

The Effect of Benson's Relaxation on Blood Pressure in the Elderly in Hypertension Patients

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Abstract

Hypertension is a common health issue among the elderly and significantly impacts their quality of life. This study aims to evaluate the effectiveness of the Benson relaxation technique in reducing blood pressure in elderly individuals with hypertension at the Sajira Health Center. Using a pre-experimental method with a pretest-posttest design, measurements were taken before and after the intervention. Seventeen elderly participants with a history of hypertension were selected through purposive sampling. The results showed a significant reduction in blood pressure after the intervention. The average reduction in systolic blood pressure was 25.765 mmHg (SD = 13.917), and diastolic blood pressure was 14.118 mmHg (SD = 7.944). A paired sample *t*-test showed a significance value of $p = 0.000$, indicating a statistically significant effect of Benson relaxation in reducing blood pressure. Benson relaxation is effective in lowering blood pressure in the elderly and can be used as a non-pharmacological therapy. The Health Center can incorporate this technique into educational and promotive programs for hypertensive elderly individuals.

Keywords: Hypertension, Benson Relaxation, Elderly

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INTRODUCTION

Hypertension is one of the most common health problems experienced by the elderly worldwide and is a major factor in reducing the quality of life in this age group (Adamu et al., 2022; Zheng et al., 2021). Global data shows that approximately 1.28 billion people aged 30 to 79 years suffer from hypertension, and its prevalence increases with age (WHO, n.d.). This condition is often referred to as the "silent killer" because it develops slowly without obvious symptoms, but can lead to serious complications such as stroke, kidney failure, and heart disease (Rokom, 2021).

In Indonesia, hypertension is also a huge burden on the public health system. As revealed in the results of a national survey conducted in 2018 (Riskesdas, 2018), 34.1% of people in Indonesia have hypertension. This has increased compared to the results of *Riskesdas* research data in 2013, which was 25.8%. In Indonesia, it is estimated that only 1/3 of hypertension cases are diagnosed; the remainder are undiagnosed (Ardiana, 2022). The prevalence of hypertension shows a clear pattern of increase in older age groups. Starting from 55.2% at the age of 55-65 years, the percentage rose to 63.2% in the age group of 65-74 years and reached the highest rate of 69.5% in individuals aged 75 years and above. In *Kab. Lebak*, there were 1,490 cases of hypertension. The prevalence of hypertension in women is 36.9%, which is 5.6% higher than the prevalence in men at 31.3% (Riskesdas, 2018). Data sourced from the Sajira Health Center shows that there were 151 cases of hypertension out of a total of 390 cases detected through the *BPJS* mechanism, which occurred in the period from March to September 2023.

Hypertension treatment can be conducted pharmacologically and non-pharmacologically. However, pharmacological approaches are not always accepted by all

sufferers due to the side effects that drugs may cause (Kristanto & Diyono, 2021). Therefore, non-pharmacological interventions such as relaxation techniques are becoming an increasingly considered alternative because they are safer, cheaper, and can be performed independently. One technique that has been proven effective is Benson relaxation, a method that combines physical and mental elements such as diaphragmatic breathing, focus on a particular word, and a relaxed posture. This technique can reduce sympathetic nervous system activity and stimulate alpha brain waves, thereby lowering blood pressure (Febriyanti et al., 2021; Solehati & Kosasih, 2015).

The level of importance in controlling high blood pressure is equal between older and younger age groups. Decreased flexibility impairs the ability of blood vessels to expand and contract by varying amounts, thereby increasing peripheral vascular resistance and reducing renal flow (Putra, 2019). Controlling high blood pressure can be managed pharmacologically and non-pharmacologically. From the perspective of drug treatment, hypertensive patients have the option of therapy with drug groups such as diuretics, calcium antagonists, angiotensin-2 receptor blockers, and ACE inhibitors (Kristanto & Diyono, 2021). Usually, some sufferers refuse to discipline themselves in taking medication because each experiences side effects, so some hypertension sufferers choose not to take medication.

Research conducted by Buana et al. (2021) shows that the Benson relaxation technique can reduce blood pressure. In this research sample, 2 elderly subjects were used, each with the same blood pressure before Benson relaxation therapy of 150/100 mmHg, and after being given therapy, the blood pressure was 130/80 mmHg and 130/90 mmHg in both subjects.

As for the results of the preliminary study that was carried out, interviews showed that the Sajira Community Health Center had a Chronic Disease Program (*Prolanis*) specifically for treating hypertension and diabetes mellitus. *Prolanis* is for universal age and does not yet have a hypertension treatment program specifically for the elderly, said the Sajira Health Center health officer. Hypertension sufferers say that the symptoms they experience when blood pressure is high interfere with their daily activities.

However, the implementation of Benson relaxation in first-level health care facilities in Indonesia, especially in a structured program for the elderly, is still very limited. Data from the initial study showed that *Puskemas* Sajira does not have a special program for hypertension treatment for the elderly, although there is a *Prolanis* program for chronic diseases in general. In addition, previous research (Buana et al., 2021) only involved two elderly people as subjects, so it is not strong enough to represent a wider population.

Based on this background, this study aims to evaluate the effectiveness of Benson relaxation therapy in reducing blood pressure in elderly people with hypertension in the working area of the Sajira Health Center. This study is expected to provide a scientific basis for the development of non-pharmacological promotive and preventive programs in primary health care, especially for the elderly.

RESEARCH METHOD

The selection of quantitative methods in this study is based on the need to accurately and objectively measure changes in blood pressure that occur before and after the intervention, which will be analyzed using numerical data. Benson's relaxation therapy is positioned as an

independent variable, meaning that it is an intervention or treatment given to observe its effect. Blood pressure is the dependent variable, which is the result or effect observed after the therapy is given. With this design, researchers can determine whether there is a statistically significant decrease in blood pressure after the elderly receive the therapy.

The location of this study was in the operational area of the *UPTD* Sajira Health Center. The target population was elderly people over 60 years old who were not on medication and resided in the working area of the Health Center. This research uses a non-probability sampling technique with a purposive sampling method to select samples. Non-probability sampling is a sampling method in which not all members of the population have the same opportunity to be selected as a sample. In the purposive sampling approach, sample selection is based on certain considerations or criteria that have been predetermined by the researcher. Purposive sampling determines the inclusion criteria. The subjects studied are specifically chosen based on the topics studied by the researcher (Donsu, 2019).

RESULTS AND DISCUSSION

A. Univariate Analysis Results

1. Description of the Characteristics of Hypertensive Respondents in the Sajira Community Health Center working area

The purpose of this section on respondent characteristics is to provide a descriptive overview of the educational background, employment status, and gender of the research participants. No participants withdrew or dropped out of the study during the intervention period. Complete data regarding these characteristics can be seen in the table below:

Table 1. Individual Blood Pressure Measurements Before and After Benson Relaxation

Name	Gender	Blood Pressure Before	Blood Pressure After
Tn. I	Male	145/90 mmHg	140/85 mmHg
Ny. M	Female	170/100 mmHg	145/85 mmHg
Ny. S	Female	170/100 mmHg	160/85 mmHg
Ny. T	Female	160/90 mmHg	140/83 mmHg
Ny. S	Female	150/90 mmHg	145/83 mmHg
Ny. K	Female	150/90 mmHg	145/83 mmHg
Ny. K	Female	187/109 mmHg	170/99 mmHg
Ny. S	Female	160/100 mmHg	150/85 mmHg
Ny. M	Female	150/90 mmHg	140/83 mmHg
Tn. S	Male	155/100 mmHg	145/83 mmHg
Ny. S	Female	160/100 mmHg	150/89 mmHg
Tn. T	Male	170/100 mmHg	150/75 mmHg
Ny. R	Female	160/100 mmHg	150/75 mmHg
Ny. A	Female	150/90 mmHg	140/72 mmHg
Ny. Z	Female	160/100 mmHg	150/80 mmHg
Tn. A	Male	155/100 mmHg	145/78 mmHg
Ny. A	Female	130/84 mmHg	110/70 mmHg

Table 1 shows variations in systolic and diastolic values across participants, indicating that while the magnitude of reduction differed, all participants experienced a decrease in either systolic or diastolic blood pressure.

Table 2. Frequency Distribution of Respondent Characteristics

No	Variable	Frequency	Presentation
1	Education		
	1. Elementary School	9	52.9%
	2. Junior High School	4	23.5%
	3. Senior High School	4	23.5%
2	Work		
	1. Work	9	52.9%
	2. Doesn't work	8	47.1%
3	Gender		
	1. Man	5	29.4%
	2. Woman	12	70.6%
4	Smoking Habit		
	1. No smoking	13	76.5%
	2. 1 pack/day	1	5.9%
	3. >1 pack / day	3	17.6%
5	Coffee Consumption		
	1. Don't consume	7	41.2%
	2. 1 time/day	5	29.4%
	3. >1 time/day	5	29.4%

Table 2 is based on research results, most of the 9 (52.9%) respondents were elementary school graduates, with employment figures of 52.9% (9 respondents) working, and most of the respondents were 12 (70.6%) women, then the smoking habit (76.5%) and the number of coffee consumption habits (41.2%) were higher than those who did not consume either.

2. Description of the Blood Pressure of the Elderly Before and After Benson Relaxation Who Suffer from Hypertension in the Sajira Community Health Center Work Area

Table 3. Blood Pressure Figure Before Getting Benson Relaxation

Variable	Mean	SD	Min-Max
Blood pressure systole before	157.76	16.623	130 – 187
Pressure pre-diastolic blood	96.06	7.395	84 – 109

Based on Table 3, the results showed that the average systolic blood pressure before Benson relaxation was 157.76 with std. Deviation 16.623, min-max value 130 – 187. Meanwhile, the average diastole result before being given Benson relaxation was 96.06 with std. Deviation 7,395, and value minimum maximum 84 – 109.

Table 4. Blood Pressure Image After Receiving Benson Relaxation

Variable	Mean	SD	Min-Max
Blood pressure systole after	132.00	13.825	110 – 170
Diastolic blood pressure after	81.94	7.669	70 – 99

The table explanation shows that after Benson relaxation, the mean systolic blood pressure became 132.00 (SD 13.825; range 110-170), and the mean diastolic blood pressure became 81.94 (SD 7.669; range 70-99).

B. Bivariate Analysis Results

The Effect of “Benson Relaxation Therapy” on “Elderly Blood Pressure in Hypertension Sufferers” in the Sajira Community Health Center Working Area

Table 5. Differences in Respondents' Blood Pressure After and Before Benson Relaxation

The effect of Benson's relaxation on blood pressure	Difference Mean ± SD	SE	Paired Difference		P Value
			Df	T(t-test)	
Pre-Post Systolic blood pressure	25.765 ± 13.917	3.115	16	7.633	0.000
Pressure Pre-Post Diastole blood	14.118 ± 7.944	3.605	16	7.327	0.000

Paired Sample t-test analysis showed significant differences in systolic and diastolic blood pressure before and after the intervention. The mean decrease in systolic was 25.765 (SD 13.917) and diastolic was 14.118 (SD 7.944), with a p-value of 0.000 (<0.05). This proves that the intervention significantly changed systolic and diastolic blood pressure.

Mean Blood Pressure of Respondents Before Benson Relaxation

With age, blood pressure is positively correlated due to changes in the large blood vessels. Narrowing and stiffening of the blood vessel walls, due to loss of elasticity, complicates blood flow and increases blood pressure. The decrease in blood vessel elasticity that occurs with age contributes to increased blood pressure. Stiffer blood vessels cannot expand and contract as easily, causing blood to flow at a higher pressure to reach the organs.

Interpretation of the data in Table 5 reveals that of the 17 elderly participants suffering from hypertension, the majority (58.8% or 10 individuals) had systolic blood pressure above 160 mmHg before the implementation of Benson relaxation. The group with a systolic pressure range of 120-139 mmHg is the group with the smallest representation, namely 3 respondents (17.6%). A total of 4 respondents (23.5%) were observed to have systolic pressure in the range

of 140-159 mmHg. Then with the results of diastolic blood pressure before being given Benson relaxation, the highest number of 17 respondents was 5 (29.4%) respondents in the diastolic range of 80-89 mmHg, the diastolic range was <80 mmHg with 4 (23.5%) respondents, and the highest was diastolic blood pressure with 8 (47.1%) respondents. In addition, in the initial measurement before the Benson relaxation intervention, the mean systolic blood pressure was 157.76 mmHg (with a standard deviation of 16.623) and the mean diastolic blood pressure was 96.06 mmHg (with a standard deviation of 7.395) in the elderly population with hypertension.

This research confirms the results found by [10], which showed that before Benson relaxation therapy was administered, the average systolic blood pressure of the participants was 151.38 mmHg, and the diastolic blood pressure was 95.75 mmHg. These values illustrate the relatively high blood pressure conditions before the intervention.

Blood pressure is influenced by two main factors: how much blood the heart pumps (cardiac output) and how much resistance the blood vessels provide (peripheral vascular resistance). Several external and internal factors, such as a high-salt diet, genetic factors, stress, obesity, and the condition of the endothelium (the inner lining of blood vessels), can affect blood pressure. In addition, body systems such as the sympathetic nervous system and the renin-angiotensin-aldosterone (RAA) system, as well as the regulation of body fluid balance, which is influenced by the hormone aldosterone, play an important role in regulating or increasing blood pressure [19]. This opinion is in line with research conducted by [11] with research results showing that there is a relationship between age, the older you get, the higher the risk of hypertension. It was explained that hypertension, systolic isolated, and associated with peripheral vascular resistance (obstacle to blood flow in peripheral blood vessels) in the arteries.

Apart from that, based on the results of research conducted on respondents, the causes of increased blood pressure, apart from age, can be influenced by several factors, such as gender. Based on the results of this study, most of the 12 respondents (70.6%) were female. Until now, there is no definite theory that can explain why women are more susceptible to it, but there are several articles stating that it is related to hormonal changes due to menopause. Before menopause, the hormone estrogen helps protect women by increasing levels of HDL, the good kind of cholesterol. HDL functions to transport bad cholesterol (LDL) from the arteries back to the liver, which helps prevent cholesterol buildup in the walls of blood vessels and reduces the risk of atherosclerosis, a condition in which blood vessels become narrowed due to fat accumulation. High HDL levels have protective effects against cardiovascular problems such as these (Kusuma et al., 2022). While HDL is responsible for clearing cholesterol from the blood, low levels coupled with high LDL increase the risk of atherosclerosis. Atherosclerosis is the process of LDL accumulation in the artery walls, leading to narrowing and hardening of the arteries. When blood vessels are narrowed, blood has a harder time flowing, which can lead to increased blood pressure (hypertension). Thus, the combination of unhealthy cholesterol levels can worsen heart and blood vessel health.

The results of this research are by the research results of Podungge (2020) with the results that the majority of respondents were female (57.8%). Another factor is that smoking can trigger an inflammatory process in the body, which can damage blood vessels and increase strain on the cardiovascular system. This causes blood vessels to become narrower and stiffer,

making it harder for blood to flow smoothly. As a result, the heart has to work harder to pump blood, which in turn increases blood pressure. Therefore, smoking is considered a major risk factor for hypertension. Nicotine in cigarettes is harmful because it can trigger the release of the hormones epinephrine and norepinephrine by the nervous system, or the effect of CO that increases red blood cells (Rahmatika, 2021). The presence of this hormone will make blood vessels narrow and force the heart to work harder, and is a factor in consuming coffee, which contains caffeine. So that can cause an increase in blood pressure due to vasoconstriction effects. When caffeine is consumed, the arteries narrow, and then blood pressure increases by triggering the adrenal glands to release the hormone adrenaline or epinephrine (Febriyanti et al., 2021). This explanation is in line with the findings presented by Kusuma et al. (2022) which explains the mechanism of caffeine in coffee triggering vasoconstriction and increasing total peripheral resistance, thus raising blood pressure. The research data shows that 50% of respondents have a habit of drinking coffee frequently. The other findings Kristanto and Diyono (2021) stated similar results, with most respondents (51.9%) having high coffee drinking habits.

Based on these results, respondents who are starting to enter old age are advised to pay more attention to their health by implementing healthy living behavior and frequently consulting about their health conditions.

Mean Blood Pressure of Respondents After Benson Relaxation

Based on Table 5, the average systolic pressure after being given Benson relaxation was 132.00 mmHg, and the average diastolic blood pressure was 81.94 mmHg. This shows that the systolic and diastolic blood pressure of the respondents after being given Benson relaxation therapy decreased. This study strengthens the previous findings by Yulendasari and Djamaludin (2021) which show that the results obtained after giving Benson relaxation can reduce systolic and diastolic blood pressure.

Management of hypertension is divided into two therapies, the first is nonpharmacological therapy nonpharmacology and the second is pharmacological. In this research, management of hypertension using therapy non pharmacologist namely Benson relaxation therapy. Relaxation causes a decrease in oxygen consumption and output CO_2 , cellular ventilation, respiratory frequency, and lactate levels as indications of reducing stress levels. In addition, it was found that PO_2 or the oxygen concentration in the blood remains constant, even increasing slightly (Febriyanti et al., 2021)..

Benson relaxation is a method that combines mental and physical elements to calm the body, emphasizing a positive attitude or self-confidence, so it can reduce stress and help control blood pressure. This technique is suitable for use by people of all ages. Meanwhile, most cases of hypertension are caused by narrowing of the blood vessels, which makes the heart have to work harder to pump blood, resulting in increased pressure inside the arteries.

The breathing process in Benson relaxation is the process of oxygen entering through the respiratory tract, then entering the lungs and being processed into the body, then further processed in the lungs, specifically in the bronchi, and circulated throughout the body through the veins and arteries to meet the need for oxygen. If there is sufficient oxygen, the body will be in a balanced condition, and conditions will be relaxed in general throughout the body [11].

The Effect of Benson Relaxation Therapy on Elderly Blood Pressure in Hypertension Sufferers in the Sajira Community Health Center Working Area

Data obtained in this study showed that the average difference in systolic blood pressure before and after was 25,765. Meanwhile, the average difference in diastolic blood pressure before and after was 14,118. Based on the paired t-test, it shows a sig (2-tailed) result or p value ≤ 0.000 , when compared with the alpha of 0.05, it can be concluded that the null hypothesis is rejected. This shows that there is an influence of Benson Relaxation Therapy on Blood Pressure in hypertensive sufferers in the Sajira Health Center Work Area.

Benson relaxation has several benefits apart from being easy to do because the process convinces the respondent by asking God Almighty, and accompanied by deep breathing, it can be done anywhere. Based on the results of interviews conducted by researchers, the effects of Benson relaxation can provide a feeling of calm, happiness, and comfort. This is in line with mentioning Benson Relaxation stimulates brain activity to shift into alpha wave frequencies or waves that usually appear when a person feels calm and comfortable. This helps to create positive feelings that lower stress. This decrease in stress results in the reduced production of stress hormones such as cortisol, epinephrine (adrenaline), and norepinephrine, which normally constrict blood vessels (vasoconstriction). With less vasoconstriction, blood vessels relax and open up, resulting in better blood flow and lower blood pressure. The results of this study are also in line with Yulendasari and Djamaludin (2021) the elderly with hypertension, concluding that the results show a significant difference between blood pressure in the elderly with hypertension after Benson relaxation, with p-value = 0.009.

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Benson relaxation results in a decrease in sympathetic nerve activity, causing blood vessels to relax. A relaxed state can influence the HPA axis, hypothalamus (CRF decreases), pituitary (ACTH decreases), and adrenal catecholamines, which result in a decrease in blood pressure (Yulendasari & Djamaludin, 2021). In the research process, respondents breathed in Benson relaxation, where Benson is the process of O₂ entering through the respiratory tract, then entering the lungs and being processed into the body, then further processed in the lungs, specifically in the bronchi, and circulated throughout the body through the veins and arteries to meet the need for O₂. If the internal O₂ is sufficient, then man is in a state of balance. This

condition will give rise to a situation that is generally found in humans (Yulendasari & Djamaludin, 2021).

In a study conducted by the American Heart Association, it was found that participants who practiced meditation for 20 minutes a day experienced a significant reduction in both systolic and diastolic blood pressure. By applying relaxation therapy, we allow the body to return to a balanced state, which in turn can positively influence blood pressure.

The statistically significant decrease in blood pressure following the Benson relaxation intervention indicates that this therapy is generally effective in reducing blood pressure among elderly individuals with hypertension. However, although all 17 participants experienced a reduction in blood pressure, the degree of reduction varied from person to person. This variation may be influenced by several factors, such as the duration of the therapy, individual psychological responses, and the ability to consistently apply the relaxation techniques. The therapy was administered for 10–15 minutes per day over seven consecutive days, which may have been sufficient for some participants, but potentially less effective for those who require more time to reach a relaxed state. The Benson relaxation technique in this study involved diaphragmatic breathing, repetition of calming words, and maintaining a comfortable posture; however, each participant's subjective experience during relaxation likely differed. Individuals with higher levels of stress or anxiety may find it more difficult to fully engage in the relaxation process, resulting in smaller reductions in blood pressure. For example, one participant (Mrs. S) only experienced a decrease from 170/100 mmHg to 160/85 mmHg, while another participant (Mrs. A) showed a more substantial drop from 130/84 mmHg to 110/70 mmHg. These findings suggest that while Benson relaxation is generally effective, individual characteristics such as stress resilience, emotional state, and mental readiness can influence the outcome, highlighting the need for personalized adaptation in such interventions.

CONCLUSION

This study concluded that Benson relaxation therapy has a significant effect in reducing the blood pressure of hypertensive elderly individuals at the Sajira Health Center. The average decrease in systolic blood pressure of 25.765 mmHg (SD = 13.917) and diastolic blood pressure of 14.118 mmHg (SD = 7.944) proved statistically significant ($p = 0.000 < 0.05$). This demonstrates the effectiveness of Benson relaxation in lowering blood pressure through decreased sympathetic nerve activity and relaxation of blood vessels, as well as its ease of application. These findings indicate that Benson relaxation can be used as a non-pharmacological intervention that is easily accessible and applied in efforts to control blood pressure in the elderly, especially in primary health care. However, the limitations of this study include location coverage that is limited to only one working area of the health center and does not control for other variables such as caffeine intake, physical activity, and the use of antihypertensive drugs. Therefore, it is recommended that future studies be conducted with wider area coverage, longer intervention duration, and consideration of other factors that can affect blood pressure to obtain more comprehensive results.

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