

Conference Paper

The Effect of Hypnotherapy on the Reduction of Blood Glucose Levels in Diabetes Mellitus Type-2

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Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia, which occurs due to abnormalities in insulin secretion, insulin action, or both. Most cases of diabetes mellitus are diabetes mellitus type-2. The purpose of this study was to determine the effect of hypnotherapy on reducing blood glucose levels in patients with diabetes mellitus type-2. The research used a quasi-experimental design with a non-equivalent control group design. Purposive sampling was used, and 30 respondents selected. The instrument in this study was a single stick tool. The intervention group was given standard therapy treatment in the form of bio-energy therapy and hypnotherapy, while the control group was only given standard therapy treatment in the form of bio-energy therapy. Univariate analysis of the results indicates that the average blood glucose level before treatment was 234.67 mg/dl and after treatment was 194.67 mg / dl. Bivariate analysis based on the results of the Wilcoxon Signed Ranks Test obtained a *p-value* of 0.002 (*p-value* <0.05). This means that hypnotherapy reduced blood glucose levels in diabetes mellitus type-2 sufferers. This study recommends the nursing profession apply hypnotherapy as an alternative or non-pharmacological complementary therapy that can be used to reduce blood glucose levels in people with diabetes mellitus type 2.

Keywords: Hypnotherapy, diabetes mellitus type 2, blood glucose levels

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1. Introduction

Non-communicable diseases have become a global public health problem. One of the non-communicable diseases that has received a lot of attention is Diabetes Mellitus [6, 7] a study report on diabetes by the Director General of Disease Control and Environmental Health of the Indonesian Ministry of Health, said that the global status report on NCD of the World Health Organization [6, 7] in 2010 reported that 60% of the causes of death of all ages in the world were due to non-communicable diseases. Diabetes mellitus is

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ranked 6th as the cause of death. About 1.3 million people die from diabetes and 4% die before the age of 70. The International Diabetes Federation (IDF) in 2009, predicted an increase in the number of people with diabetes mellitus from 7.0 million in 2009 to 12.0 million in 2030 [11]. The IDF also added that more than 371 million people in the world aged 20-79 years have diabetes. Meanwhile, Indonesia is the 7th country with the highest prevalence of diabetes, behind China, India, USA, Brazil, Russia and Mexico [6, 7].

The increase in the prevalence of diabetes type-2 above shows the importance of prevention efforts. Prevention of diabetes type-2 is to try to normalize blood glucose levels in the body. According to Waspadji [10] that efforts to lower blood sugar levels are done through the four pillars of DM management: education, meal planning, physical exercise and pharmacological therapy. In addition to the four pillars of DM management above, another effort that can be used to control the prevalence of type 2 diabetes mellitus is a stress management program [18].

According to Sudoyo et al [16] that emotional stress can increase blood sugar and glucose through increased sympathoadrenal stimuli. Stress also increases the production of pituitary hormones, catecholamines, corticosteroids and suppresses insulin release. The result is an increase in blood glucose. Stress management program efforts can be done with complementary therapies. Complementary therapy is an alternative therapeutic treatment related to practices, approaches, knowledge and beliefs that combine plants, animals, and minerals as the basis for medicine, spiritual healing, manual techniques, and exercises [20]. According to The Indonesian Board of Hypnotherapy (IBH) in 2012, one of the complementary therapies that can be used for stress management programs is hypnotherapy.

Hypnotherapy is one of the proven and very effective methods for dealing with stress. Indeed, there are several methods besides hypnotherapy that are used to deal with stress, such as psychoanalysis and behavior therapy, but these methods are less effective and take a long time to feel significant changes. Less effective because other methods do not touch the root of the problem and only play at the level of the conscious mind, even though the source of stress in a person is stored in the subconscious mind [4].

2. Methods and Equipment

The type of research used in this study is a quasi-experimental design with a non-equivalent control group design. In this design, there are two groups, namely the

intervention group and the control group. Observations were made twice, namely before and after the experiment. Observations made before the intervention (O1) are called pre-tests and observations made after the intervention (O2) are called post-tests. In this design, neither the experimental group nor the control group were chosen randomly [17]. The intervention group was taken at week one and week two, and the control group was taken at week three and week four. The intervention group was given standard therapy (bio energy) and hypnotherapy for 3 days. Meanwhile, the control group was given standard therapy (bio energy) for 3 days without being given hypnotherapy.

	Pre-test	Treatment	Post-test
Intervent group	O ₁	X	O ₂
Control group	O ₁		O ₂

Figure 1: Chart of Research Design

In taking samples of this study using the technique of *purposive sampling*, namely the technique of determining the sample with certain considerations in accordance with what the researcher wants.

The sample inclusion criteria for the research are:

1. Willing to be a respondent and willing to take hypnotherapy.
2. Patients diagnosed with diabetes mellitus type-2.
3. Patients diagnosed with diabetes mellitus type-2 with the same age level, namely 30 to 40 years.
4. Patients diagnosed with diabetes mellitus type-2 with relatively the same level of education, namely Senior High School / equivalent.

The sample consisted of the intervention group and the control group, 30 people were taken as the sample, 15 people who were given treatment (intervention group) and the untreated sample (control group) were 15 people. The technique used to determine whether the sample belongs to the experimental group or the control group is not random. Because the researcher conducted the study for one month, the techniques for determining the sample group were patients who treated in the first two weeks of the study, then entered the experimental group, and patients who treated in the second two weeks were included in the control group.

The method of measurement in this study is to use a single stick tool to measure blood glucose levels at any time. While blood glucose levels are not DM, it is DM and uncertain DM can be seen in table 1 below:

TABLE 1: Current blood glucose levels

	Non DM	Uncertain DM	DM
Plasma vena	< 100 mg/dl	100-199 mg/dl	≥ 200 mg/dl
Kapiler blood	< 90 mg/dl	90-199 mg/dl	≥ 200 mg/dl

Source: PERKENI, 2006 [20]

3. Result

3.1. Description of blood glucose levels in diabetes mellitus type-2 before and after standard therapy (bio-energy therapy) and hypnotherapy in the intervention group.

Blood glucose levels in patients with diabetes mellitus type-2 before being given standard therapy (bio-energy therapy) and hypnotherapy in the intervention group, the highest blood glucose level was 413 mg / dl and the lowest blood glucose level was 121 mg / dl. Blood glucose levels in patients with diabetes mellitus type-2 after being given standard therapy (bio-energy therapy) and hypnotherapy in the intervention group, the highest blood glucose levels showed 374 mg / dl and the lowest blood glucose levels showed 110 mg / dl. This shows that there are changes in blood glucose levels before and after standard therapy (bio-energy therapy) and hypnotherapy are given.

3.2. Analysis of blood glucose levels in patients with diabetes mellitus type 2 before and after standard therapy (bio-energy therapy) and hypnotherapy in the intervention group.

The mean value of the respondent's blood glucose level before being given standard therapy (bio-energy therapy) and hypnotherapy was 234.67 mg / dl, the median value of the respondent's blood glucose level before being given standard therapy (bio-energy therapy) and hypnotherapy was 217.00 mg / dl and the mode value of the respondent's blood glucose level before being given standard therapy (bio-energy therapy) and hypnotherapy was 121 mg / dl. The mean value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) and hypnotherapy was 194.67 mg / dl, the median value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) and hypnotherapy was 173.00 mg / dl and the mode value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) and hypnotherapy was 110 mg / dl.

3.3. Description of blood glucose levels in people with diabetes mellitus type-2 before and after being given standard therapy (bio-energy therapy) in the control group.

Blood glucose levels in patients with diabetes mellitus type-2 before being given standard therapy (bio-energy therapy) in the control group, the highest blood glucose levels were 376 mg / dl and the lowest blood glucose levels were 133 mg / dl. Blood glucose levels in patients with diabetes mellitus type-2 after being given standard therapy (bio-energy therapy) in the control group, the highest blood glucose levels showed 295 mg / dl and the lowest blood glucose levels showed 115 mg / dl. This shows that there are changes in blood glucose levels before and after being given standard therapy (bio-energy therapy).

3.4. Analysis of blood glucose levels in people with type 2 diabetes mellitus before and after being given standard therapy (bio-energy therapy) in the control group.

The mean value of the respondent's blood glucose level before being given standard therapy (bio-energy therapy) was 203.07 mg / dl, the median value of the respondent's blood glucose level before being given standard therapy (bio-energy therapy) was 157.00 mg / dl and the mode value of the respondent's blood glucose level before being given standard therapy (bio-energy therapy) was 139 mg / dl. The shows that the mean value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) was 176.07 mg / dl, the median value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) was 152.00 mg / dl. and the mode value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) was 115 mg / dl.

3.5. Changes in blood glucose levels in diabetes mellitus type-2 before and after standard therapy (bio-energy therapy) and hypnotherapy in the intervention group.

Changes in blood glucose levels before and after standard therapy (bioenergy therapy) and hypnotherapy showed that the highest changes in blood glucose levels were 127 mg / dl and changes in the lowest blood glucose levels were 7 mg / dl. The mean change in respondent's blood glucose levels after being given standard therapy (bio-energy therapy) and hypnotherapy is 40.00 mg / dl, the median value of respondent's

blood glucose levels after being given standard therapy (bio-energy therapy) and hypnotherapy is 22, 00 mg / dl and the mode value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) and hypnotherapy was 44 mg / dl.

3.6. Changes in blood glucose levels in people with type 2 diabetes mellitus before and after being given standard therapy (bio-energy therapy) in the control group.

Changes in blood glucose levels before and after standard therapy (bio-energy therapy) showed that the highest change in blood glucose levels was 136 mg / dl and changes in the lowest blood glucose levels were 4 mg / dl. The mean change in respondent's blood glucose levels after being given standard therapy (bio-energy therapy) is 27.00 mg / dl, the median value of respondent's blood glucose levels after being given standard therapy (bio-energy therapy) is 18.00 mg / dl. and the mode value of the respondent's blood glucose level after being given standard therapy (bio-energy therapy) was 6 mg / dl.

3.7. Distribution of changes in blood glucose levels in patients with diabetes mellitus before and after standard therapy (bioenergy therapy) and hypnotherapy type-2 in the intervention group.

The comparison of blood glucose levels in patients with diabetes mellitus type-2 before and after being given standard therapy (bio-energy therapy) and hypnotherapy there are 2 (two) respondents with the results of blood glucose levels after being given standard therapy (bio-energy therapy) and hypnotherapy There was an increase compared to before being given standard therapy (bio-energy therapy) and hypnotherapy, and 13 respondents with the results of blood glucose levels after being given standard therapy (bio-energy therapy) and hypnotherapy decreased than before being given standard therapy (bio-energy therapy) and hypnotherapy.

3.8. Distribution of mean changes in blood glucose levels in people with type-2 diabetes mellitus before and after being given standard therapy (bioenergy therapy) in the control group.

The comparison of blood glucose levels in patients with diabetes mellitus type-2 before and after being given standard therapy (bio-energy therapy) there are 2 (two) respondents with the results of blood glucose levels after being given standard therapy (bio-energy therapy) has increased than before. given standard therapy (bio-energy therapy), and 13 respondents with the results of blood glucose levels after being given standard therapy (bio-energy therapy) decreased than before being given standard therapy (bio-energy therapy).

4. Discussion

Blood glucose levels in people with diabetes mellitus type-2 before being given standard therapy (bio-energy therapy) and hypnotherapy showed the highest number was 413 mg / dl and the lowest was 121 mg / dl. The average blood glucose level before being given standard therapy (bio-energy therapy) and hypnotherapy was 234.67 mg / dl. Hypnotherapy is given to control blood glucose levels in patients with diabetes mellitus type-2. Before doing hypnotherapy by researchers, respondents were tested on blood glucose at any time and received standard therapy treatment (bio-energy therapy) by the therapist. Then the respondents followed several steps in hypnotherapy carried out by the researcher. Hypnotherapy is given for 30-60 minutes so that it provides sufficient benefits for the respondents. The results of the study after standard therapy (bio-energy therapy) and hypnotherapy showed that blood glucose levels in type-2 diabetes mellitus patients showed the highest number was 374 mg / dl and the lowest was 110 mg / dl. The average blood glucose level after being given standard therapy (bio-energy therapy) and hypnotherapy was 194.67 mg / dl. Based on these results it can be concluded that there was a change in blood glucose levels after standard therapy (bio-energy therapy) and hypnotherapy were carried out.

This is in accordance with the opinion expressed by Saleh [15] that hypnotherapy can be used to direct patients by utilizing hypnotic conditions to recognize and touch the potential and sources of the subconscious mind so that therapeutic changes occur. The results of related research conducted by Hendriyanto (4), show that hypnotherapy is a method that has been proven to reduce a person's stress level. There are several methods apart from hypnotherapy that are used to treat stress, such as psychoanalysis

and behavior therapy, but these methods are less effective and take a long time to feel significant changes. Less effective because other methods do not touch the root of the problem and only play at the level of the conscious mind, even though the source of stress in a person is stored in the subconscious mind [4].

Physiologically, when a person enters hypnosis relaxation, his thought waves enter an alpha wave with a frequency of 7-14 hertz or deeper than a theta wave with a frequency of 4-7 hertz. When the mind goes into these waves, humans produce natural endorphins that produce a comfortable sensation. And in this hypnosis state, the body's metabolic system is much better and the body is free from tension [4].

Factors that affect the response to stress include physiological functions, personality, behavioral characteristics, and stressor characteristics (intensity, duration, scope, number, and nature of stressors) [4]. It is widely recognized that stress has a negative impact on health, including often resulting in high blood glucose levels and indirectly disrupting diabetes control through effects on diet, exercise and other self-care behaviors [18]. According to Sudoyo et al [16] that emotional stress can increase blood sugar and glucose through increased sympathoadrenal stimuli. Stress also increases the production of pituitary hormones, catecholamines, corticosteroids and suppresses insulin release. The result is an increase in blood glucose.

From the results of statistical tests it means that there was an effect of hypnotherapy on reducing blood glucose levels in patients with diabetes mellitus type-2. Emotional stress can increase blood sugar and glucose through increased sympathoadrenal stimuli. Stress also increases the production of pituitary hormones, catecholamines, corticosteroids and suppresses insulin release. The result is an increase in blood glucose [16]. Stress also impairs diabetes control indirectly through its effects on diet, exercise, and other self-care behaviors. Stress must be managed so as not to increase blood glucose levels in several ways, one of which is a stress management program [18].

According to The Indonesian Board of Hypnotherapy (IBH) in 2012, hypnotherapy is a method that can be used as a stress management program. Hypnotherapy is able to reach a person's subconscious mind so that it is directly in contact with the source of stress. Hypnotherapy is also able to change initial behavior into new behavior according to the suggestions it gives.

5. Conclusion

From the results obtained, the researchers can conclude: the average blood glucose level before being given hypnotherapy was 234.67 mg / dl, the average blood glucose

level after being given hypnotherapy was 194.67 mg / dl. Based on the results of the Wilcoxon Signed Ranks Test, the p value of blood glucose levels before and after hypnotherapy was 0.002 (p value <0.05) so that H_0 was rejected and H_a was accepted, meaning that there was an effect of hypnotherapy on reducing blood glucose levels in people with type 2 diabetes mellitus.

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