

Research Article

The Effect of Classical Music Therapy on Blood Pressure Reduction in Hypertension in the Elderly at Tresna Werdha Budi in South Kalimantan Province

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Hypertension is an increase in blood pressure. Management of high blood pressure can be carried out with pharmacological and non-pharmacological therapies. Pharmacological therapy is reducing stress by listening to classical music. The purpose of this study was to determine the effect of classical music therapy on reducing blood pressure in the elderly with hypertension. The research design was pre-test experimental with a one-group pre-test and post-test design approach. The population was all elderly people with hypertension at the Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province, amounting to 52 people. The sample was 15 people with a purposive sampling technique. Data analysis through Wilcoxon test using 95% confidence level. The results of the study before being given classical music therapy had an average systolic blood pressure of 142 mmHg and after being given classical music therapy the average systolic blood pressure was 124 mmHg. There was an influence between classical music therapy on reducing blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution Banjarbaru, South Kalimantan Province (p value = 0.001). Nurses can provide nursing care interventions to the elderly with hypertension to reduce blood pressure through the provision of classical music.

Keywords: Classical Music, Blood Pressure, Hypertension

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1. INTRODUCTION

Every human being must experience the process of growth and development from infancy to old age. Elderly is someone who has reached the age of more than 60 years. The elderly population is part of family members and community members whose numbers are increasing in line with the increase in life expectancy, The increasing proportion of the elderly population (elderly) requires special attention and treatment in the implementation of development. Age 60 years and over is the final stage of the aging process which has an impact on three aspects, namely biological, economic,

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and social. Biologically, the elderly will experience a continuous aging process which is characterized by a decrease in physical endurance and is susceptible to disease attacks, one of which is hypertension (1).

The World Health Organization (WHO) says that people with hypertension are currently increasing globally and it is predicted that by 2025 around 29 percent of adults worldwide will suffer from hypertension. According to Basic Health Research Data (Riskesmas) in 2013 showed that 25.8 percent of Indonesia's population had hypertension, but based on the 2016 National Health Indicators Survey (Sikesnas) it increased to 32.4 percent (2).

Based on data from the Basic Health Research (Riskesmas), one of the non-communicable diseases that is the cause of death in South Kalimantan, namely hypertension, reaches 30.8%, while the real data for hypertension sufferers per district and city in 2015, namely, the City of Banjarmasin is the highest with hypertension, namely 18,730 sufferers, followed by Tanah Laut with 14,121 sufferers, then Banjar Regency 7,738 sufferers, Kotabaru 6,680 sufferers, Banjarbaru 5,629 sufferers, Tapin 3,085 people, Barito Kuala 2,985 people and the rest range from 2,500 to over a thousand people (3).

Based on the prevalence of hypertension in the elderly in Indonesia is 45.9% for the age of 55-64 years, the age of 65-74 years is 57.6% and the age > 75 is 63.8% years. The prevalence of hypertension in Indonesia based on blood pressure measurements at the age of 18 years is 25.8% (4). Management of high blood pressure can be carried out with pharmacological and non-pharmacological therapies. Pharmacological therapy is through taking antihypertensive drugs, while non-pharmacological therapy can be done by changing lifestyles such as reducing weight in obese children, regulating diet, regular exercise and reducing stress by listening to classical music (5).

Musical stimulation can activate specific pathways in some areas of the brain, such as the limbic system, which are associated with emotional behavior. By listening to music, the limbic system is activated and the individual becomes relaxed. When this relaxed state, blood pressure decreases. So not only Prozac (antidepressant), which can work in the Limbic system, but also music therapy. In addition, music can stimulate the body to produce a molecule called nitric oxide (NO) through smooth muscles. This molecule acts on the tone of blood vessels so that it can reduce blood pressure. That way, it will be very useful if music can be used to reduce blood pressure in hypertensive patients (6).

This study uses classical music as a therapy for hypertension because hypertension treatment so far has focused more on pharmacological treatment which has side

effects which are certainly not good for the health of the elderly. One of the non-pharmacological treatments for hypertension is by using classical music. Data from the Tresna Werdha Social Institution, South Kalimantan Province, the number of elderly in the orphanage in 2017 was 112 people, of which 52 people (46.4%) had hypertension. Preliminary studies conducted through short interviews with 10 elderly people with hypertension all said that so far they had only taken drugs given by health care workers to lower their blood pressure and had never been given any therapy other than listening to classical music.

Based on the description above, the problem is that the incidence of hypertension in the elderly is still high, which is 46.4%. These problems are caused by various factors such as diet, lifestyle and age so that if the problem is left unchecked it can cause complications of various diseases including stroke, kidney and heart, it is necessary to provide more services for the elderly who have hypertension. One of the treatments that can be given to the elderly with hypertension is classical music therapy, therefore the researchers are interested in conducting research on "The Effect of Classical Music Therapy on Lowering Blood Pressure in the Elderly with Hypertension at the Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province" The purpose of this study was to determine the effect of classical music therapy on reducing blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province.

2. MATERIAL AND METHODS

The research design was a pre-experimental approach with a one group pre and posttest design approach. The population is all elderly people with hypertension at the Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province, amounting to 52 people. The sample is part of the population as many as 15 people with purposive sampling technique. This research was conducted at the Tresna Werdha Budi Sejahtera Social Home, South Kalimantan Province, which is located at Jl. A. Yani Km. 18,700 Landasan Ulin Barat Village, Banjarbaru City, South Kalimantan Province in June 2018. The instruments or data collection tools used in this study were MP3 Players and Headphones to listen to classical music therapy, aneroid sphygmomanometer and stethoscope for measuring blood pressure and scoring sheets for recording blood pressure measurement. The assessment sheet was filled in by the researcher based on the results of blood pressure examinations in hypertensive patients who were respondents. Data analysis through Wilcoxon test using 95% confidence level.

3. RESULTS

The results of this study consist of data on the characteristics of respondents and special research data.

3.1. Characteristics of respondents

Characteristics of respondents in this study include age and gender.

3.1.1. Respondent's age

Characteristics of respondents based on age can be seen in table 3.1 below.

TABLE 1: Frequency Distribution of Respondents Characteristics by Age at Tresna Werdha Budi Sejahtera Social Homes, South Kalimantan Province in 2018.

No.	Age	Amount	
		Frequency (person)	Percentage (%)
1	Late seniors (≤ 65 years)	5	33.3
2	Seniors (> 65 years old)	10	66.7
Amount		15	100

Table 3.1 shows that most of the respondents have an age range of 66-70 years, which is 10 people (66.7%).

3.1.2. Respondent's gender

Characteristics of respondents by gender can be seen in table 3.2 below.

TABLE 2: Frequency Distribution of Respondents' Characteristics by Age in Social Institutions Tresna Werdha Budi Sejahtera, South Kalimantan Province in 2018.

No.	Gender	Amount	
		Frequency (person)	Percentage (%)
1	Man	6	40
2	Woman	9	60
Amount		15	100

Table 3.2 shows that most of the respondents are women, which is 9 people (60%).

3.2. Specific data for research variables

3.2.1. Description of blood pressure before being given classical music therapy

The distribution of blood pressure frequency in hypertensive patients before being given classical music therapy at the Tresna Werdha Budi Sejahtera Social Institution in South Kalimantan Province can be seen in table 3.3 below.

TABLE 3: Distribution of Blood Pressure Frequency before Giving Classical Music Therapy to Hypertensive Patients at Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province in 2018.

No	Mean Pre-Intervention Systolic Blood Pressure (mmHg)	Amount	
		Frequency (person)	Percentage (%)
1	140	7	46.7
2	143	5	33.3
3	146	1	6.7
4	150	2	13.3
Amount	2,141	15	100
mean	142		

Table 3.3 shows the respondents' systolic blood pressure before classical music therapy was given an average of 142 mmHg.

3.2.2. Description of blood pressure after being given classical music therapy

The distribution of blood pressure frequency after being given classical music therapy in hypertensive patients at the Tresna Werdha Budi Sejahtera Social Institution in South Kalimantan Province can be seen in table 3.4 below.

Table 3.4 shows the respondents' systolic blood pressure after being given classical music therapy an average of 124 mmHg.

3.2.3. Effect of classical music therapy on blood pressure

The effect of classical music therapy on blood pressure in hypertensive patients at the Tresna Werdha Budi Sejahtera Social Institution in South Kalimantan Province can be seen in table 3.5 below.

Table 3.4 shows that the results of the respondents' blood pressure measurements obtained that the average systolic blood pressure before classical music therapy was given was 142 mmHg and after classical music therapy was given it decreased to an

TABLE 4: Distribution of Blood Pressure Frequency After Giving Classical Music Therapy to Hypertensive Patients at Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province in 2018.

No	Mean Systolic Blood Pressure (mmHg)	Amount	
		Frequency (person)	Percentage (%)
1	116	3	20
2	120	4	26.7
3	123	3	20
4	130	2	13.3
5	133	2	13.3
6	140	1	6.7
Amount	1863	15	100
mean	124		

TABLE 5: Changes in Blood Pressure of Hypertensive Patients Before and After Giving Classical Music Therapy at Tresna Werdha Budi Sejahtera Social Homes, South Kalimantan Province in 2018.

No	Systolic Blood Pressure Changes		Difference	Information
	Before (mmHg)	After (mmHg)		
1	140	116	24	Down
2	140	120	20	Down
3	140	116	24	Down
4	140	116	24	Down
5	140	123	17	Down
6	140	120	20	Down
7	140	120	20	Down
8	143	120	23	Down
9	143	123	20	Down
10	143	123	20	Down
11	150	130	30	Down
12	150	140	10	Down
13	146	133	13	Down
14	143	130	13	Down
15	143	133	10	Down
Amount	2141	1863	288	Down
Average	142	124	19.2	

p value = 0.001

average of 124 mmHg, with an average decrease of 19.2 mmHg. Based on this that all respondents who were given classical music therapy all respondents experienced a decrease in blood pressure.

The results of statistical analysis of the test obtained a value of $p = 0.001$ or below the value of $= 0.05$ ($p < 0.05$) thus statistically at a 95% confidence level indicates that

between classical music therapy and blood pressure reduction in hypertensive elderly in social institutions Tresna Werdha Budi Sejahtera, South Kalimantan Province.

4. DISCUSSION

4.1. Overview of blood pressure before being given classical music therapy for hypertensive elderly at Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province

The results showed that the respondent's blood pressure before being given classical music therapy was the highest value was 150 mmHg as many as 2 people (13.3%) and the lowest value was 140 mmHg as many as 7 people (46.7%) with an average systolic blood pressure of all respondents. of 142 mmHg. Hypertension in this study was when the elderly had a systolic blood pressure >140 mmHg. Hypertension disease or better known as high blood pressure is a disease that gets attention from all circles of society, considering the impact it causes both short and long term so that it requires long-term prevention.

Hypertension or high blood pressure is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg on two measurements with an interval of five minutes in a state of sufficient rest or calm. Increased blood pressure that lasts for a long time (persistent) can cause damage to the kidneys (kidney failure), heart (coronary heart disease) and brain (causing stroke) if not detected early and receive adequate treatment. Many hypertensive patients with uncontrolled blood pressure and the number continues to increase(4).

Hypertension is a disease that arises due to the interaction of various risk factors that a person has, including age. Respondents in this study all had mild hypertension because the sample in this study was in the age range of 60-70 years, where at that age already had a risk of developing hypertension. The older a person gets, the blood pressure will increase. One cannot expect that blood pressure when young will be the same as one gets older. But we can control not to cross the normal upper limit. This is the effect of degeneration that occurs in people who get older. With increasing age, the arterial walls will experience thickening, due to the presence of accumulation of collagen substances in the muscle layer, so that the blood vessels will gradually narrow and become stiff. This is in accordance with what was stated by Fitriani (2017) the trend of increasing prevalence according to age and usually at the age of 40 years. This is

because arterial pressure increases with age, the occurrence of aortic regurgitation, and the presence of generative that is more frequent in old age(7).

Another factor that also influences is gender. Respondents in this study were mostly women, where women had greater risk factors than men, this is related to respondents who have experienced menopause. After menopause, the production of estrogen will decrease. Estrogen hormone plays a role in protecting resting blood pressure when there is muscle sympathetic nerve activity, so that when hormone production decreases, protection against blood pressure when there is sympathetic nerve activity is reduced. This is in accordance with what was stated by Novitaningtyas (2014) that women will experience an increased risk of high blood pressure (hypertension) after menopause, namely age over 45 years. Women who have not menopause are protected by the hormone estrogen which plays a role in increasing levels of High Density Lipoprotein (HDL)(8). Low HDL cholesterol levels and high LDL cholesterol (Low Density Lipoprotein) affect the process of atherosclerosis and cause high blood pressure.

4.2. Description of blood pressure after being given classical music therapy to the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province

The results showed that the respondent's blood pressure after being given classical music therapy for the highest value was 140 mmHg as many as 1 person (6.7%) and the lowest value was 116 mmHg as many as 3 people (20%) with an average systolic blood pressure of 124 mmHg. These data show that the average blood pressure of hypertensive patients has decreased compared to before being given classical music therapy.

Hypertension or high blood pressure is a major risk factor for various diseases. Hypertension is actually asymptomatic, it can only be known when checking blood pressure. Therefore, measuring blood pressure, especially for those who have been affected by hypertension is highly recommended. Measurement of blood pressure if done correctly and done regularly can better describe the actual blood pressure, so that changes or decreases in blood pressure will be seen.

Management of hypertension rests on the pillars of standard treatment and lifestyle changes which include regulating diet, managing stress coping, regulating activity patterns, avoiding alcohol, and smoking. The current management of hypertension with drugs has indeed progressed, but there are many reports that say that patients who

come to the hospital will come again with complaints that their blood pressure has not decreased significantly even though they have been treated (9).

Hypertension can increase the risk of cardiovascular disease so that patients with hypertension require pharmacological therapy, namely with antihypertensive drugs. Pharmacological treatment has not only beneficial effects, but also adverse effects, one of which is the rebound hypertension effect, which is a sudden increase in blood pressure when the drug is stopped. Lowering blood pressure without side effects can be done in combination with non-pharmacological therapy. Non-pharmacological therapy can be done by changing lifestyles such as weight loss in children obese children, dietary regulation, regular exercise and reducing stress by listening to classical music (5).

Efforts have been made by the government in suppressing risk factors and using pharmacological therapy, but the therapy has not been optimal. These conditions encourage scientists to develop non-pharmacological therapies to complement pharmacological therapies, so that they can improve the effect of better treatment. The recommended non-pharmacological therapy can reduce blood pressure including progressive muscle relaxation and music therapy. The two therapies are examples of non-pharmacological therapy and preventive efforts that can be carried out by a community nurse (10).

4.3. The effect of classical music therapy on reducing blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Home, South Kalimantan Province

The results showed that the results of measuring respondents' blood pressure obtained an average systolic blood pressure before classical music therapy was given, namely 142 mmHg and after classical music therapy decreased to an average of 124 mmHg, with an average decrease of 19.2 mmHg. Based on these data, all respondents experienced a decrease in blood pressure. The results of the statistical analysis of the test showed that there was an effect of classical music therapy on reducing blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution, South Kalimantan Province.

Giving classical music therapy with soft strains can affect the respondent's mood for the better so that the mood becomes calmer and more comfortable. This situation affects the decrease in sympathetic nerve response which reduces the respondent's vital signs such as heart rate, respiration, oxygen demand and blood pressure. Classical music therapy can reduce blood pressure because listening to classical music can

increase levels of relaxation hormones, namely endorphins and neurotransmitters so that it will cause a decrease in blood pressure. Classical music therapy given will have an effect on the limbic system so that it releases endocrine in the respondent's body. When the limbic system is activated, blood vessels dilate and the brain relaxes, this condition triggers the respondent's blood pressure to decrease.

Classical musical stimulation can activate specific pathways in several areas of the brain, such as the limbic system, which is associated with emotional behavior. By listening to music, the Limbic system is activated and the individual becomes relaxed. When this relaxed state, blood pressure decreases. So not only Prozak (antidepressant), which can work in the Limbic system, but also music therapy. In addition, music can stimulate the body to produce a molecule called nitric oxide (NO). This molecule acts on the tone of blood vessels so that it can reduce blood pressure. That way, it will be very useful if music can be used to reduce blood pressure in hypertensive patients (6).

Classical Baroque music that is played will stimulate the auditory organs and stimulate the temporal lobe of the brain (auditory cortex), and is followed by stimulation of the limbic system, namely the Hippocampus, Amygdala, and Hypothalamus. Here the hypothalamus which is stimulated by sound waves will stimulate the release of brain waves in the frontal and parietal cerebral cortex. Some theories state that stimulation of the limbic system will stimulate the RAS (Reticular Activated System). The waves released from the brain for stimulation from relaxation music are alpha waves. This alpha wave causes the release of 2 chemical substances, namely, the neurotransmitter serotonin which will cause a sense of calm and endorphins which are the active system of opium. Second This chemical substance will stimulate the parasympathetic nervous system so that changes occur in the cardiovascular system. Parasympathetic stimulation causes vasodilation of blood vessels, supported by endorphins and the neurotransmitter serotonin (11).

The music produced by the harp (a component of classical music) can inhibit the stress response which is one of the causes of heart disease by slowing the heart rate and reducing blood pressure. Baroque classical music such as Bach's work can harmonize and balance all body rhythms, including heart rate, breathing rate, blood pressure, brain wave frequency, and primary respiratory rate and is often used as a non-pharmacological treatment in hypertensive patients (12).

Decreased blood pressure and stress are suspected that plasma catecholamine concentrations affect symptoadrenergic activation and also cause the release of stress-released hormones. Giving classical music with a slow rhythm will affect the release of catecholamines into the blood vessels, so that the concentration of catecholamines in

plasma becomes low. This results in the body experiencing relaxation, reduced heart rate and lower blood pressure (13). The results of this study are in line with the results of research by Asmaravan (2018) which state that there is an effect of classical music therapy (Mozart) on decreasing systolic blood in the elderly with hypertension (14).

5. CONCLUSION

Based on the results of research and discussion, it can be concluded as follows:

1. Blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution in South Kalimantan Province before being given classical music therapy was an average of 142 mmHg.
2. Blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution in South Kalimantan Province after being given classical music therapy was an average of 124 mmHg.
3. There is an effect of classical music therapy on reducing blood pressure in the elderly with hypertension at the Tresna Werdha Budi Sejahtera Social Institution, Banjarbaru, South Kalimantan Province.

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