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Research Article

Effect of Progressive Muscle Relaxation Therapy on Blood Pressure in Hypertension Sufferers in Pantoloan Health Center Area Huntara

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ABSTRACT

Background: Hypertension is an increase in blood pressure both diastolic and systolic which disappear or persist with increasing blood pressure -> 140/90 mmHg. In Indonesia reaching 32% of the total population, hypertension sufferers amounting to 15 million but only 4% are under controlled hypertension Pantoloan Puskesmas data with 2018 new cases based on visits to services totaling 218 cases. The purpose of this study was to determine the effect of providing progressive muscle relaxation therapy on blood pressure in hypertensive patients in the Pantaraan Puskesmas working area.
Method: This type of analytic research, true experimental design with pretest-posttest control design. The population of hypertension sufferers in Pantoloan is 218 people. The sampling technique of this study was purposive sampling, as many as 14 patients with hypertension were divided into 2 groups, namely therapy and control.
Result: Paired t-test results are P value = 0.005 and 0.047 for the morning and P Value = 0.001 and 0.000 in the afternoon (<0.05) so that statistically there is an influence on the provision of progressive muscle relaxation therapy in patients with hypertension in Huntara region Pantoloan Puskesmas work. The conclusion in this study is that there is a significant effect of progressive muscle relaxation therapy on blood pressure in patients with hypertension in the Pantoloan Puskesmas Work Area.
Conclusion: Suggestions for puskesmas are expected to be useful as an alternative to providing non-pharmacological therapy to hypertensive patients in addition to ongoing medical therapy

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1. INTRODUCTION

The World Health Organization (WHO) states that the number of people with hypertension will continue to increase along with the increasing population, in 2025 it is estimated that around 29% of world's citizens are affected by hypertension. WHO states that developing economic countries have hypertension sufferers by 40% while developed countries only have 35%, the African Region holds the top position of hypertension sufferers, which is equal to 40%. The Americas account for 35% and Southeast Asia 36%. Asia region this disease has killed 1.5 million people each year. This indicates that one in three people suffer from hypertension. Meanwhile, in Indonesia it is quite high, reaching 32% of the total population (Kemenkes, 2019).

According to the Ministry of Health report (2018), hypertension is the number 3 cause of death after stroke and tuberculosis, where the proportion of deaths reaches 6.7% of the population of deaths at all ages in

Indonesia. The results of the 2018 Balitbangkes Basic Health Research (Riskesdas) showed that the national prevalence of hypertension reached 25.8%, increasing to 34.1%. It is estimated that there are 15 million people with hypertension in Indonesia, but only 4% have hypertension under control. Controlled hypertension are those who have hypertension and they know they are being treated for it. Conversely, 50% of sufferers are not aware of themselves as having hypertension, so they tend to suffer from more severe hypertension (Kemenkes, 2018)

Data on hypertension sufferers in Central Sulawesi Province based on the Profile of the Central Sulawesi Provincial Health Office in 2016 total cases of hypertension, namely 96,797 cases. Whereas in 2017 the number of sufferers increased by 111,058 cases. This can be seen from the data on hypertension in Central Sulawesi Province increasing every year (Profil Kesehatan Sulawesi Tengah, 2017).

Data obtained from the Palu City Health Office, the number of hypertension sufferers in 2016 was 8,697 cases. In 2017 the number of hypertension sufferers increased by 9,406 cases. Then in 2018 hypertension sufferers experienced an increase of 9,429 cases. It can be seen from the data that there are cases of hypertension in Palu City increasing every year (Profil Kesehatan Kota Palu, 2018).

Data obtained from the Pantoloan Health Center in 2017 on old cases of hypertension sufferers totaled 603 cases and new cases of hypertension sufferers totaled 115 cases. In 2018, 411 cases of early detection of hypertension were carried out. Patients with hypertension in 2018 new cases based on visits to services amounted to 218 cases (Puskesmas Pantoloan, 2019).

Preliminary study conducted by researchers on February 3 2019 at the shelter (temporary shelter) through the interview method and blood pressure measurements on 10 people, obtained data that there were 7 patients with hypertension but had not been treated further therapeutically, and 3 of them if hypertension recurred they overcome it by taking herbal medicine, new sufferers hear about Progressive Muscle Relaxation Therapy being able to lower blood pressure.

Therefore, this study aims to determine the effect of progressive muscle relaxation therapy on blood pressure in hypertensive patients in the Pantoloan Public Health Center working area.

2. RESEARCH METHODS

This study uses analytic research methods using a true experimental research design (experiments that are true), with a pretest – posttest control design. The study was conducted for 5 days with 14 respondents, in this study the researchers divided into 2 groups, namely the treatment group and the control group, each group consisting of 7 respondents. On day 1 to day 2 the researcher met with respondents by means of interviews and observations of initial blood pressure measurements and was willing to become a research respondent, then on day 3 to day 5 the researcher carried out therapy/treatment. Giving treatment / therapy for 3 days with 2x giving therapy in the morning and evening.

In this research design there are two groups. The first group was the treatment/therapy group, while the second group was the control group as a comparison and the control group did not receive any treatment/therapy but only measured blood pressure. Before carrying out treatment/therapy in the research group, an initial measurement (pre-test) was carried out to determine the initial value of the respondent's blood pressure, then continued with treatment/therapy for 15 minutes according to the SOP. After the therapy was carried out, the researcher carried out the final measurement (posttest) in both groups to determine the effect of the treatment on the respondents. This research was conducted on 27 - 02 May 2019 for 7 days in the shelter working area of the Pantoloan Health Center. Data analysis in this study used bivariate analysis.

3. RESULTS

3.1. Bivariate Analysis

Bivariate analysis in this study used the Paired T – Test statistical analysis. In processing the systolic and diastolic blood pressure data in the action group and the control group, a paired t-test statistical test was used with a 95% confidence level (0.05). To see the effect and differences in the significance value of blood pressure in hypertensive patients before and after being given progressive muscle relaxation. The results are presented in tabular form as follows:

Table 1. The Effect of Progressive Muscle Relaxation Therapy on Blood Pressure in Hypertension Patients in the Shelter in the Work Area of the Pantoloan Health Center

	Therapy Group					
Blood pressure	Different Mean	Std. deviation	Std. Error Mean	df	t count	ρ value

Systolic Pre Test in the morning Systolic Post Test morning	15,714	9,759	3,689	6	4,260	0,005
Diastolic Pre Test in the morning Diastolic Post Test in the morning	7,143	7,559	2,875	6	2,500	0,047

Source: primary data, 2019

Blood pressure	Different Mean	Std. deviation	Std. Error Mean	df	t count	ρ value
Systolic Pre Test in the afternoon Afternoon Post Systolic Test	22,857	9,512	3,595	6	6,358	0,001
Diastolic Pre Test In the afternoon Diastolic Post Test afternoon	18,571	6,901	2,608	6	7,120	0,000

Source: primary data, 2019

The table above shows that the results of the statistical test analysis of paired t-test systolic and diastolic blood pressure pre and post-test progressive muscle relaxation therapy in the morning obtained p value = 0.005 ($\alpha < 0.05$), mean difference = 15.714 for systolic and p value = 0.047 ($\alpha < 0.05$), mean difference = 7.143 for diastolic. In the evening, p value = 0.001 ($\alpha < 0.05$) mean difference = 22.857 for systolic and p value = 0.000 ($\alpha < 0.05$) mean difference = 18.571 for diastolic

Table 2. Control Group

Blood pressure	Different Mean	Std. deviation	Std. Error Mean	df	t count	ρ value
Early morning systolic pre test Morning Post Systolic Test	-2,857	7,559	2,857	6	-1,000	0,356
Diastolic Pre Test in the morning Diastolic Post Test morning	-4,286	5,345	2,020	6	-2.121	0,078

Source: primary data, 2019

Blood pressure	Different Mean	Std. deviation	Std. Error Mean	df	t count	ρ value
Systolic Pre Test in the afternoon Afternoon Post Systolic Test	0,000	11,547	4,364	6	0,000	1,000
Diastolic Pre Test In the afternoon Diastolic Post Test afternoon	1,429	13,452	5,084	6	0,281	0,788

Source: primary data, 2019

Meanwhile, systolic and diastolic blood pressure at the beginning and at the end without progressive muscle relaxation therapy in the morning obtained p value = 0.356 (α > 0.05), mean difference = -2.857 for systolic and p value = 0.078 (α > 0 .05), mean difference = -4.286 for diastolic. In the evening, p value = 1.000 (α > 0.05) for systolic and p value = 0.788 (α > 0.05), the mean difference = 1.429 for diastolic.

In accordance with the research hypothesis, Ho is rejected and Ha is accepted, which means that there is an effect of progressive muscle relaxation therapy on blood pressure in hypertensive patients in the therapy group. Whereas in the control group the value of α > 0.05 then Ho is accepted and Ha is rejected, which means there is no effect between the initial and final measurements.

To test the significance of the results of t count compared to t table, that is, if t count > t table. Then Ha is accepted and Ho is rejected, meaning that there is an influence between the pre-test and post-test averages.

The value of t table is calculated based on the value of df (degree of freedom) and the significance value (α/2). From the data above the df value is 6 and a significance value of 0.005/2 = 0.0025. This value is used as a reference in finding the t table value of 2.447

Because the value of t count 4.260 > t table 2.447 and t count 2.500 > t table 2.447 on systolic and diastolic blood pressure in the morning. For t count 6.358 > t table 2.447 and t count 7.120 > t table 2.447 on systolic and diastolic blood pressure in the afternoon.

Then the basis for making the decision above can be concluded that Ho is rejected and Ha is accepted, so it can be concluded that there is an influence between the pre-test and post-test averages.

4. DISCUSSION

The results of the study show that from 7 in the morning the respondents in the action group experienced a decrease in systolic blood pressure by 6 people (85.7%) and steady blood pressure by 1 person (14.3%) for diastolic blood pressure decreased by 4 people (57 .1%) and blood pressure remained constant for 3 people (42.9%) while in the afternoon the systolic blood pressure decreased by 7 people (100%) and the diastolic blood pressure decreased by 7 people (100%)

Meanwhile, for 7 respondents in the morning in the control group, systolic blood pressure increased by 1 person (14.3%) and systolic blood pressure remained constant by 6 people (85.7%). Diastolic blood pressure was fixed by 3 people (42.9%) and diastolic blood pressure increased by 4 people (57.1%) while in the afternoon systolic blood pressure decreased by 3 people (42.9%) systolic blood pressure remained by 2 people (28.5%) systolic blood pressure increased by 2 people (28.5%). And blood pressure decreased diastolic by 3 (42.9%) blood pressure remained diastolic by 2 people (28.5%) blood pressure increased diastolic by 2 people (28.5%).

The results above, the researchers assume that from the two groups there is a very clear difference in systolic and diastolic blood pressure from the first day to the third day. For the group that underwent progressive muscle relaxation therapy, there was a decrease in systolic and diastolic blood pressure, while in the control group, the highest increase in systolic and diastolic blood pressure occurred on the third day.

The researchers' assumptions above are supported by the theory put forward by Budhi (2013) stating that Progressive Muscle relaxation techniques are widely used to reduce stress, chronic pain and blood pressure. Relaxation techniques allow the client to control his body's response to tension and anxiety. This technique can reduce oxygen consumption, metabolism, respiratory rate, heart rate, muscle tension, and systolic and diastolic blood pressure.

Meanwhile, for the control group, which did not receive any action or progressive muscle relaxation therapy, there were changes in systolic and diastolic blood pressure in the morning and evening. Systolic and diastolic blood pressure which increased by 2 men aged 57 and 66 years. Meanwhile, there were 4 women aged 64-70 years.

The above shows that researchers assume that there are changes in systolic and diastolic blood pressure that increase, namely in men aged 52 and 66 years entering the middle age mass (middle) between 45-59 years and elderly (elderly) between 60-74 year.

The assumptions of the researchers above are supported by the theory put forward by Potter (2010) about blood pressure varying according to age. Blood pressure in adults will increase with age, optimal blood pressure for middle-aged adults is below 120/80 mmHg. The elderly usually experience an increase in systolic and diastolic blood pressure which is associated with decreased elasticity of blood vessels.

The assumptions of the researchers above are supported by the theory put forward by Potter (2010) There is no significant difference in blood pressure between male and female adolescents. After puberty, men tend to have higher blood pressure. In this case, men have a higher probability of developing hypertension than women until the age of 55. Conversely, after the age of 60, women have a higher probability of developing hypertension. In women, the risk of hypertension and cardiovascular disease is influenced by the hormone estrogen. It also answers the question why at the age of 60 and over the risk of hypertension is higher in women. At that age it is assumed that a woman has stopped menstruating (menopausal mass) which causes normal ovarian function to gradually disappear and estrogen levels fall after post-menopause resulting in an increase

in cholesterol and low density lipoprotein (LDL) levels, while receptors for LDL become reduced and can cause blood pressure to rise.

The assumptions of the researchers above are supported by the theory put forward by Potter (2010) Blood pressure is lower, namely at midnight at 00.00 – 03.00 in the morning. Between 03.00 - 06.00 in the morning there is an increase in morning blood pressure. The highest blood pressure is found during the day between 10.00 – 18.00.

The theory above is supported by research conducted by Erika (2017) who argues that the large number of elderly people who experience hypertension is caused by patterns of daily life such as excessive and insufficient consumption of sweet, salty, fatty foods, preserved foods, alcoholic and caffeinated drinks. consumption of fiber from vegetables or fruit. Lifestyle such as physical activity, smoking habits, and stress can also trigger an increase in blood pressure in the elderly. The problem that often occurs in the elderly who have hypertension is the difficulty of maintaining blood pressure instability.

The results of the study with 7 respondents in the action or therapy group showed that the p value of systolic blood pressure was 0.005 and diastolic blood pressure was 0.047 (<0.05) for the morning and systolic blood pressure was 0.001 and diastolic blood pressure was 0.000 (<0.000). 05) for the afternoon, which means that there is an effect of giving acupressure therapy on blood pressure in hypertensive patients which was obtained by the results of the paired t-test statistic.

The researcher's assumption based on these results is that when Progressive Muscle Relaxation therapy is given it causes a decrease in stress on the respondent, blood circulation becomes smooth and the respondent relaxes so that blood pressure gradually decreases.

The researcher's assumptions are supported by Kozier (2016) stating that relaxation techniques allow clients to control their body's response to tension and anxiety. This technique can reduce oxygen consumption, metabolism, respiratory rate, heart rate, muscle tension, and systolic and diastolic blood pressure.

The researcher's assumption is also supported by Budhi (2013) who states that focusing on muscle effectiveness is by identifying tense muscles and then reducing tension by doing relaxation techniques to get a relaxed feeling.

The researcher's assumptions are also supported by Lemone's theory (2016) that behavioral and mind-body therapy can help to a large extent in lowering blood pressure. Blood pressure rises in response to physiological and psychological stress and anxiety. Mind body therapies such as yoga and progressive muscle, meditation are designed to modify the physiological and cognitive aspects of the stress response.

Another study conducted by Hamonangan, et al (2018) entitled the effect of progressive muscle relaxation techniques on reducing blood pressure in hypertensive patients at Imelda General Hospital. The results of this study indicate that there is a significant effect indicating that the average value of systole and diasistole before and after with a value of p = 0.000 <p there is a significant difference after being given progressive muscle relaxation therapy, meaning that there is an effect on systole and diasistole before and after progressive muscle relaxation and also another study conducted by Erika (2017) The results of the Wilcoxon statistical test on the effect of progressive muscle relaxation techniques on blood pressure in the elderly with hypertension obtained a value of p = 0.005, namely p <α (0.05), which means that there is an effect of progressive muscle relaxation techniques on pressure. Blood pressure in the elderly with hypertension at the Pelangi Pradah Elderly Posyandu Kali Kendal RT 4 Surabaya.

5. CONCLUSION

This study concluded that there was an effect of progressive muscle relaxation therapy on blood pressure in hypertensive patients in the pantoloan health center area shelters.

The mean systolic and diastolic blood pressure before progressive muscle relaxation therapy was carried out, which was 144.29/95.71 mmHg and after progressive muscle relaxation therapy was carried out, which was 128.57/88.57 mmHg in the morning while the systolic and diastolic blood pressure before progressive muscle relaxation therapy was carried out, namely 147.14/104.29 mmHg and progressive muscle relaxation therapy was carried out, namely 124.29/88.57 mmHg in the afternoon.

The mean of the systolic and diastolic blood pressure control group at the beginning of the measurement was not carried out progressive muscle relaxation therapy, namely 137.14/92.86 mmHg and the final measurement was not carried out by progressive muscle relaxation therapy, namely 140.00/97.14 mmHg in the morning while the blood pressure systolic and diastolic before progressive muscle relaxation therapy was carried out, namely 143.43/100.00 mmHg and progressive muscle relaxation therapy was carried out, namely 141.43/98.57 mmHg in the afternoon.

6. RECOMMENDATION

For the Palu Health Polytechnic Institute, this research can be used as a reference in teaching complementary nursing courses to increase knowledge about administering non-pharmacological therapies to hypertensive patients.

For the Pantoloan Health Center, this research can be used as input material in establishing policies in an effort to implement complementary therapy for hypertension patients in addition to ongoing medical therapy.

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