

PROLANIS GYMNASTICS CORRELATION WITH DECREASE BLOOD GLUCOSE IN ELDERLY PATIENTS DIABETES MELLITUS

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ABSTRACT

In Indonesia diabetes mellitus has become a serious threat to global health, quoted from the WHO 2016 "70% of total deaths in the world and more than half the disease burden" International Diabetes Federation (IDF) Atlas 2017 reported the diabetic epidemic in Indonesia's tendency increases and has ranked to six worlds with the number of diabetics aged 20-79 years around 10.3 million people. Blood sugar levels of diabetics can decrease by means of physical activity, one of them is prolanis gymnastics.

This research aims to determine the correlation of gymnastics with the decrease in blood sugar while in elderly people with diabetes mellitus.

This type of research is quantitative analytic with cross sectional design and is in the implementation in the Puskesmas in Sukaraja on 29 August 2019 with a population of 35 using a total sampling technique. The instruments used are questionnaire sheets and observation sheets.

In the know the univariate analysis of the variable gymnastic gymnastics of 35 respondents following the provisions of gymnastics 21 (60.0%) And those who do not follow the provisions 14 (40.0%) Respondents. For the results of univariate analysis that occurs decrease with blood sugar levels when the 100-199 as much as 20 (57.1%) Respondents and the > 200 as many as 15 (42.9%) Respondents.

It is known that from 35 respondents following the provisions of 9 Resonden (25.7%) With blood sugar 100-199 in elderly people with diabetes mellitus. Based on statistical test table sufficient test analysis obtained P value 0.022 then p, value > α , so that Ha accepted and H0 rejected which means ststistic test shows there is a prolanical gymnastics relationship with blood sugar decline in elderly diabetics Melitus in the Puskesmas Sukaraja. Diabetes mellitus is not curable, but blood sugar levels can be controlled by one of them by Prolanis Gymnastics. One of the benefits of Prolanis gymnastics is that it can lower blood sugar.

Keywords : gymnastics, blood sugar, Diabetes mellitus

INTRODUCTION

Diabetes is a high blood sugar level that causes damage to blood vessels, nerves and other internal structures. Poor blood circulation through large blood vessels can injure the brain, heart, and leg veins, while small blood vessels can injure the eyes, kidneys, nerves, and skin and slow wound healing. Hypertension in diabetes mellitus is not handled properly, so it has the potential to cause other illnesses. One of the most common is stroke, especially the type of thrombotic stroke. ¹

Currently there are 230 million people in the world who have diabetes, this figure is up 3% or an increase of 7 million people every year and by 2025 it is

estimated that 350 million people will have diabetes.¹⁵ In Indonesia diabetes mellitus has become a serious threat to global health, quoted from the 2016 WHO “70% of the world's total deaths and more than half of the disease burden” The International Diabetes Federation (IDF) Atlas 2017 reports that the diabetes epidemic in Indonesia has an increasing trend and has occupied ranked sixth in the world with the number of people with diabetes aged 20-79 years around 10.3 million people. Based on data from the health profile of Bogor Regency, patients with diabetes mellitus who are undergoing outpatient treatment in the hospital are 11.52% or 11.83 cases with an age range of 45 to 75 years, which is the most cases after hypertension. At the Sukaraja Community Health Center in 2018, 391 people or 18.19% had diabetes mellitus, consisting of 125 men and 266 women.

There are 347 million people in the world with Diabetes. In 2004 an estimated 3.4 million died due to high fasting blood sugar levels. In low and middle income countries, the mortality rate is 80% due to DM. Diabetes is the 7th leading cause of death in 2030.²

Currently, Indonesia is experiencing an epidemiological transition, where there has been a decrease in the prevalence of infectious diseases but an increase in the prevalence of non-communicable diseases (PTM) or degenerative diseases. According to the results of Basic Health Research (Riskesdas) in 2007. Government programs in the health service system and a proactive approach implemented in an integrated manner that involve participants. Health Facilities and BPJS (Social Security Service Agency) for Health are PROLANIS (Chronic Disease Management Program). The aim of PROLANIS is to encourage participants with chronic diseases to achieve optimal quality of life on specific examinations for Diabetes Militus (DM) and Hypertension according to related clinical guidelines so as to prevent complications.¹ Public knowledge about PROLANIS needs to be improved to increase interest and motivation because PROLANIS was stopped for about a month ago (lastly implemented in mid-October) because the BPJS budget did not go down.¹

State of Northern California, the implementation of the PROLANIS DM program is carried out by trained pharmacists who are tasked with prescribing and adapting drugs for DM sufferers. Pharmacists also refer patients to carry out laboratory examinations, provide education and confirm glycemic levels.^{The 3} countries with the highest cases of Diabetes Mellitus are China, which is estimated to reach 142.7 million in 2035 from 98.4 million today. However, the prevalence is highest in the West Pacific, with over a third of adults in Tokelau, Micronesia and the Marshall Islands suffering from the disease.¹

Indonesia is one of the 10 largest countries with Diabetes Mellitus in the world. To be precise, Indonesia's position is at number seven with a total of 8.5 million sufferers. In the top position, there are China (98.4 million people), India (65.1 million people), and America (24.4 million people). The rate of Diabetes

Mellitus in East Java is around 1.01%, the essence of the population, which is more than 222,430 sufferers from 3 million people.¹

Gymnastics according to Muhajir is the main activity that is useful in developing physical and movement components.⁶ Meanwhile, according to Imam Hidayat in Hendra Agusta Senam is a form of body training that has undergone a systematic arrangement, is constructed deliberately, is carried out consciously, planned, which aims to improve physical health, as well as develop skills and instill mental and spiritual values.⁶

Gymnastics is a form of physical movement that is systematic, orderly, planned, by doing physical movements in order to get benefits in the body.⁶ Gymnastics is a physical movement that has rhythm. The movements are regular and rhythmic which aim to improve physical health.

Based on the general definition, a person is said to be elderly (elderly) when he is 65 years and over. Elderly is not a disease, but is an advanced stage of a life process marked by a decrease in the body's ability to adapt to environmental stress. Elderly is a condition characterized by a person's failure to maintain balance against physiological stress conditions. This failure is related to a decrease in the ability to live and an increase in individual sensitivity.⁹

Gymnastics for the elderly is a light and easy exercise that is not burdensome for the elderly.¹⁰ These sports activities help the body to stay in shape and stay fresh because it trains bones to stay strong, encourages the heart to work optimally and helps eliminate free radicals that roam the body.

PROLANIS is a health service system and a proactive approach that is implemented in an integrated manner that involves participants, health facilities and BPJS Kesehatan in the context of health care for BPJS Kesehatan participants who suffer from chronic diseases to achieve optimal quality of life with cost effective and efficient health services.⁴ This PROLANIS activity is very beneficial for the health of BPJS users. PROLANIS is to encourage participants with chronic diseases to achieve optimal quality of life on specific examinations for DM and Hypertension according to related clinical combinations so as to prevent disease complications.⁴ Patients with diabetes mellitus who do not participate in prolanis activities may experience complications, because PROLANIS will control blood pressure and sugar so that they are normal and avoid complications.⁴

In the success of the government program, it is necessary to socialize and motivate health workers about PROLANIS to the community and so that it will invite Diabetes Mellitus and Hypertension patients to participate in the success of the PROLANIS program is a health service system and a proactive approach implemented in an integrated manner that involves participants, health facilities and BPJS Kesehatan in the framework of health care for BPJS Kesehatan participants who suffer from chronic diseases to achieve an optimal quality of life with cost effective and efficient health services.⁴

Physical freshness is the ability of a person to carry out daily tasks without experiencing significant fatigue and still have reserves of energy to enjoy his free time properly. Freshness / physical fitness for the elderly is fitness related to health, namely heart-lung fitness, blood circulation, muscle strength and joint flexibility.¹⁹

Sports training for the elderly aims to improve physical fitness. To obtain good physical fitness, you must train all the basic components of physical fitness which include heart endurance, blood circulation and respiration, muscle endurance, muscle strength and flexibility. With the aging process, it causes a decline in work performance and a decrease in one's physical capacity. To maintain physical fitness, exercise is needed.¹⁰

Physical activity or sports are open media that can be used by the elderly according to the abilities, pleasures, goals and opportunities of each person. Sports training in the elderly must be tailored to their individual abilities based on their physical abilities, needs and goals for carrying out these sports activities.¹⁰

level is Fitness evaluated by monitoring resting heart rate, i.e. resting pulse rate. So in order to be fitter, your resting heart rate must decrease.¹⁹ Gymnastics for the elderly in addition to having a positive impact on improving the function of organs also has an effect on increasing immunity in the human body after regular exercise.¹⁰

Based on the results of a preliminary study conducted by researchers on August 29, 2019, at the Sukaraja Community Health Center there were 35 people who suffered from diabetes mellitus and participated in prolanic exercises. The data was obtained from the number of visits at the Sukaraja Community Health Center. Of these, 35 people participated in the Prolanis exercise at the Sukaraja Community Health Center.

By participating in elderly exercise, the minimal effect is that the elderly will feel happy, always have fun, can sleep better, and have a fresh mind.

RESEARCH RESULTS

This research was conducted at the Sukaraja Community Health Center in 2019. With primary data, questionnaires and blood sugar levels were measured in Prolanis gymnastics patients. This study was conducted on August 29, 2019. This study aims to determine the relationship between prolanic exercise and decreased blood sugar levels in elderly people with diabetes mellitus. The variables studied were prolanic exercise (independent variable), and blood sugar levels (dependent variable). Respondents in this study were elderly prolanis participants. The measuring instruments used were questionnaires and checking blood sugar levels by collecting data from 35 respondents.

This study uses a method *quantitative analytical* with approach, *cross sectional* the sampling technique used is *technique total sampling*. After going through data collection, the next step is to find out the results of the research, the

data processing is carried out, then the Univariate analysis and the Bivariate analysis are carried out.

Table 1
Frequency Distribution of Prolanic Exercise in Elderly Patients with Diabetes Mellitus

No	Prolanic Gymnastics	Frequency	Percentage (%)
1	Following Provisions	21	60.0
2	Not Following Provisions	14	40.0
Total		35	100

Source: SPSS Version 22

Based on table 1 the frequency distribution of prolanic exercise in elderly people with diabetes mellitus at Sukaraja Community Health Center in 2019, 21 respondents (60.0%) performed prolanic exercise by following the provisions.

Table 2
Distribution of Frequency Blood Sugarin Elderly Patients with Diabetes Mellitus

No	Blood Sugar Levels	Frequency	Percentage (%)
1	Decreased	20	57.1
2	There was no decrease	15	42.9
Total		35	100

Source: SPSS Version 22

Based on table 2 of the frequency distribution of blood sugar levels in diabetes mellitus patients at the Sukaraja Community Health Center in 2019, it is known that 20 respondents (57.1%) had decreased blood sugar levels.

Table 3 The
relationship between prolanic exercise and a decrease in blood sugar during the elderly with diabetes mellitus

ParentalProlanis Gymnastics	Involvement						<i>P</i> <i>Value</i>	<i>Odds</i> <i>Ratio</i>
	There is a decrease		There is no decrease in		Total			
	F	%	F	%	F	%		
Follow the Conditions	9	25.7	12	34.3	21	60.0	0.022	0.205
Not following the provisions	11	31.4	3	8.6	14	40.0		
Total	20	57.1	15	42.9	35	100		

Source: SPSS Version 22

Based on table 3 Based on Table 4.3 above, it is known that the relationship between Prolanic Exercise and Blood Sugar Decrease in the Elderly with Diabetes Mellitus at Sukaraja Health Center in 2019, there were 12 (34.3%) respondents who followed the provisions of prolanic exercise and there was no decrease in blood sugar. With anvalue of *odd ratio* 0.205, it can be concluded that there is no risk factor for prolanic exercise with a decrease in blood sugar in the elderly with diabetes mellitus.

The significant relationship value using computerization obtained *p value* $0.022 \leq 0.05$ (*alpha*), meaning that H_a is accepted and H_0 is rejected. From this value, the results of the analysis state that there is a relationship between Prolanic Gymnastics and a decrease in blood sugar in the elderly with diabetes mellitus.

DISCUSSION

a. Prolanis Gymnastics for elderly people with diabetes mellitus

Based on Table 1, the frequency distribution of prolanic exercise in elderly people with diabetes mellitus at the Sukaraja Community Health Center in 2019 from a total of 35 respondents, shows that 21 respondents (60.0%) followed the provisions, 14 respondents (40.00%) did not follow the provisions.

The results of this study are comparable to research conducted by Deiby 2016 which examined "the effect of Prolanis Exercise on blood sugar levels in diabetes mellitus patients" of 191 respondents, indicating that 128 (67.0%) good respondents attended exercise, and 63 respondents (33.0%) respondents who are not good at following gymnastics.

According to Margono's opinion, gymnastics is a body movement exercise that was created systematically with the aim of forming harmonious movements in the physical development and ability of a person to move.⁸

In the opinion of H. Werner, gymnastics is one of the body exercises designed to increase flexibility and strength endurance by using tools in floor exercises.⁸

According to Imam Hidayat, the meaning of gymnastics is a form of body exercise that is carried out in a planned and structured manner to improve physical fitness and improve skills.⁸

Prolanis Gymnastics is an activity or physical activity (sports) for sufferers of chronic diseases such as Diabetes Mellitus and Hypertension, this activity is carried out in an integrated manner in the framework of maintaining health for sufferers of chronic diseases in order to achieve an optimal life. This sport is organized from the health service of the Social Security Administration (BPJS).

The provisions of gymnastics: Exercise dosage is done once a week exercise duration 30-40 minutes (including warm up and cool down). At the beginning of gymnastics warm up, stretch, then core exercises and at the end of the exercise do cool down and stretch again. Before exercising, you can drink it first to replace lost sweat. Always remember to drink water before and after exercise. Gymnastics is supervised by trainers to prevent injury.

Based on the theory and results of research that researchers have conducted at the Sukaraja Community Health Center with 35 respondents, most of the respondents who follow the provisions are 21 (60.0%) respondents, this is reinforced by the results of the questionnaire items that have been researchers give to respondents.

So the conclusion from the results of theory and research can be concluded that prolanis exercise can affect the decrease in blood sugar levels.

b. Decrease in Blood Sugar when Elderly with Diabetes Mellitus

Based on Table 2 above, it is known that the frequency distribution of blood sugar levels in elderly people with diabetes mellitus at Sukaraja Health Center in 2019, there were 20 respondents (57.1%) who experienced a decrease or had blood sugar levels of 100-199, and there were 15 respondents (42.9%) with blood sugar levels > 200 that did not decrease.

The results of this study are comparable to research conducted by Deiby 2016 which examined "the effect of Prolanis Exercise on blood sugar levels in diabetes mellitus patients" of 191 respondents, indicating that 128 (67.0%) good respondents attended exercise, and 63 respondents (33.0%) respondents who are not good at following gymnastics.

Blood sugar is a term that refers to the level of glucose in the blood. Blood sugar concentration, or serum glucose level, is tightly regulated in the body. Blood-borne glucose is the main source of energy for body cells. Generally, blood sugar levels are maintained within narrow limits throughout the day: 4-8 mmol / l (70-150 mg / dl). These levels increase after eating and are usually at their lowest level in the morning, before people eat.

A time blood sugar check is a blood sugar test that is done on the spot. Blood glucose test when done by taking a blood sample of the patient without fasting first to be able to find out the blood sugar level at that time. The unit used to express the value of blood sugar at any time is mg / dl (milligrams per deciliter). The results of blood sugar tests when comparing the amount of blood sugar in milligrams with the amount with the amount of blood in deciliter units.

Factors that affect blood sugar are stress, obesity, food intake, exercise, treatment either with tablets or insulin, education, knowledge, availability and exposure to information sources.

Based on the theory and the results of research that researchers have conducted at Sukaraja Public Health Center with 35 respondents, that most of the respondents who experienced a decrease in blood sugar were 25 respondents (71.4%), this was strengthened by doing a blood sugar check at any time.

So the conclusion from the results of theory and research can be concluded that the factor of blood sugar levels can be decreased, one of which is by doing physical activity to do prolanic exercise.

c. The relationship between prolanic exercise and a decrease in blood sugar in the elderly with diabetes mellitus.

Based on table 3, based on Table 3 above, it is known that the relationship between Prolanic Exercise and Blood Sugar Decrease in the Elderly with Diabetes Mellitus at the Sukaraja Health Center in 2019, there were 12 (34.3%) respondents who followed the provisions of prolanic exercise and there was no decrease in blood sugar. With anvalue of *odd ratio* 0.205, it can be concluded that there is no risk factor for prolanic exercise with a decrease in blood sugar in the elderly with diabetes mellitus.

The significant relationship value using computerization obtained *p value* $0.022 \leq 0.05$ (*alpha*), meaning that H_a is accepted and H_0 is rejected. From this value, the results of the analysis state that there is a relationship between Prolanic Gymnastics and a decrease in blood sugar in the elderly with diabetes mellitus in 2019.

Prolanis exercise is a health service system in the context of maintaining chronic diseases to achieve optimal quality of life with cost effective and cost effective health services. efficient. The goal is to encourage participants with chronic diseases to achieve an optimal quality of life with the target of all participants with chronic diseases.

Blood sugar level is the amount of sugar or glucose in the blood. Even though it is constantly changing, blood sugar levels need to be maintained within normal limits so that disturbances do not occur in the body. Sugar levels are influenced by the intake of nutrients from food or drinks, especially carbohydrates, as well as the amount of insulin and the sensitivity of the body's

cells to insulin. Blood sugar levels that are too high or too low will be bad for health, both in the short and long term.

Diabetes mellitus is a chronic progressive disease characterized by the inability of the body to metabolize carbohydrates, fats and proteins, leading to hyperglycemia (high blood glucose levels).

Diabetes mellitus is a metabolic disease characterized by chronic hyperglycemia caused by insulin resistance or the effects of insulin secretion.

The more chronic diseases that occur, the government, through BPJS Kesehatan, in collaboration with health services, designs a program with a chronic disease management model for chronic disease sufferers called "PROLANIS" or "Chronic Disease Management Program". The goal is to encourage participants with chronic diseases to achieve an optimal quality of life.

Diabetes mellitus cannot be cured, but blood sugar levels can be controlled. Diabetes mellitus sufferers should carry out the 4 pillars of diabetes mellitus management, namely education, nutritional therapy, physical exercise or exercise, and pharmacological intervention.

One of the great benefits of physical activity is prolanis exercise, including lowering blood sugar levels, preventing obesity, playing a role, in overcoming complications, blood lipid disorders and increasing blood pressure.

Another theory states that physical activity or prolanic exercise is related to the speed at which muscle blood sugar is recovered. When exercising is done the muscles in the body will react by using the glucose it stores so that the stored glucose is reduced. In this situation there will be a muscle reaction in which the muscles will experience glucose in the blood so that in the blood it decreases and this can leave blood sugar control.

From the research results of Anugrah Dhea, Siti Nafsiah. et al, 2014 examined "the behavior of using prolanis with blood sugar levels in diabetes mellitus patients in Purwokerto City in 2014" found 128 diabetes mellitus patients who participated in good exercise with 93 patients (72.7%) and 35 patients (27.3%) less well. The results of the parametric statistical test using the test *Chi-Square* obtained a *p-value* of 0.018 (*p-value* <0.05), indicating that prolanic exercise has a relationship with health status.

Based on the results of the research and the theory above, the researchers concluded that there was an agreement between the theory and the results of the researchers, namely that prolanis exercise was associated with a decrease in blood sugar levels in people with diabetes mellitus. This is evidenced by the fact that there were 21 respondents who participated in the prolanic exercise and 9 respondents who experienced a decrease in blood sugar (25.7%). It was concluded that if the respondent did Prolanis exercise, it could reduce high blood sugar levels.

CONCLUSION

Based on the discussion as previously described, the conclusions of this study are as follows:

1. It is known that the frequency distribution of prolanic exercise in elderly people with diabetes mellitus is 21 respondents (60.0%) who follow the provisions of prolanic exercise.
2. It is known that the distribution of blood sugar frequencies in elderly people with diabetes mellitus, there are 20 respondents (57.1%) who have a decrease in blood sugar levels of 100-199.
3. It is known that Prolanic Exercise with a decrease in blood sugar when the elderly with Diabetes Mellitus at Sukaraja Community Health Center in 2019, there are 12 (34.3%) respondents who follow the provisions of prolanic exercise. Based on the results of the bivariate analysis using the analysis test *Kendall Tau* , the *p value* was $0.022 \leq 0.05$ (*alpha*), meaning that H_a was accepted and H_0 was rejected. From this value, the results of the analysis state that there is a relationship between Prolanic Gymnastics and a decrease in blood sugar when elderly people with diabetes mellitus in 2019.

SUGGESTION

1. Educational institutions are expected to provide reference material and reading material for nursing management courses as well as a reference in carrying out further research related to Prolanis exercise with a decrease in blood sugar at any time.
2. For Research Sites
It is hoped that this research can be used as input and evaluation in the prolanis exercise program.
3. For further researchers
 - a. It is hoped that in future studies to use a different research site.
 - b. It is hoped that the results of this study can provide additional information related to prolanic exercise with a decrease in blood sugar in the elderly with diabetes mellitus.

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