood sugar levels. Before exercising the highest respondent's blood sugar level = 416 mg/dl and lowest = 154 mg/dl, after exercise the highest = 354 mg/dl and lowest = 109 mg/dl (Wiwit, 2011).

In the second week the results of the blood sugar examination of respondents also experienced changes after doing gymnastics, 13 respondents experienced a decrease in blood sugar levels with an average decrease of 7 mg/dl, and 7 respondents experienced an increase in blood sugar levels with an average increase of 4 mg/dl while 1 other respondent did not experience a change in blood sugar levels after doing gymnastics. Based on the results of the paired t-test, there was no significant decrease in blood sugar levels in the respondents after doing gymnastics, this can be seen by the value of p0.061 (p<0.05). This might have happened because the respondent consumed food that could increase blood sugar levels 2 hours before the examination or the respondent did not follow the gymnastics instructor properly so that there was no significant/significant decrease in blood sugar levels.

Research conducted by Tanti Indriana (2010) on the effect of exercise (diabetes gymnastics) on the regulation of blood sugar levels in people with diabetes mellitus also showed that there was no effect of diabetes exercise on decreasing blood sugar levels with a p value = 0.477. (Indriana, 2010).

In the third week, 15 respondents experienced a decrease in blood sugar levels with an average decrease of 8 mg/dl, and 5 respondents experienced an increase in blood sugar levels with an average increase of 5 mg/dl while 1 other respondent did not experience a change in blood sugar levels after doing exercise . Based on the results of the paired t-test, there was a significant decrease in blood sugar levels in the respondents after doing gymnastics in the third week. This is evidenced by the value of p <0.05 , namely p = 0.008.

Meanwhile, in the fourth week, 19 respondents experienced a decrease in blood sugar levels with an average decrease of 8 mg/dl and 2 respondents experienced an increase in blood sugar levels with an average increase of 2 mg/dl after doing gymnastics. Based on the results of the paired t-test, there was also a significant decrease in blood sugar levels in the respondents after doing gymnastics, this was evidenced by the p value <0.05, namely p = 0.01.

After doing exercise for 4 weeks, 14 respondents experienced a decrease in blood sugar levels with an average decrease of 32 mg/dl, 6 respondents experienced an increase in sugar levels with an average increase of 21 mg/dl and 1 other respondent did not experience a change in blood sugar levels.

Before doing gymnastics in the first week, the average blood sugar level of the respondents was 272.4 mg /dl and after doing the exercises in the fourth week, the average blood sugar level of the respondents was 257.04 mg/dl, there was a decrease in blood sugar levels of 15.36 mg/dl. From the results of the study analyzed using the paired t-test significantly decreased blood sugar levels in respondents with a p value of 0.05 , namely 0.041. This means that doing regular exercise can directly lower blood sugar levels .

The decrease in blood sugar levels is in accordance with the opinion of PERSADIA (2008), namely when physical exercise the body's muscles, heart system and blood circulation and respiration are activated. Therefore, the body's metabolism, fluid and electrolyte balance and acid-base must adjust. The muscles will use free fatty acids and glucose as a source of power or energy. When physical exercise begins, glucose from glycogen in the muscles begins to be used as a source of energy. If physical exercise continues to be increased, the source of energy and muscle glycogen is reduced, then there will be a use of blood glucose and -—fatty acids.

CONCLUSION

Based on the results of the paired t-test, after doing gymnastics in the first week there was a significant decrease in blood sugar levels in respondents with a p <0.05, namely p = 0.01. Meanwhile, in the second week, the value of p> 0.05 was obtained , namely p = 0.061, which means that there was no significant decrease in blood sugar levels. The results of the paired t-test on respondents after doing gymnastics in the third week showed a value of p <0.05 , namely p <0.008 which means there was a significant decrease in blood sugar levels, while in the fourth week the results of the paired t-test showed a value of p <0 .05, namely p = 0.001, this means that there is also a significant decrease in blood sugar levels.

Overall the results of the paired t-test on examining blood sugar levels before the first week of exercise and after the fourth week of exercise show a value of p <0.05, namely p <0.041, this means that there is a significant decrease in blood sugar levels in respondents who do routine exercise for 4 weeks. From the results of the five paired t-test above, it can be concluded that there is an effect of diabetes exercise on reducing blood sugar levels in patients with diabetes mellitus..

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