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COMPARISON OF THE COMBINATION OF DEEP BREATHING EXERCISE-NEUROMUSCULAR TAPING AND DEEP BREATHING EXERCISE-SLOW STROKE BACK MASSAGE TO REDUCE HIGH BLOOD PRESSURE

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ABSTRACT

Background: Hypertension or high blood pressure is a disease that often affects most people. Hypertension is one of the deadliest diseases in the world. Hypertension cannot directly kill the sufferer, but can trigger other deadly diseases. Physiotherapy interventions that can be applied to hypertensive conditions are deep breathing exercise, neuromuscular taping and slow stroke back massage. The purpose of this study was to prove the effectiveness of combination of Deep Breathing Exercise-Neuromuscular Taping and Deep Breathing Exercise-Slow Stroke Back Massage to reduce high blood pressure. By providing this non-pharmacological therapy, it was hoped that it might have an impact on reducing high blood pressure in people with hypertension. Method: This study used a Quasy Experiment design with Two Group Pretest and Posttest design approaches. This research was conducted on hypertensive patients at a health clinic at Panti Werdha Husnul Khotimah Pekanbaru with 2 treatment groups. Data analysis using univariate and bivariate using independent t-test statistics. The results The results of statistical analysis of the SPSS for Windows test using the Wilcoxon Signed Rank Test. In treatment I, there were no differences in systolic pressure between pre and post intervention (p-value = 0.063), as well as the diastolic pressure, there were no differences in diastolic pressure between pre and post intervention (p-value = 0.157). In treatment II, the results showed that deep breathing exercise and slow stroke back massage had an effect on reducing systolic blood pressure (p-value= 0.027) and diastolic blood pressure (p-value= 0.015). The results of the SPSS for Windows test using the Mann Whitney statistical test, the difference between the two groups after the intervention obtained a systolic pressure p-value= 1,000 and diastolic pressure p-value= 0.317, which means there were no differences in blood pressure values between the two groups Conclusion: There were an effect of giving Deep Breathing Exercise-Neuromuscular Taping and Deep Breathing Exercise-Slow Stroke Back Massage on reducing blood pressure in both groups at the health clinic at Panti Werdha Husnul Khotimah Pekanbaru.

Keyword : Hypertension, Deep Breathing Exercise, Neuromuscular Taping, Slow Stroke Back Massage.

INTRODUCTION

High blood pressure or hypertension is a condition in which the blood have raised pressure above normal, this is indicated by the systolic and diastolic numbers on blood pressure test using a blood pressure measurement device either in the type of a mercury cuff or other digital instrument. Hypertension is called a "silent killer" because the patient does not know he suffered from hypertension before his blood pressure checked.

Hypertension or high blood pressure is a major public health problem. Hypertension is one of the deadliest diseases in the world. Hypertension cannot immediately kill the sufferer, but it can lead other deadly diseases [(1)].

Recent data from the World Health Organization (2013), shows that globally cardiovascular disease is estimated to cause 17 million deaths each year and one third of these deaths is caused by complications from

hypertension [2].

High blood pressure can cause the heart to work harder. Over time, a higher workload leads to serious damage. In the heart, the heart muscle will be thickening (hypertrophy) and cause its function as a pump to be disturbed, then the heart will be dilated and its contraction ability will be reduced. Apart from the heart, high blood pressure can cause damage to blood vessels in the brain, eyes (retinopathy) and kidneys. Most cases of hypertension have no definitive therapy, but can be controlled with a healthy lifestyle and medication [3]. Clinicians, public health practitioners, and health care systems used several treatment strategy to prevent hypertension and reduce mortality caused by hypertension. Doctors and pharmacists recommend taking medication regularly, nutritionists recommend regulating food and a healthy diet, while physiotherapists recommend active movement and exercise.

The specific objective of this study was to prove the effectiveness of adding a Deep Breathing Exercise to Neuromuscular Taping and Slow Stroke Back Massage for reduce high blood pressure. By providing this non-pharmacological therapy, it was hoped that it might have an impact on reducing high blood pressure in people with hypertension.

MATERIAL AND METHODS

The type of this research is a quasi experimental research with pre and post test research design. Quasy experiment is a research method used one group pre-post test design approach. The purpose of this design is to examine the cause-effect relationship to a treatment or intervention. This research was conducted by grouping respondents or subjects and then observing them before and after the intervention was carried out [4].

The population in this study were the elderly subjects at Panti Werdha Husnul Khotimah Pekanbaru and the sample in this study were 14 elderly people with hypertension. The sampling technique used in this research is the cluster sampling technique, in which the selection of the sample refers to groups with certain predetermined characteristics.

The bivariate test used is the Wilcoxon Signed Rank Test and the Mann Whitney U Test, the non-parametric test used to determine the difference in the median of the two independent groups if the dependent variable data scale is ordinal or interval or ratio but is not normally distributed.

RESULTS

After conducting research on 14 respondents in the elderly with hypertension, the following results were obtained.

Table 1
Results of Analysis of Differences in Blood Pressure between Before and After Intervention in Hypertensive Patients

Group I	Mean	p
Sistol Pre and Post	2,5	0,063
Diastol Pre and Post	1,5	0,157

Based on table 1, there were no differences in systolic pressure between pre and post intervention (p-value = 0.063), as well as the diastolic pressure, there were no differences in diastolic pressure between pre and post intervention (p-value = 0.157).

Table 2
Results of Analysis of Differences in Blood Pressure between Before and After Intervention in Hypertensive Patients

Group II	Mean	p
Sistol Pre and Post	3,5	0,027
Diastol Pre and Post	4	0,015

Based on table 2, there were difference in systolic pressure between pre and post intervention in group II (p-value = 0.027). There were difference in diastolic pressure between pre and post intervention in group II (p-value = 0,015), it means that there were differences in the effect before and after intervention.

Table 3
Results of Analysis of Difference in Average of Blood Pressure in Hypertensive Patients

Group		Mean	P
Sistol between Group 1 and 2 Post	Group 1	7,50	1,000
	Group 2	7,50	
Diastol between Group 1 and 2 Post	Group 1	8,00	0,317
	Group 2	7,00	

Based on table 3, the statistical test of the difference between of two groups after the intervention obtained a systolic pressure of p-value = 1,000 and diastolic pressure of p-value = 0.317, it means that there were no difference in blood pressure values between of the two groups.

DISCUSSION

Statistical analysis of the SPSS for Windows test using the Wilcoxon Signed Rank Test, the results showed that deep breathing exercise and slow stroke back massage had an effect on reducing systolic blood pressure (p-value: 0.027) and diastolic blood pressure (p-value 0.015). Research by Santoso and Rahayu showed that there is an effect of breathing relaxation techniques on lowering blood pressure as indicated by the results of the SPSS for Windows test using the Wilcoxon Signed Rank Test, α = 0.05 obtained a significant value = 0.003. Because of the significance value <0.05, it means that the effect of lowering blood pressure between before and after giving breathing relaxation techniques in hypertensive respondents were significant. Then the research results obtained a significant value, and H0 was rejected, which means that there were an effect of giving breathing relaxation techniques on reducing blood pressure in hypertensive respondents in RW 08 Lirboyo Village, Kediri City [5].

Slow deep breathing is one of relaxation methods. The effect of slow deep breathing increases baroreflex sensitivity. Baroreflex would activate the parasympathetic system, then it leads to vasodilation of blood vessels, decreased cardiac output and decreased blood pressure. Deep and slow breathing would increase oxygen levels in the body and stimulate the body's chemoreceptors, it leads to vasodilating response of blood vessels and a decrease in vascular pressure so that blood pressure drops [6]. Deep Breathing Exercise were given 3 times / minute for 10 minutes.

Research by Retno and Prawesti (2012) showed the effect of Slow Stroke

Back Massage on changes in systolic and diastolic blood pressure using the Wilcoxon statistical test obtained ρ systolic = 0.001 and ρ diastolic = 0.007. Because the results of ρ <α, which means there is an effect of slow stroke back massage on changes in blood pressure in respondents. There were a decrease in the frequency of respondents from hypertension stage 2 to stage 1 and pre hypertension, but not all respondents experienced a change in the form of a decrease in systolic blood pressure, there was 1 respondent (4.2%) who had an increase in systolic blood pressure. From the data, it was found that 20 respondents (83.3%) had a decrease in systolic blood pressure and 17 respondents (70,8%) had a decrease in diastolic blood pressure [(7)].

Slow stroke back massage is a manipulation therapy with gentle massage on the tissues that aims to have a physiological effect, especially the vascular, muscular, and nervous systems of the body. The mechanism of action of slow stroke back massage is the release of endorphins, systemic vasodilation and decreased contractility that occurs due to increased activity of the parasympathetic nervous system which releases the neurotransmitter acetylcholine which can inhibit the depolarization of the SA node and AV node leading to sympathetic nerve activity which releases the neurotransmitter norepinephrine, causing a decrease in heart rate, cardiac output, and stroke volume resulting in changes in blood pressure, a decrease in blood pressure. Slow stroke back massage were given for 3-10 minutes.

Muscles, tendons, and ligaments relax due to contact or pressure on the skin thereby increasing parasympathetic activity to release the neurotransmitter acetylcholine to inhibit sympathetic nerve activity in the heart muscle which manifests in a decrease in blood pressure. Massage gives benefits to organs such as musculoskeletal and cardiovascular organs which gives a positive effect on the organs. Slow stroke back massage can vasodilate blood and lymph vessels, and increase the baroreceptor reflex response which affects the decrease in activity of the sympathetic nervous system and increases the activity of the parasympathetic nervous system. This mechanism causes systemic vasodilation and decreased cardiac muscle contractility, which in turn affects the decrease in heart rate, cardiac output, and stroke volume and ultimately changes in blood pressure, a decrease in blood pressure [(8)].

CONCLUSION

There was effect of Deep Breathing-Neuromuscular Taping Exercise and Deep Breathing Exercise-Slow Stroke Back Massage on reducing blood pressure in both groups at the Panti Werdha Husnul Khotimah health clinic, Pekanbaru.

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