

The effect of gym and zikr towards reduction blood pressure among elderly in suburban Malang city, Indonesia

Amalia Tri Utami, Andi Anis Raffi Assegaf, Firdaus Silahudin, M. Nur Faizin, Yuwan Ihzudin

Faculty of Medical and Health Science, UIN Maulana Malik Ibrahim, Indonesia

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Abstract:

Health problems that occur in the elderly are generally decreasing organ function, which triggers various degenerative diseases, including hypertension. Neurodegenerative diseases in the elderly if not appropriately treated, will reduce the quality of life of the elderly. Hypertension is a symptom of degenerative cardiovascular disease that is most commonly experienced by the elderly and cannot be known with certainty the cause. Management of hypertension in the elderly in addition to pharmacology can also be done with non-pharmacology such as hypertension gymnastics and zikr. This study aims to determine the effect of gymnastics and zikr on the reduction of elderly blood pressure with hypertension in the Urban District of Malang. This research is a quantitative study with pre-experiment design One Group Pre-test-post-test design. Data collection using mercury sphygmomanometer, while data analysis using the Wilcoxon Signed Rank Test. The results of this study were blood pressure before the intervention were mostly pre-hypertension (39%), blood pressure after the invasion of hypertension mainly was normal (56%). And the effect of hypertension gymnastics and zikr on elderly blood pressure in Urban Malang (p -values = 0.001).

Preliminary:

Increasing the elderly population requires attention from all parties in anticipating various existing problems. The aging of the community brings different implications both from social, economic, legal, political, and especially health aspects (Komnas Lansia 2010).

The increasing population of the elderly cannot be separating from health problems that occur in the elderly; declining organ function triggers various degenerative diseases (Azizah, 2011). Degenerative conditions in the elderly if not treated properly, will add to the country's financial burden. That is not small and will reduce the quality of life of the elderly because it increases morbidity and can even cause death (MOH, 2013). Some of the degenerative diseases most commonly suffered by the elderly include, joint disorders, hypertension, cataracts, strokes, mental, emotional disorders, heart disease, and diabetes mellitus (Riskasdas, 2013).

The prevalence of hypertension in the world is estimated at 1 billion people and nearly 7.1 million deaths each year due to hypertension, or about 13% of total deaths (Gusmira, 2012). The prevalence of hypertension in Indonesia for the population aged over 25 years is 8.3%, with a male prevalence of 12.2% and women 15.5%.

Based on the results of the Ministry of Health's Basic Health Research (Riskasdas) 2013, around 76% of cases of hypertension in the community have not been diagnosing. It can be seen from the results of blood pressure measurements at the age of 18 years and over found the prevalence of hypertension in Indonesia amounted to 31.7% (MOH RI, 2013).

Hypertension is founding in the elderly.

Sports such as hypertension gymnastics can encourage the heart to work optimally. Exercise can increase energy requirements by cells, tissues, and organs. It can consequently increase venous return, causing the volume to a stroke which will directly increase cardiac output, thereby causing arterial blood pressure to rise. Then, arterial blood pressure will improve first. The impact of this phase can decrease respiratory activity and skeletal muscle which causes sympathetic nerve activity decreases. It will cause the rate of heart rate to fall, stroke volume to drop, and vasodilation. Due to this, decline resulting in decreased cardiac output and decreased total peripheral resistance, resulting in a decrease in blood pressure (Sherwood, 2005).

The relationship of hypertension gymnastics to the control of elderly blood pressure, as concluded in Wahyuni's study (2015). Research shows an improvement in blood pressure in the elderly but does not reach the desired level of significance. It is not achieving the desired increase in blood pressure due to confounding factors associated with elderly blood pressure. Include diet, stress, physical activity, genetics, and pharmacology in research that cannot be controlling.

Hypertension is a sport that one of them aims to increase blood flow and oxygen supply to the muscles and skeletons that are active, especially against the heart muscle. Mahardani (2010) said that with exercise or exercise the need for oxygen in cells will increase for the process of energy formation, increasing heart rate, so that cardiac output and stroke volume increase. Thus blood pressure will increase. After resting the blood vessels will dilate or stretch, and blood flow will temporarily go down, about 30-120 minutes later will return to blood pressure before gymnastics. If you exercise regularly and continuously, the reduction in blood pressure will last longer, and the blood vessels will be more elastic. The mechanism of decreasing blood pressure after exercise is because exercise can relax blood vessels. So that with blood vessels, dilation blood pressure will drop.

The aging process or old age is a natural thing and cannot be stopping. According to the data obtained, the number of elderly and life expectancy has increased each year significantly. The physical exercise can be done to prevent functional decline in the elderly, unusually high blood pressure. However, not all physical activity is suitable for the elderly, given the ability to mobilize the elderly is limited. Therefore, researchers use hypertension gymnastics as a research intervention to reduce blood pressure in hypertensive elderly who live in Bandungrejosari, Malang City, Indonesia.

Method:

This research is a quantitative study with a pre- and post-test design. In this design, the researchers compare the pre-test value (before the intervention) and the post-test amount (after the response). The study population was all elderly who lived in Malang with 152 people and a

sample of 84 elderly who had hypertension with saturated sampling techniques. Hypertension gymnastics is a physical activity carried out in the form of particular gymnastic movements of hypertension patients. It carried out for 30 minutes with 5 minutes of warm-up exercises, 20 minutes of transitioning campaigns, and 5 minutes of cooling changes. The frequency of gym is four times in 2 weeks. This exercise aims to preserve blood circulation and stretch stiff muscles in elderly hypertension. And zikr is to reduce the stress by concentrate the mind to God. Data collection using a calibrated Sphygmomanometer, while data analysis using the Wilcoxon Signed Rank Test.

Ethical clearance:

This research has already approved by ethical clearance committee at Faculty of Medicine and Health Science, UIN Maulana Malik Ibrahim, Indonesia.

Result:

The Characteristic of Respondent

Table 1: Respondent characteristic

No	Characteristic	Frequency	Percentage (%)
1.	Gender		
	Male	30	36
	Female	54	64
2.	Age		
	60-75 y.o	57	64
	>75 y.o	27	36

The Blood Pressure of Elderly

Table 2: Statistical Tendency of Blood Pressure

No	Statistical Value	Pre Test		Post Test	
		Systolic	Diastolic	Systolic	Diastolic
1	Lowest	140	80	110	70
2	Highest	180	100	160	100
3	Average	153.53	95.36	131.14	83.36
4	Median	150	90	130	80
5	Standard Deviation	11.46	8.81	14.52	8.33

The results of collecting systole and diastolic blood pressure data obtained by the following statistical tendencies. The statistical value of respondent's blood pressure tendency after the intervention (post-test) obtained an average systolic blood pressure of 131.14, mmHg, lowest pressure of 110 mmHg, highest 160 mmHg, the median of 130 mmHg and standard deviation of 14.52 mmHg. Furthermore, the diastole blood pressure, a pre-test was 83.36 mmHg, the lowest was 70 mmHg, the highest was 100 mmHg, the median was 80 mmHg, and the standard deviation was 8.33 mmHg.

Table 3: Classification Blood Pressure By JNC 7

No	Category	Pre Test		Post Test	
		Frequency	%	Frequency	%
1	Normal	0	0	15	18
2	Pre Hypertension	0	0	39	46
3	Hypertension 1	51	61	24	29
4	Hypertension 2	33	39	6	7
Total		84	100	84	100

Effects of Gymnastic and Zikr on Decrease Blood Pressure in the Elderly Wilcoxon Signed-Rank Test results of the effect of hypertension gymnastics and zikr on elderly blood pressure are as follows. Wilcoxon Signed-Rank Test results pre-test and post-test systole blood pressure obtained Z count value of 4.370 with a significance value (p-value) of 0.001. The significance value of the test (p-value) is smaller than 0.05 (0.001 <0.05). So, it is decided that H0 was rejected, which means that there were significant differences in average systolic blood pressure pre-test and post-test.

Wilcoxon Signed-Rank Test results pre-test and post-test diastole blood pressure obtained Z count value of 4.311 with a significance value (p-value) of 0.001. The significance value of the test (p-value) is smaller than 0.05 (0.001 <0.05). So, it is decided that H0 was rejected, which means that there were significant differences in the mean blood pressure of the diastole pre-test and post-test. Furthermore, the decrease in average systolic blood pressure and diastole pre-test to the post-test of respondents is showing in Graph 1.

Graph 1: The decrease in Average Blood Pressure

The average value of systole blood pressure pre-test (153.53) is higher than the average systole blood test post-test (131.14). So, it can be concluding that the provision of hypertension gymnastic and zikr intervention influences the decrease in respondent systole blood pressure. The mean diastolic blood pressure pre-test (94.43) is higher than the average diastole post-test blood pressure test (83.36). So, it can be concluding that the administration of hypertension gymnastic and zikr intervention influences the decrease in respondent's diastolic blood pressure.

Discussion:

This decrease in blood pressure occurs because the blood vessels experience widening and relaxation. Over time, exercise can relax blood vessels, so that blood pressure drops as well as widening water pipes will reduce water pressure. In this case, elderly use can reduce peripheral resistance. Decreased blood pressure can also occur due to reduced heart-pumping activity. The heart muscle in people who exercise regularly is powerful. So, the heart muscle of individuals who use diligently contract less than the heart muscle of people who rarely exercise to pump blood volume that is same. Because physical exercise activity can cause a decrease in heart rate, it will reduce cardiac output, which in turn causes a reduction in blood pressure. Increased cardiac work efficiency is reflected in a reduction of systolic pressure, while a reduction of peripheral resistance is indicating a decrease in diastolic pressure (Harber, 2009).

From mental health, it is known that remembrance is a level of psychiatric therapy higher than ordinary psychotherapy. Zikr is an attempt to draw closer to Allah by remembering Him. In Islam, dhikr is not a strange thing, but it is a normal thing for every Muslim to do. Remembrance here is more functioning as a method of psychotherapy. By zikrs, it will make the heart peaceful, calm, and not easily swayed by the influence of the global environment and culture. There are basic spiritual needs that must be fulfilled. As indicated in verse Az-Zumar, verse 23.

Things like spiritual factors become interesting to study because they are important factors that also influence the healing process and psychological interventions. WHO in 1984 (Hawari, 2005) stated that four things indicate complete human health. That is physically, mentally, socially, and spiritually healthy. A fully healthy human being is humans who fulfill these four pillars of health. In the development of personality, humans have four holistic dimensions, namely organo-biological, psycho-educative, socio-cultural, and spiritual. Witmer and Sweeny (Burke, Chauvin, & Miranti, 2005) state that the religious elements in human beings, integrate and unite the components of physical, emotional, and intellectual needs in the human body in their growth and development. Therefore, human health management, including hypertension sufferers, must fulfill the four dimensions. The above shows the importance of spiritual and religious elements in handling stress, especially stress management in patients with hypertension.

One effort to get closer to the creator is through remembrance. Remembrance has the power of relaxation that can reduce tension (stress) and bring peace of mind. Each recitation of memory contains a profound meaning that can prevent strain. The first reading, Laillahailallah, means that there is no god worthy of worship except Allah, the existence of godly confession only to God in a belief. Individuals who have the high spiritual ability have a strong faith in God. This belief gives rise to active control, can interpret and accept every unpleasant event in a more positive direction. And it is convinced that there is something that governs every event that happens in the universe. That way, individuals can reduce tension (stress), overcome health problems, and increase mental strength quickly (Bogar & Killacky, 2006).

The second reading, namely Astagfirullahaladzim, according to Yurisdaldi (2010) that the process of remembrance by saying sentences containing the letters Jahr, such as monotheism and istighfar sentences, will increase the disposal of CO₂ in the lungs. The third recitation is Subhanallah, the Most Holy of God, where Allah is the Most Holy. So, we should think favorable because it can avoid stress reactions (Sholeh, 2005).

The fourth reading, Alhamdulillah, is an attitude of gratitude for the fortune that God has given. The effect of gratitude on health, one of which has been studied by Krouse (2006), which proves that the impact of stress on health can be reduced by increasing gratitude to God.

The fifth reading is Allahu Akbar, where is the real power of God. the vast wealth of God, great creation of God, so that it raises an optimistic attitude. An attitude of optimism, a new source of energy in the spirit of life, and combats despair.

Other research conducted by Lulu (2002) mentions when dhikr has penetrated all parts of the body even into every cell of the body itself. It will affect the body (physical) by feeling the vibration of weakness and penetrating and penetrating the dhikr throughout the body. At this time, the human body feels the relaxation of the nerves, the tensions of the soul (stress), as a result of meeting the needs of physical and spiritual.

It has searched by two researchers, namely Levin and Vander-pool (Hawari, 2005). They think the same thing in the patients suffering from heart and blood vessel disease. From the results of his research, it concluded that religious activities (worship) could reduce one's risk of suffering from heart and blood vessel disease (hypertension).

Therefore, the relaxation of remembrance therapy is used to reduce physical, emotional, cognitive, and behavioral stressors which result in increased blood pressure or essential hypertension. One form of an effort to relieve nervous tension which is quite easy to do is with relaxation therapy of remembrance. This technique forces the individual to concentrate on the perceived pressure and then practice it to relax. People who are stressed, emotionally, usually experience emotional tension. This technique tries to relieve nervous tension so that it can reduce blood pressure.

Conclusion:

The majority of the respondent's blood pressure before the intervention was prehypertension (39%). The blood pressure of respondents after the administration of hypertension gymnastics and zikr interventions was mostly prehypertension (46%). There is the influence of gymnastics and zikr on elderly blood pressure in Suburb Malang, Indonesia.

Conflict of Interest Statement:

The author declares that we have no conflict of interest.

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