The Effect of Self Surrender Exercise on Stress in Patients of Diabetes Mellitus Type II

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Abstract - **This study aims to determine the effect of Self Surrender exercise against stress in patients with type 2 diabetes mellitus at Muhammadiyah Hospital Palembang. The design used in this research is Pre-experimental using one group pretest-posttest design, sample determination with Simple Random Sampling counted 16 respondents. The analysis in this study used univariate and bivariate analysis. Bivariate analysis using t-test dependent test on stress and blood sugar level. The results of this study were the average age of respondents was 56.25 years (SD: 9,399), with respondents male sex numbered 9 people (56.3%) and female sex numbered 7 people (43.8%), the mean pre intervention stress score was 17.63 (SD: 2.446), the mean post-intervention stress score was 15.63 (SD: 2,500). There are influence of self surrender exercise to stress (value = 0,000, = 0,05). Based on this study recommended that self surrender exercise should be applied to patient care in hospitals especially for relaxation measures.**

Keywords: *Self Surrender Exercise.*

I. INTRODUCTION

Diabetes mellitus (DM) is a degenerative disease that requires proper and serious treatment efforts. If not treated, DM will cause various complications of other serious diseases such as heart disease, stroke, erectile dysfunction, kidney failure and damage to the nervous system. Therefore, DM is one of the biggest threats to human health [1]. [2].

Various epidemiological studies show a tendency to increase in the incidence and prevalence of type 2 diabetes in various parts of the world. The World Health Organization (WHO) estimates that more than

346 million people worldwide have diabetes and the Association of Southeast Asian Nations (ASEAN) 19.4 million in 2010. This number is likely to more than double by 2030 without intervention. Nearly 80% of diabetes deaths occur in low and middle income countries [3].

According to the International of Diabetic Federation (IDF) (2015), the global prevalence rate of DM sufferers in 2014 was 8.3% of the total world population and experienced an increase in 2014 to 387 million cases. Indonesia is ranked 7th country with DM sufferers numbering 8.5 million sufferers after China, India and the United States, Brazil, Russia, Mexico. In the province of South Sumatra the prevalence of DM was 0.9% with an estimated number of DM diagnosed at 49,318 people [4].

Diabetes mellitus is a major public health problem because of its short-term and long-term complications. Diabetes mellitus can have physical and psychological effects. The physical impact caused by diabetes is long-term hyperglycemia affecting the system of vessels or small blood vessels in the eyes, kidneys, and nerves and larger arteries leading to accelerated atherosclerosis. Diabetes is the most common cause of blindness in the productive age group (working age), and the single most common cause for end-stage renal failure (ESRF) or end-stage renal failure. In addition, the consequences of neuropathy caused by long-term hyperglycemia have the most frequent effects of amputations on the nontraumatic lower extremities [5].

Long-term complications of diabetes including cardiovascular, retinal damage that can cause blindness, as well as nerve damage that can cause

impotence and gangrene with the risk of amputation. In addition to the physical effects caused by diabetes mellitus, chronic diseases such as diabetes are one of the causes of stress and even depression in a person, in addition to other causes. The incidence of symptoms of stress and even depression in patients with diabetes mellitus 8.5-60%, while the United States is said to be 3-4 times compared to the normal population. In addition, Type 2 diabetes mellitus with psychiatric disorders has a mutually mutually reciprocal relationship and prevents success in managing patients [6]. [7].

Other psychological effects that arise in patients with chronic health conditions such as heart problems, diabetes mellitus, lung disease, and cancer will suffer psychological disorders while struggling to manage the physical ailments they face. No exception in patients with diabetes mellitus, they must have discipline and adherence during their lives in adhering to the recommended diet program to help maintain normal blood sugar, this can then cause boredom and stress in patients [8].[9].

Stress itself is the body's reaction to psychosocial stressors (mental stress / the burden of life). Stress causes overproduction of cortisol. Cortisol is a hormone that counteracts the effects of insulin and causes high blood glucose levels. If a person experiences severe stress that is produced in his body, then the cortisol produced will be more and more, this will reduce the body's sensitivity to insulin. Cortisol is an enemy of insulin, making it more difficult for glucose to enter cells and increase blood glucose [10], [7], [11].

Stress management can be done with pharmacological and non pharmacological management. Some ways that can be done to reduce stress in clude through healthy and nutritious eating patterns, maintaining physical fitness, breathing exercises, relaxation exercises, engaging in happy activities, vacationing, establishing harmonious relationships, avoiding bad habits, planning daily activities routinely, raising plants and animals, taking time for yourself (family), avoiding being alone [12].

One way to reduce stress in diabetic patients, namely relaxation techniques with resignation exercises. Self resignation training is a method that combines relaxation and remembrance with a focus on breathing exercises and words contained in remembrance to evoke a relaxation response, where the emergence of the relaxation response is expected to improve stress symptoms or depressive symptoms so that it affects directly or indirectly on blood sugar control [13].

II. METHOD

This research is a type of quantitative research with a Preexperiment design using one group pretest-posttest design, with the first observation (pre-test) on the stress value and blood sugar levels and test changes that occur after treatment (posttest).

In this study, Self surrender exercise was carried out for 3 days, by measuring the stress value before and after treatment every day until the third day, carried out 2 times / day for three days in the morning and evening with a duration of 15 minutes. Measurement of stress value before it is done before the first self surrender exercise, then measurement of stress value after it is done after the second surrender exercise, measurement is carried out until the third day.

The population in this study were all type 2 diabetes mellitus patients who were treated at Palembang Muhammadiyah Hospital.

The sample of this study was a portion of type 2 diabetes mellitus patients in the disease room in Muhammadiyah Hospital Palembang with inclusion criteria as follows: patients diagnosed by doctors suffering from type 2 diabetes mellitus, are Muslim, have good hearing and verbal skills, patients aged 35 - 70 years old, willing to be a respondent, patients with mild - moderate stress. Sampling in this study used simple random sampling of 16 respondents.

The analysis in this study was carried out univariately and bivariately. Bivariate analysis in this study used a t-test dependent test.

III. RESULTS

Table 1. Distribution of Gender

Gender	freq	(%)
Male	9	56,3
Female	7	43,8
Total	16	100

The table shows that respondents with male was 9 (56.3 %) and female 7 (43.8%).

Table 2. Distribution of Age

Variable	Mean	Median	SD	Min-Max	95% CI
Age	56,25	59,00	9,399	42-69	51,24 - 61,26

The analysis showed that the average age of respondents in this study was 56.25 years. The youngest age of the respondents is 42 years and the oldest age is 69 years. From the interval estimation results it can be concluded that 95% are believed that

the average age of DM patients in this study is in the range of 51.24 years to 61.26 years.

Table 3. Distribution of stress value day 1

Variable	Mean	Median	SD	Min- Max	95% CI
Stress Day 1	17,63	17,50	2,446	15-24	16,32 - 18,93

The results of the analysis showed that the average stress value before doing the surrender exercise was 17.63. The lowest stress value is 15 and the highest stress value is 24. From the interval estimation results it can be concluded that 95% are believed that the average stress value before resigning is in the range of 16.32 to 18.93.

Table 4. Distribution of stress value day 3

Variable	Mean	SD	*p value*
Stress Day 1	17,63	2,446	
Stress Day 3	15,63	2,500	0,000

The results of the analysis showed that the average stress value after doing surrender was 15.63. The lowest stress value is 13and the highest stress value is 22. From the estimated interval results it can be concluded that 95% are believed that the average value of stress after doing surrender is in the range of 14.29 to 16.96

Table 5. The Effect of Progressive Muscle Relaxation to Stress

Variable	Mean	Median	SD	Min-Max	95% CI
Stress day 3	15,63	15,00	2,500	13-22	14,29-16,96

Based on table 5 shows that the results of statistical measurements using the t-test dependent test, obtained a significant value of 0,000 (<0.05), which means there are significant differences in the average stress value before and after resignation.

IV. DISCUSSIONS

In this study, the respondents were type 2 diabetes mellitus patients at the Muhammadiyah Hospital Palembang in the Internal Medicine Room. The results showed the average age of respondents was at the age of 56.25 years. Distribution of respondents according to the lowest age of respondents is 42 years and the oldest age is 69 years. In line with the theory revealed by Smeltzer and Bare (2002), which states that type II diabetes mellitus often occurs in patients aged over 30 years.

Damayanti (2015) also explained that the risk factors for type II diabetes mellitus are age above 30 years, this is due to anatomical, physiological and biochemical declines. Researchers argue, the more a person's age increases the risk of developing diabetes mellitus. This is supported by research conducted by Wicaksono (2011) at the Internal Medicine Polyclinic Dr. Kariadi who showed a significant relationship between age and the incidence of Type 2 Diabetes mellitus where people aged more than 45 years have a risk of 9 times the occurrence of type 2 diabetes compared with those aged less than 45 years [14][15].

In this study, most of the respondents were 9 male respondents while 7 other respondents were women with 56.3% respondents who suffer from type 2 diabetes mellitus were male while the remaining 43.8% were women.

Research that is in line with this research is conducted by Pramudiarja (2011) who said that male sex has a risk of developing diabetes faster. Scientists from the University of Glasgow, Scotland revealed that after observing 51,920 men and 43,137 women. All of them are people with type II diabetes and generally have a body mass index (BMI) above the overweight limit. Men affected by diabetes in BMI an average of 31.83 kg / m2 while new women experienced it in BMI 33.69 kg / m2. This difference in risk is influenced by the distribution of body fat. In men, fat accumulation is concentrated around the stomach, triggering central obesity which is more at risk of triggering metabolic disorders.

Research contrary to this research is a study conducted by Corwin (2009) which says that type II diabetes mellitus is more found in women than men [16]. The results showed the results of statistical measurements using the t-test dependent test, obtained a significant value of 0,000 (<0.05), which means that there are significant differences in the average stress value after resignation. The results of this study indicate the existence of the effect of surrender to the value of stress. The results of this study support the hypothesis that the effect of self-surrender on stress in patients with type 2 diabetes mellitus.

The results of this study are supported by the theory of a number of experts who suggest that resignation is one way to deal with stress. Exercise of resignation (a combination of relaxation and dhikr), dzikir relaxation therapy is a type of relaxation developed by Benson, where this relaxation is a combination of relaxation with religious beliefs held in this case Islam. The belief response adopted will accelerate the occurrence of a relaxed state, in other words the combination of the relaxation response by involving confidence will multiply the benefits derived from the relaxation

response [17] [18]. The results of this study are in accordance with the results of previous studies conducted by Susanti and Rahmah (2014) showing that there is an effect of self-surrender training on stress levels and blood sugar levels in type II diabetes mellitus patients, namely a decrease in stress levels after self-surrender exercise [6].

According to Synder., M & Lindquist, R. (2002), self surrender exercise which combines relaxation and remembrance is one of the mind body therapies as one of the states that this therapy uses the belief that thoughts affect the body through the concept of self healing. Remembrance as mind body therapy is an application of psychoneuroimmunology that underlies the principle of holistic balance to reduce stress [19].

According to Asdie (2005) remembrance is the highest power in reducing stress, evoking a relaxation response, reducing depressive symptoms and having a direct or indirect effect on blood sugar control. The results of this study are also in line with research Safitri, S (2016) shows that the relaxation of remembrance therapy is effective in reducing stress [20] [8].

Self resignation training is a method that combines relaxation and remembrance with a focus on breathing exercises and words contained in remembrance to evoke a relaxation response, where the emergence of the relaxation response is expected to improve stress symptoms or depressive symptoms so that it affects directly or indirectly on sugar control blood [20].

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V. CONCLUSION

There is an influence of resignation to stress on type 2 diabetes mellitus patients at Palembang Muhammadiyah Hospital

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