THE EFFECT OF SLOW DEEP BREATHING EXERCISE ON BLOOD PRESSURE ELDERLY IN PSTW SABAI NAN ALUIH, SICINCIN PADANG PARIAMAN, 2020

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ABSTRACT

Based on World Health Organization (WHO) in 2017, around 998 million people or 26.4% of people worldwide suffer from hypertension, with a ratio of 26.6% men and 26.1% women. Of the 998 million people with hypertension, 378 million are in developed countries and the remaining 620 million are in developing countries including Indonesia and it is estimated that this will increase to 1.5 billion people in the coming year. The prevalence of hypertension in Indonesia increases every year. The Indonesian Ministry of Health (2017) stated that there was an increase in the prevalence of hypertension from 7.6% in 2007 to 9.5% in 2013 and in 2017 it had reached 19.5% and was dominated by the elderly (34.2%). West Sumatra currently has reached 33% of the total population of hypertension cases and from 19 districts / cities in West Sumatra, the highest cases of hypertension in the elderly are in Padang Pariaman District (43.2%).

This research is a quantitative research with a quasi experimental research design / design one group pre test post test. The research objective was the effect of slow deep breathing exercise on blood pressure in the elderly at PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency which was held on Tuesday, 16 July 2020 s/d Wednesday, 24 July 2020 with a total population of 21 people, total sampling technique. The statistical test used was the Paired Sample T Test (T Dependent).

The results showed the effect of slow deep breathing exercise on blood pressure in the elderly in the PSTW Sabai Nan Aluih Cincin, Padang Pariaman Regency in 2020 (systolic p value = 0,000 and diastolic p value 0.002). Researchers hope that the PSTW Sabai Nan Aluih Sicincin will provide health education about slow deep breathing exercise techniques and urge all the elderly to be able to practice slow deep breathing exercise independently when they experience hypertension.

Keywords : Slow Deep Breathing Exercise, Blood Pressure, Elderly, PSTW Sabai Nan Aluih Sicincin.

INTRODUCTION

Hypertension is a disorder of the blood vessels which causes the supply of oxygen and nutrients carried by the blood to be blocked to the tissues that need it so that blood pressure is not normal, namely systolic pressure ≥ 120 mmHg and diastolic pressure ≥ 80 mmHg (Insiyah, 2015). Hypertension is a condition in which blood pressure increases beyond normal limits. The limit of normal blood pressure varies according to age (MOH, 2016).

Based on World Health Organization (WHO) data in 2017, around 998 million people or 26.4% of people worldwide suffer from hypertension, with a ratio of 26.6% men and 26.1% women. Of the 998 million people with hypertension, 378 million people are in developed countries and the remaining 620 million are in developing countries including Indonesia and it is estimated that this will increase to 1.5 billion people in the coming year

The prevalence of hypertension in Indonesia increases every year. The Indonesian Ministry of Health (2017) stated that there was an increase in the prevalence of hypertension from 7.6% in 2007 to 9.5% in 2013 and in 2017 it had reached 19.5% and was dominated by the elderly (34.2%).

Management of hypertension in the elderly needs to be done in an appropriate manner. Management can be divided into two, namely pharmacological management and non-pharmacological management. Pharmacological management can be done

by administering anti-hypertensive drugs. Standard pharmacological treatment of hypertension recommended by the Committee of Doctors of Hypertension is diuretic drugs, beta blockers, calcium antagonists, and ACE inhibitors (Angiotensin Converting Enzyme) (Nuraini, 2016).

Pharmacological drugs have a quick reaction to lower blood pressure, but they can have dangerous side effects for hypertensive patients. If the anti-hypertensive drug is consumed in excess, it will cause fluid retention, allergies and heart arrhythmias. Efforts to minimize pharmacological side effects require a non-pharmacological approach (Nuraini, 2016).

Non-pharmacological therapies that must be carried out by people with hypertension include controlling food and sodium intake, losing weight, limiting alcohol and tobacco consumption, and doing exercise and relaxation (Kusumastuty, 2016). According to Gayatri (2010), one of the non-pharmacological management for hypertensive patients is slow deep breathing exercise. Meanwhile, according to Nuraini, (2016), non-pharmacological approaches that can be taken include limiting sodium, alcohol, routine control, exercise, lifestyle changes and relaxation techniques. Relaxation techniques that can be done are slow deep breathing exercises.

Slow deep breathing exercise is a breathing relaxation technique by inhaling deeply and slowly exhaling it through the mouth at a frequency of 6-10 times per minute so that there is an increase in cardiopulmonary stretch (Fithriyani, 2017). According to Insiyah (2015), reducing the frequency of breathing in one minute to 10 times or less regularly for 15 minutes per day can help regulate blood pressure and lower blood pressure by 10-15 points. This turns out to be a substitute for diet, exercise or drugs. According to Leleh (2017), to get significant results, it is recommended that a slow deep breathing exercise be carried out for 15 minutes per day for at least 3 days.

A person with hypertension experiences an increase in blood pressure which results in the circulation of blood throughout the body not smooth, resulting in an increase in the work of the heart to meet O2 throughout the body. Slow deep breathing helps to ease the workload of the heart by increasing the supply of O2 resulting in a decrease in heart rate followed by a decrease in blood pressure. Doing deep and slow breathing will give the body the opportunity to do diaphragmatic breathing and can dramatically change the physiology of life because it activates relaxation centers in the brain (Sebastianus, 2014).

Research by Gayatri (2015) entitled effectiveness of slow deep breathing on decreasing blood pressure in primary hypertension: a randomized controlled trial of patients in Atambua, East Nusa Tenggara found that slow deep breathing has an effect on blood pressure in patients with hypertension with a value of p = 0.002. . Research by Fithriyani (2017) also found that there was an effect of giving deep breath relaxation techniques on changes in blood pressure with statistical test results of p-value = 0.000 for systolic and p-value = 0.006 for diastolic or $<\alpha$ (0.05) at 30 respondents.

The preliminary study conducted by the researchers at PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency on the date it was found that the current number of elderly people is 109 people (1 person died). Researchers carried out blood pressure checks on all elderly people for 10 days and of the 109 elderly who were in PSTW, there were 21 elderly who were experiencing hypertension. If this is left unchecked, it will have an impact on the worsening of the health condition of the elderly. Therefore it is necessary to carry out interventions that can help and improve the blood pressure of the elderly PSTW Sabai Nan Aluih.

This study aims to identify the average blood pressure in the elderly in PSTW Sabai Nan Aluih Sicincin, Padang

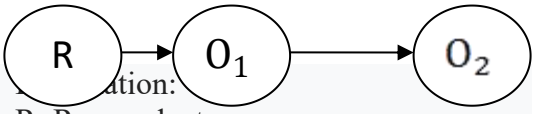
Pariaman Regency before and after slow deep breathing exercise and to identify the effect of slow deep breathing exercise on blood pressure in the elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency.

MATERIAL AND METHODS

Research Design

This research is a quantitative research with a quasi-experimental research design one group pre-test post-test, namely quasi-experimental research with one group without a comparison group with the presence of pretest and posttest. Respondents in this study before being given slow deep breathing exercise interventions. Researchers will do a pretest (measurement of blood pressure), then after the respondent is given the intervention slow deep breathing exercise, the researcher will do a post test (measurement of blood pressure) again. The research design can be seen in the following chart:

group *Pretest*Intervention Post test



ation:

R: Respondent

O_1: Pre test given before treating

O_2: Post test given after treatment

Result

The implementation of data collection at PSTW Sabai Nan Aluih Sicincin that researchers did began with the researcher introducing himself, explaining the aims and objectives and asking the respondent's willingness to be used as a respondent by signing an agreement sheet.

After the respondent received an explanation of the aims and objectives of the study and signed the informed consent, the researcher conducted a pre-test (blood pressure check) and recorded it on the results of the blood test. Furthermore, the researcher gave slow deep breathing exercise intervention with several stages, namely adjusting the position of the elderly in a semi-fowler or sitting position, asking the elderly to put their hands on their stomach, asking the elderly to breathe slowly and deeply through their nose, inhaling for 3 seconds and feeling them. The abdomen / stomach expands when inhaling, asks the elderly to hold their breath for 3 seconds, asks the elderly to curl their lips, exhales through the mouth slowly for 6 seconds while feeling the abdomen / stomach move downward, asking the elderly to repeat all steps for 15 minutes.

After the slow deep breathing exercise intervention was completed, the researcher performed a post test (measuring blood pressure) for the elderly again and recorded them on the blood pressure measurement result spreadsheet. All of the above procedures were carried out for 1 week (7 days) consecutively for each respondent. Conclusion is drawn by taking / seeing and comparing the results of the pre-test on the first day with the results of the post-test on the seventh day.

Univariate Analysis

The results of the univariate analysis in this study were about the average blood pressure in the elderly in the PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency before and after being given slow deep breathing exercise. This can be seen in the following table:

Table 5.1
Average Blood Pressure of the Elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman District Before and After Given Slow Deep Breathing Exercise (n = 21)

Blood pressure	Mean		Minimal		Maksimal	
	Sistole	**Diastole**	**Sistole**	**Diastole**	**Sistole**	**Diastole**
Pre Test	192,38	104,29	160	80	240	120
Post Test	154,29	86,19	120	80	180	100

Based on table 5.1, it is known that the average blood pressure in the elderly in the PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency before being given a slow deep breathing exercise, the systolic blood pressure was 192.38 mmHg and diastole 104.29 mmHg. The minimum value for systolic blood pressure is 160 mmHg and diastole 80 mmHg. While the maximum value of systolic blood pressure is 240 mmHg and diastole is 120 mmHg.

Meanwhile, after being given a slow deep breathing exercise for the elderly in the PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency, the average systolic blood pressure was 154.29 mmHg and diastole 86.19 mmHg. The minimum value of systolic blood pressure is 120 mmHg and diastole 80 mmHg. While the maximum value of systolic blood pressure is 180 mmHg and diastole is 100 mmHg.

Bivariat Analysis

The results of the bivariate analysis in this study were in the form of data exposure on the effect of slow deep breathing exercise on blood pressure in the elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency in 2020 using the Paired Sample T Test (T Dependent) statistical test. For more details, see the following table:

Table 5.2 Effects of Slow Deep Breathing Exercise on Blood Pressure in the Elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency in 2020 (n = 21)

Tabel 5.2 The Effect Of Slow Deep Breathing Exercise On Blood Pressure In Elderly In Pstw Sabai Nan Aluih, Sicincin Padang Pariaman, 2020

Blood Pressure	**Mean (mmHg)**	**P_*Value***	**Selisih (mmHg)**
Pre Test ***Sistole***	192,38	0,000	38,09
Post Test ***Sistole***	154,29		
Pre Test ***Diastole***	104,29	0,002	18,10
Post Test ***Diastole***	86,19		

Based on table 5.2, it can be seen that the p value of blood pressure pre-test systole with post-test systole is 0.000 (p <alpha). It can be concluded that there is an effect of slow deep breathing exercise on blood pressure (systole) in the elderly at PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency in 2020. Furthermore, the results of the p value of blood pressure after diastolic test with post test diastole

were also found to be 0.002 (p <negligent), which means that there is an effect of slow deep breathing exercise on blood pressure (diastole) in the elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency in 2020.

Based on these results it can be concluded that slow deep breathing exercise has an effect on elderly blood pressure, both systolic and diastolic blood pressure. The difference in the average pre-test and post-test systolic blood pressure values was 38.09 mmHg and the average difference between pre-test and post-test diastolic blood pressure values was 18.10 mmHg.

DISCUSSION

Average Blood Pressure of the Elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency Before and After Given Slow Deep Breathing Exercise

Based on table 5.1, it is known that the average blood pressure in the elderly in the PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency before being given a slow deep breathing exercise, the systolic blood pressure was 192.38 mmHg and diastole 104.29 mmHg. The minimum value for systolic blood pressure is 160 mmHg and diastole 80 mmHg. While the maximum value of systolic blood pressure is 240 mmHg and diastole 120 mmHg.

Meanwhile, after being given a slow deep breathing exercise in the elderly at PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency, the average blood pressure was 154.29 mmHg systolic and 86.29 mmHg diastole. The minimum value of systolic blood pressure is 120 mmHg and diastole 80 mmHg. While the maximum value of systolic blood pressure is 180 mmHg and diastole is 100 mmHg.

The results of this study are in line with research conducted by Leleh (2017) which found that the average blood pressure of respondents at Binong Public Health Center, Tangerang Regency before doing slow deep breathing exercises (systole = 168.43 mmHg, diastole = 96.45 mmHg) and after doing slow deep breathing exercises, the average blood pressure of the respondents became (systole = 130.22 mmHg, diastole = 83.42 mmHg).

Blood pressure is the pressure of the blood pumped by the heart against the artery walls. A person's blood pressure includes systolic blood pressure and diastolic blood pressure. Systolic blood pressure is the blood pressure when the heart is closed. Diastolic blood pressure is the blood pressure when the heart is at rest. Apart from diagnosis and classification, diastolic blood pressure is indeed more important than systolic.

a. Systolic blood pressure is the amount of pressure on the artery walls each time the heart contracts or presses blood out of the heart. Diastolic pressure is the amount of pressure in the arteries when the heart is at rest. The pumping action of the heart exerts pressure that pushes blood through the vessels. Every time the heart beats, blood is pumped out of the heart into the blood vessels, which carry blood around the body. The amount of pressure in the system is important to keep blood vessels open (Kusumastuty, 2016).

Normal blood pressure in the elderly according to the Indonesian Ministry of Health (2016) is 120 / 80-140 / 90 mmHg. If the blood pressure of the elderly exceeds this threshold, the elderly is said to be suffering from hypertension. Hypertension is a disorder of the blood vessels which causes the supply of oxygen and nutrients carried by the blood to be blocked to the tissues that need them so that blood pressure is not normal (Insiyah, 2015). Hypertension is a condition in which blood pressure increases beyond normal limits (MOH, 2016).

In a study that has been conducted by researchers, the researchers found that 21 elderly people at PSTW Sabai Nan Aluih Sicincin had hypertension. Based on the

information obtained by researchers while at PSTW Sabai Nan Aluih Sicincin, the elderly like to drink coffee, are often awake at night sleep and lack physical activity. This can be associated with the occurrence of hypertension in the elderly.

According to Insiyah (2015), the cause of increased blood pressure in the elderly is due to an increase in heart rate, an increase in resistance (resistance) of blood vessels from the edges and an increase in the volume of blood flow. Wiharja (2016) states that this is due to reduced physical activity, excess body weight, hormonal disorders, genetic influences, caffeine consumption and disturbed sleep patterns.
Hypertension in the elderly if not handled properly will have a very detrimental impact. Hypertension in the elderly has become one of the main causes of disability and death in almost all countries (Gayatri, 2010). Furthermore, according to Annisa

Based on the results of research conducted by researchers, it is known that the p value of blood pressure in the pre-systolic test with the post-systolic test is 0.000 (p <negligent). It can be concluded that there is an effect of slow deep breathing exercise on blood pressure (systole) in the elderly at PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency in 2020. Furthermore, it was also found that the results of the p value value of blood pressure post diastolic blood pressure test with post diastolic test were 0.002 (p <negligent), which means that there is an effect of slow deep breathing exercise on blood pressure (diastole) in the elderly in PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency in 2020.

Based on these results it can be concluded that slow deep breathing exercise has an effect on elderly blood pressure, both systolic and diastolic blood pressure. The difference in the average pre-test and post-test systolic blood pressure values was

(2018), the impact of hypertension has caused death at all ages in Indonesia up to 6.8%. According to Nuraini (2016) that hypertension in the elderly can be a serious threat if left untreated, it will result in strokes, myocardial infarction, kidney failure, encephalopathy and seizures.
In order for the elderly at PSTW Sabai Nan Aluih Sicincin to avoid the negative impact of hypertension, the researchers hope that the elderly avoid the causes or triggers of hypertension, such as avoiding drinking coffee and regularly participating in sports activities carried out in the PSTW Sabai Nan Aluih environment. Furthermore, the researchers also hope that the PSTW Sabai Nan Aluih will improve the comfort of the elderly's bedroom so that the elderly can rest quietly and sleep enough.
The Effect of Slow Deep Breathing Exercise on Blood Pressure in the Elderly at PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency
38.9 mmHg and the mean difference between pre-test and post-test diastolic blood pressure values was 18.1 mmHg.

The results of this study are in line with the research of Gayatri (2015) entitled effectiveness of slow deep breathing on decreasing blood pressure in primary hypertension: a randomized controlled trial of patients in Atambua, East Nusa Tenggara. The results show that slow deep breathing has an effect on blood pressure in hypertensive patients. with p value = 0.002. Research by Fithriyani (2017) also found that there was an effect of giving deep breath relaxation techniques on changes in blood pressure with statistical test results of p-value = 0.000 for systolic and p-value = 0.006 for diastolic or <α (0.05) at 30 respondents. Insiyah's (2015) study also found that there was an effect of deep breathing technique therapy on lowering blood pressure with a value of p = 0.000.

Slow deep breathing exercise is a breathing relaxation technique by inhaling deeply and

slowly exhaling it through the mouth at a frequency of 6-10 times per minute so that there is an increase in cardiopulmonary stretch (Fithriyani, 2017). According to Insiyah (2015), reducing the frequency of breathing in one minute to 10 times or less regularly for 15 minutes per day can help regulate blood pressure and lower blood pressure by 10-15 points. This turns out to be a substitute for diet, exercise or drugs. According to Leleh (2017), to get significant results, it is recommended that a slow deep breathing exercise be carried out for 15 minutes per day for at least 3 days.

In this study, the researchers performed a slow deep breathing exercise procedure for 1 week (7 days) consecutively to each respondent at the Sabai Nan Aluih PSTW. Conclusions were drawn by taking / seeing and comparing the results of the pre-test on the first day with the results of the post-test on the seventh day, both on systolic blood pressure and diastolic blood pressure. The researchers found that slow deep breathing exercise can reduce systolic blood pressure to 38.09 mmHg and diastolic blood pressure to 18.1 mmHg.

Slow deep breathing exercises can lower blood pressure due to the help of the heart's work. According to Annisa (2018), when a person relaxes with deep and slow breaths, the need for oxygen (O2) that enters the lungs will be more adequate so that O2 can be circulated according to the body's needs, so that it will affect the work of the heart, namely if the heart works optimally. then the heart rate will decrease and is accompanied by a decrease in blood pressure.

Slow deep breathing helps to ease the workload of the heart by increasing the supply of O2 resulting in a decrease in heart rate followed by a decrease in blood pressure. Doing deep and slow breathing will give the body the opportunity to do diaphragmatic breathing and can dramatically change the physiology of life because it activates relaxation centers in the brain (Sebastianus, 2014).

Based on this, the researchers recommend that the PSTW Sabai Nan Aluih Sicincin socialize and teach slow deep breathing exercise techniques and urge all the elderly to practice slow deep breathing exercise independently when they experience hypertension.

CONCLUSION

1. The average blood pressure in the elderly at PSTW Sabai Nan Aluih Sicincin, Kabupaten Padang Pariaman before being given a slow deep breathing exercise, the systolic blood pressure was 192,385 mmHg and diastole 104,2 mmHg. Meanwhile, after being given a slow deep breathing exercise for the elderly in the PSTW Sabai Nan Aluih Sicincin, Padang Pariaman Regency, the average systolic blood pressure was 154.29 mmHg and diastole 86.19 mmHg.
2. There is an effect of slow deep breathing exercise on blood pressure in the elderly in the PSTW Sabai Nan Aluih Sicincin, Kabupaten Padang Pariaman in 2020 (p value systole = 0,000 and p value diastole 0.002).

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