

The Effect of Music Therapy on Reducing Blood Pressure among Elderly With Hypertension

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ABSTRACT

Introduction

Hypertension commonly known as cardiovascular disease, especially in elderly. More than half of deaths over 60 years are caused by heart disease and cerebrovascular disease. Hypertensive management of the elderly is essential for reducing blood pressure with pharmacological or nonpharmacological therapy, but Pharmacological therapy have more side effect. One of the non-pharmacological therapy has been developed including music therapy. This study was to examine the effect of music therapy on reducing blood pressure among elderly with hypertension.

Methods

The study used a one grup pretest to posttest pre-experimental design and data were collected by direct blood pressure measurement. Thirty seven respondents were obtained using simple random sampling technique. The respondents were treated by classical music therapy with 3 songs from Mozart. The treatment was applied in one session with duration of 30 minutes.

Results

Among 37 elderly people with hypertension, blood pressure was measured for pretest and post-test. It took three times measurements and then the mean was calculated. The music therapy was provided after the pretest. Post test data after the therapy obtained that 13 people (35.1%) had constant blood pressure while the remaining 24 people (64.9%) experienced a significant decrease. The data was analysed using Mc Nemar test with confidence level 95% and based on the result of $p\text{ value} = 0,003 < 0,05$.

Conclusion

There was a significant correlation between music therapy and reducing blood pressure among elderly with hypertension.

Keywords

Music Therapy; Blood Pressure; Elderly

BACKGROUND

Hypertension is generally known as cardiovascular disease. Hypertension that does not get proper treatment can cause complications such as stroke, coronary heart disease, diabetes, kidney failure and blindness. Stroke and coronary heart disease are known to be the leading cause of death at 51% and 45% and both diseases are strongly related to hypertension. Data shows that the highest prevalence of hypertension occurs at the age of 55 years reaching 17.2%. In 2011 the World Health Organization data shows that 1 billion people in the world

experience hypertension, and 2/3 of them come from developing countries and low to moderate income, Hypertension prevalence will continue to increase sharply and is predicted in 2025 as many as 29% of adults throughout the world has hypertension. Hypertension has resulted in the deaths of around 8 million people each year, of which 1.5 million deaths occur in Southeast Asia, 1/3 of the population suffer from hypertension, which can cause an increase in health costs¹.

For the Asian region, this disease has killed 1.5 million people each year. This indicates that one in three people suffer from high blood pressure. In Indonesia, hypertension's rate based on the 2013 RISKESDA is 25% with an age range above 25 years. The number of male patients reached 42.7%, while 39% were women (DEPKES, 2017). Meanwhile, based on NHANES (National Health and Nutrition Examination Survey) data showed that the risk of hypertension increased according to increasing age. NHANES 2005-2008 data shows that approximately 76.4 million people aged ≥ 20 years are hypertensive, meaning 1 in 3 adults suffer from hypertension. In Indonesia, it is 26.5%, in East Java. The prevalence of hypertension is 26.2% and in Jember hypertensive patients 69,000 cases².

In the elderly the problem of hypertension is often found to be a major factor in coronary disease. More than half of deaths over 60 years are caused by heart and cerebrovascular diseases. Hypertension in old age is divided into two types, namely hypertension at systolic pressure if systolic pressure was ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg and isolated systolic hypertension systolic if systolic pressure ≥ 160 mmHg and diastolic blood pressure lower than 90 mmHg^{3,4}.

The impact of the problem of elderly hypertension tends towards degenerative diseases such as coronary heart disease, or cerebral vascular disease that causes the first death in addition to neoplasm and respiratory track³. Along with increasing age will also increase blood pressure, if a person reaches a peak that is elderly blood recognition and decreased flexibility arteries that cause an increase in blood pressure in accordance with age. In addition the complications caused by hypertension are coronary heart disease, kidney failure, stroke and vascular disease. The management of hypertension in the elderly is very important for lowering blood pressure namely by pharmacological therapy and non-therapy Pharmacology. The pharmacological therapy that has been given is the administration of captopril, the side effects of pharmacological therapy are dizziness, headaches and weakness, while the non-pharmacological therapies that have been given are gymnastics, Qur'anic studies, and ros flower tea⁵. One of the non-pharmacological therapies developed is by music therapy^{6,7}.

Music is a series of beautiful sounds that have extraordinary effects on body health, while music therapy is the use of musical abilities and musical elements by therapists to improve and maintain physical health, improve mental, emotional and spiritual health. When compared with therapy using drugs, music therapy has fewer side effects⁶. Based on research by Suherly et al (2012), addresses the differences in blood pressure before and after music therapy. Based on research conducted by Saing (2010) listening to classical music can reduce

anxiety and stress so that the body experiences relaxation, which results in a decrease in blood pressure and heart rate^{8,9}.

Based on preliminary studies conducted at Jember Elderly Social Services, there were an elderly number of 140 people from the total elderly with the number of hypertensive patients as many as 40 people (28.6%). Previously there was no research on the effect of music therapy on blood pressure in elderly hypertensive patients at Jember PSLU. Based on the data above, the authors are interested in conducting research to find out whether there is any influence of music on blood pressure in elderly hypertensive patients at Jember Elderly Social Services.

METHODS

The type of research used in this study was Pre-experiment with the One Group Pretest Posttest design. In this design there is no comparison group (control), but at least the first observation has been carried out (pretest) which allows testing the changes that occur after the experiment (post test). The study was conducted at Jember PSLU with a total population of 40 ounces, then 37 people were selected as the sample selected by simple random sampling technique with inclusion criteria: More than 60 years old, willing to become a respondent, Have hypertension with blood pressure > 140-159 / 90-99 mmHg and not receiving pharmacological therapy

The variables are blood pressure as variable dependent and therapy music as variable independent. Research is initiated with do a pretest with measurement pressure blood as much as 3x later taken on average, after that Respondents given therapy music classic with 3 classic mozard works with a duration of 30 minutes, once time treatment. And last blood pressure was measured again (post test) after treatment. Pre-test and post-test values are recorded on the sheet observation and saved for processed and analyzed. Code 1 is given if the blood pressure goes down dragging the treatment while if it is still given code 2 so that the variables in the study are in the nominal scale so *Mc Nemar* test is done to compare between the two groups

RESULTS

This research has been conducted in 2015 at the Jember PSLU with involving 37 samples.

Table 1. Frequency distribution of elderly by sex in hypertension patients at Jember Elderly Social Services In 2015

No.	Category	amount	Percentage (%)
1	Man	13	35.1
2	Woman	24	64.9
amount		37	100

Data from the study showed that of the 37 elderly samples involved, most of them were female are 24 people (64.9%).

Table 2. Blood pressure after music therapy in Elderly Social Service Jember In 2015

	Systolic Blood Pressure after Music Therapy	Diastolic Blood Pressure after Music Therapy
N Valid	37	37
Missing	0	0
Mean	157.16	88.92
Median	155.00	90.00
Mode	150	90
Std. Deviation	11,992	7,084
Minimum	140	70
Maximum	190	100

Table 3. Blood pressure before music therapy at Jember Elderly Social Services

	Systolic Blood Pressure Before Music Therapy	Diastolic Blood Pressure Before Music Therapy
N Valid	37	37
Missing	0	0
Mean	171.76	94.32
Median	175.00	90.00
Mode	175	90
Std. Deviation	12,089	6,472
Minimum	150	80
Maximum	200	110

Identification Pressure Blood Before Therapy Music In Elderly Hypertension Patients in Elderly Social Services

Based on results research obtained that the average pressure blood systolic elderly before do therapy music is 171.76, mode 175, highest 200, lowest 150 with standard deviation amounting to 12,089. Standard deviation more small from on average value shows that pressure systolic on elderly have small fluctuations. While pressure blood diastolic on elderly before do therapy musica verages 94.32, mode 90, highest 110, lowest 80 with standard deviation amounting to 6,472. Standard deviation more small from on average value shows that pressure diastolic on elderly have small fluctuations.

Identification Pressure Blood After Do Therapy Music In Elderly Hypertension Patients in Elderly Social Services

Based on results research obtained that the average pressure blood systolic elderly after do therapy music is 157, mode 150, highest 190, lowest 140 with standard deviation amounting to 11,992. Standard deviation more small from on average value shows that pressure systolic on elderly have small fluctuations. While pressure blood diastolic on elderly after do therapy average music 88.92, mode 90, highest 100, lowest 70 with standard deviation amounting to 7,084. Standard deviation more small from on average value shows that pressure diastolic on elderly have small fluctuations.

Table 4. Blood pressure frequency distribution after music therapy in elderly hypertensive patients in Jember elderly social institutions In 2015

No.	Category	amount	Percentage (%)
1	Permanent	13	35.1
2	Down	24	64.9
amount		37	100

Based on table 4 shows that the music therapy to 37 elderly as many as 24 elderly (64.9%) of their blood pressure dropped and from as many as 13 elderly (35.1%) their blood pressure remained.

The data was analyzed using Mc Nemar test with confidence level 95% and based on the result of p value = 0.003 <0.05, so that was significant correlation between musid therapy and reducing blood pressure among elderly with hypertension at PSLU Jember.

DISCUSSION

Identification of Blood Pressure Before Music Therapy in Elderly Hypertension Patients

The identification of blood pressure levels of hypertensive patients before music therapy at Jember PSLU showed an average results of systolic blood pressure 171.76, mode 175, highest 200, lowest 150 with a standard deviation of 12,089. While diastolic blood pressure averaged 94.32, mode 90, highest 110, lowest 80 with a standard deviation of 6,472.

Individuals who have entered the age of more than 45 years and above are mostly elderly who experience hypertension. This is due to the elasticity of the arteries due to aging associated with atherosclerosis (hardening of the arterial wall) and the inability of the tissue to repair itself or replace tissue damage so that the body's organs can no longer maintain normal function and the body cannot resist infection and repair the damage suffered. This result is consistent with Sundari (2012), who explained that the elderly had a threefold risk of developing hypertension compared to adulthood. This is due to an increase in age, causing

the heart and blood vessels to change, both structural and functional. In general, changes that occur take place continuously which is marked by a decrease in the level of activity¹⁰.

The blood pressure can be prevented by relapse by using pharmacological therapies such as anti-hypertensive and non-pharmacological drugs including; healthy lifestyle, and music therapy. Music therapy is a form of therapy by using music in a systematic, controlled, and directed manner in healing, rehabilitating, educating, and training children and adults who suffer from physical, mental or emotional disorders. Music that consists of a combination of rhythm, rhythm, harmonics and melody has always been believed to have an influence on the treatment of the sick¹¹.

Identification Pressure Blood After Therapy Music On Elderly Patients with Hypertension I

The identification of blood pressure levels of hypertensive patients after music therapy at the Jember PSLU obtained the average results were 157, mode 150, highest 190, lowest 140 with a standard deviation of 11,992. While the average diastolic blood pressure was 88.92, mode 90, the highest was 100, the lowest was 70 with a standard deviation of 7,084. According to Campbell (2002) music can stimulate the pituitary gland to release endorphins which will produce euphoria and sedation effects, so that in the end it will be able to reduce pain, stress and blood pressure by distracting someone. regarding the effects of music on the human body, that the type of music is slow or according to the heart rate it will react by releasing hormone (serotonin) which can make a sense of pleasure and pleasure. Mary Griffith (2012), a physiologist suggests that the hypothalamus controls various autonomic nerve functions, such as breathing, heart rate, blood pressure. A study found that there was an increase in Luteinizing Hormone (LH) when listening to music Listening to music can improve heart health.

The study, conducted by the University of Maryland Medical Center in 2008, examined the blood pressure of ten people who listened to their choice of music. Their blood vessels actually widened by 26 percent after listening to music, while those who watched funny videos only experienced a 19% and 11% widening after listening to relaxing sound recordings Music stimulation was able to activate the limbic system that is emotionally related. When the limbic system is activated, the brain relaxes. The music can also stimulate the body to produce nitric oxide (NO) molecules. This molecule works on blood vessel tone which can reduce blood pressure. By listening to music, the Limbic system is activated and the individual becomes relaxed. When this relaxed condition, blood pressure decreases. In addition, music can stimulate the body to produce a molecule called nitric oxide (NO). This molecule works on vascular tone so it can reduce blood pressure^{9,12}.

Influence Therapy Music to Pressure Blood on elderly patients with hypertension in elderly social

Based on the results of the study showed that giving music therapy to 37 elderly as many as 24 elderly (64.9%) of blood pressure dropped and from as many as 13 elderly (35.1%) of blood pressure remained. Based on the results of the MC test. Neman obtained the results that the significance value is $0.000 < 0.05$ so H_a hypothesis is accepted means that there is an effect of music therapy on blood pressure in elderly hypertensive patients at Jember PSLU.

Classical music (mozart) is a rare item for humans in the modern era as it is now, but thanks to the strains of the tone it is believed to be able to have positive effects on human life. The influence of classical music (mozart) as entertaining effect, learning support effect and as an enriching effect. Mozart's music has also been recommended as relaxation music because music can affect the heartbeat so that it creates calmness because the music with a gentle rhythm that is heard through the ear will directly enter the brain and be processed immediately so as to produce a very good effect on one's health ^{13,14}.

Music and health are very closely related. Music has the power to affect heart rate and blood pressure according to the tempo, frequency and volume. The slower the tempo of the music, the slower the heart rate and decreased blood pressure. Finally hearing is carried by a relaxed atmosphere, both in the mind and body (Rasyid, 2010). listening to classical music can reduce anxiety and stress so that the body experiences relaxation, which results in a decrease in blood pressure and heart rate With multi stimulus capital owned, when music is received by the human sense of hearing, music will penetrate through the auditory nerve, be accepted, interpreted by the brain, and if music is good then music also influences an organ in the brain called the limbic system, when the limbic system activated then someone relaxes. This condition triggers decreased blood pressure. After stimulation occurs, the emotional elements that humans possess will be involved. So that it will affect all metabolism in the brain ^{12,14}.

Music is an organized auditory stimulus consisting of melody, rhythm, harmony, timbre, shape and style. Music has the power to treat the illness and disability experienced by everyone. When music is applied to a therapy, music can improve, restore, and maintain the physical, mental, emotional, social, and spiritual health of each individual. This is because, music has several advantages, such as music is universal, comfortable and fun, structured. With music therapy can effectively change the threshold of the brain in a state of stress becomes physiologically more adaptive. Music does not require the brain to think or interpret, nor is it limited by intellectual or mental functions. Music also has no restrictions so that it is easily accepted by our hearing organs and through the auditory nerve is accepted and interpreted in the brain and music can enter directly into our emotional brain or limbic system. Music can also resonate and be instinctive, so music enters the brain without cognitive paths. Furthermore, the most important thing is that music therapy does not require a guide to high intellectual functioning to run effectively ^{6,7,9,13,14}.

CONCLUSIONS

From the results of research conducted, that there were 24 (64.9%) of 37 respondents who experienced a decrease in blood pressure after being given music therapy. With this it can be concluded that music therapy has an influence on blood pressure reduction. And music therapy can be used as an alternative to nonpharmacological therapy for people with high blood pressure

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