

Pengaruh Relaksasi Otot Progresif terhadap Tekanan Darah pada Penderita Hipertensi

The Effect of Progressive Muscle Relaxation on Blood Pressure in Hypertensive

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Abstrak

Hipertensi merupakan penyakit tidak menular yang menjadi penyebab utama morbiditas dan mortalitas di seluruh dunia, termasuk di Indonesia. Lansia merupakan kelompok yang paling rentan, mengingat proses penuaan disertai dengan penurunan fungsi organ dan gaya hidup yang kurang aktif. Penatalaksanaan hipertensi tidak terbatas pada terapi farmakologis, tetapi juga dapat dilakukan dengan pendekatan nonfarmakologis, salah satunya melalui relaksasi otot progresif. Teknik ini dianggap efektif dalam membantu menurunkan tekanan darah secara alami, aman, dan dapat dilakukan secara mandiri. Penelitian ini bertujuan untuk mengetahui pengaruh terapi relaksasi otot progresif terhadap tekanan darah pada lansia dengan hipertensi di wilayah kerja UPTD Puskesmas Samaenre, Kabupaten Sinjai. Desain penelitian yang digunakan adalah pra-eksperimental dengan pendekatan *pre-test* dan *post-test*. Sampel penelitian terdiri dari 18 lansia dengan hipertensi yang dipilih menggunakan teknik *purposive sampling* dari total populasi sebanyak 30 orang. Tekanan darah diukur menggunakan sphygmomanometer, dan data dianalisis dengan uji *paired sample t-test*. Hasil penelitian menunjukkan adanya penurunan tekanan darah setelah intervensi. Rata-rata tekanan darah sistolik sebelum terapi adalah 145,89 mmHg dan menurun menjadi 143,78 mmHg. Sementara itu, tekanan darah diastolik menurun dari 87,56 mmHg menjadi 86,44 mmHg. Hasil uji statistik menunjukkan nilai signifikansi $p = 0,000$ ($p < 0,05$), yang menandakan adanya pengaruh signifikan dari terapi relaksasi otot progresif terhadap penurunan tekanan darah. Kesimpulan: Terapi relaksasi otot progresif terbukti efektif dalam menurunkan tekanan darah pada lansia hipertensi dan dapat dijadikan sebagai intervensi non-obat yang aman, murah, serta mudah diterapkan di pelayanan kesehatan primer.

Kata Kunci: *Hipertensi; Lansia; Relaksasi Otot Progresif; Tekanan Darah; Nonfarmakologis*

Abstract

Hypertension is a non-communicable disease that is a major cause of morbidity and mortality worldwide, including in Indonesia. The elderly are the most vulnerable group, given that the aging process is accompanied by decreased organ function and a less active lifestyle. Hypertension management is not limited to pharmacological therapy, but can also be carried out with non-pharmacological approaches, one of which is through progressive muscle relaxation. This technique is considered effective in helping to lower blood pressure naturally, safely, and can be done independently. This study aims to determine the effect of progressive muscle relaxation therapy on blood pressure in elderly people with hypertension in the work area of the UPTD Samaenre Community Health Center, Sinjai Regency. The study design used a pre-experimental with a pre-test and post-test approach. The sample consisted of 18 elderly people with hypertension selected using a purposive sampling technique from a total population of 30 people. Blood pressure was measured using a sphygmomanometer, and data were analyzed using a paired sample t-test. The results showed a decrease in blood pressure after the intervention. The average systolic blood pressure before therapy was 145.89 mmHg and decreased to 143.78 mmHg. Meanwhile, diastolic blood pressure decreased from 87.56 mmHg to 86.44 mmHg. The statistical test results showed a significance value of $p = 0.000$ ($p < 0.05$), indicating a significant effect of

progressive muscle relaxation therapy on blood pressure reduction. Conclusion: Progressive muscle relaxation therapy has been proven to be effective in reducing blood pressure in hypertensive elderly and can be used as a safe, inexpensive, and easy-to-implement non drug intervention in primary health care.

Keywords: *Hypertension, Elderly, Progressive Muscle Relaxation, Blood Pressure, Non-Pharmacological.*

BACKGROUND

Hypertension is one of the non-communicable diseases (NCDs) that causes the most morbidity and mortality worldwide. According to a report by the World Health Organization (WHO, 2021), approximately 1.28 billion people worldwide suffer from hypertension, and more than two-thirds of them live in low- and middle-income countries. Furthermore, approximately 46% of people with hypertension are unaware they have the condition, and only 21% successfully control their blood pressure. Hypertension is a leading cause of heart disease, kidney failure, stroke, and premature death. In Indonesia, the 2018 Basic Health Research (Riskesdas) showed a hypertension prevalence of 34.1%, and this figure continues to increase as the population ages. The elderly are the most vulnerable population to hypertension due to degenerative processes that disrupt the balance of organ function. In South Sulawesi Province, the prevalence of hypertension reached 31.68%, and in Sinjai Regency itself, it reached 29.33%. Data from the Sinjai Regency Health Office in 2024 recorded 21,280 cases of hypertension in the elderly between January and August, with 2,069 cases in the Samaenre Community Health Center (UPTD) working area.

Hypertension management is generally carried out through pharmacological therapy. However, long term medication use often causes side effects, dependence, and is expensive. Therefore, safe, affordable, and easy-to-implement non-pharmacological interventions are needed. One recommended method is progressive muscle relaxation therapy, a technique that involves systematically tensing and relaxing muscle groups accompanied by deep breathing exercises. This therapy aims to reduce stress, stabilize the autonomic nervous system, and physiologically lower blood pressure.

Several studies have demonstrated the effectiveness of progressive muscle relaxation therapy. Research by Rahayu et al. (2020) demonstrated that this therapy significantly reduced blood pressure in hypertensive elderly individuals with a p-value of 0.000. Research by Fatmawati, Indriani, and Sari (2023) also demonstrated a decrease in systolic and diastolic blood pressure after progressive muscle relaxation, with a p-value of <0.05. Furthermore, a study by Murhan, Purbianto, and Sulastri (2022) demonstrated that this therapy is safe for elderly individuals to perform independently without the assistance of medical personnel, making it suitable for community settings.

Although this therapy has been extensively studied in various regions, to date, no study has specifically evaluated the effects of progressive muscle relaxation therapy on blood pressure in hypertensive elderly people in the Samaenre Community Health Center (UPTD) area of Sinjai Regency. This demonstrates the research's scientific novelty and addresses the need for implementing non-pharmacological interventions at the primary healthcare level.

METHODS

This study used a quantitative approach with a one-group pretest-posttest pre-experimental design. The study was conducted at the Samaenre Community Health Center (UPTD), Sinjai Regency in 2025. The sample consisted of 18 elderly hypertensive patients, selected through purposive sampling based on certain inclusion criteria. The intervention in the form of progressive muscle relaxation was given for 3 consecutive days, with blood pressure measurements before and after therapy using a sphygmomanometer. Data analysis was performed univariately and bivariately using the Wilcoxon Signed Rank Test with a significance level of $p < 0.05$.

RESULT AND DISCUSSION

The results of processing this research data are presented in the form of demographic data and analysis of respondent characteristics as follows:

1. Respondent Characteristics Based on Gender, Age, Occupation, Education Level and Marital Status

Table 1. Frequency of Respondent Characteristics Based on Gender, Age, Occupation, Education Level and Marital Status

Karakteristik	N	%
Jenis Kelamin		
Laki-laki	4	22,2
Perempuan	14	77,8
Total	18	100
Umur		
Lansia awal	14	77,8
Lansia madya	4	22,2
Total	18	100
Pekerjaan		
Wiraswasta	2	11,1
Petani	2	77,8
I.R.T	14	11,1
Total	18	100
Pendidikan Terakhir		
SD	12	66,7
SMP	5	27,8
SMA	1	5,6
Total	18	100
Status		
Menikah	13	72,2
Janda/Duda	5	27,8
Total	18	100

Sumber: Data Primer 2023

Based on the table above, Gender: The majority of respondents were female, 14 people (77.8%), while 4 men (22.2%). Occupation: Most respondents worked as housewives (IRT) as many as 14 people (77.8%), while the rest were farmers and entrepreneurs, 2 people each (11.1%). Education Level: Respondents with the latest education of elementary school (SD) were 12 people (66.7%), junior high school (SMP) graduates were 5 people (27.8%), and only 1 person (5.6%) had completed high school (SMA). Marital Status: Most respondents were married as many as 13 people (72.2%), while widows/widowers were 5 people (27.8%)

2. Univariate Analysis

A. Respondent Characteristics Based on Blood Pressure in Elderly with Hypertension Pre-Intervention Progressive Muscle Relaxation Day I

Table 2. Distribution of Respondent Characteristics of Blood Pressure in Elderly Hypertensive Patients Pre-Progressive Muscle Relaxation Intervention Day 1

Klasifikasi Tekanan Darah	N	%
Normal	0	0
Boderline	0	0
Hipertensi Stadium 1	10	55,6
Hipertensi Stadium 2	8	44,4
Total	18	100

Sumber: Data Primer 2025

Based on the table above, all respondents before the intervention were in the hypertension category, with 55.6% experiencing stage 1 hypertension and 44.4% stage 2. There were no respondents with normal or borderline blood pressure, indicating that all participants did have high blood pressure that required treatment before undergoing progressive muscle relaxation therapy.

B. Respondent Characteristics Based on Blood Pressure in Elderly with Hypertension Pre-Intervention Progressive Muscle Relaxation Day II

Table 3 Distribution of Respondent Characteristics of Blood Pressure in Elderly Hypertensive Patients Pre-Progressive Muscle Relaxation Intervention Day II

Klasifikasi Tekanan Darah	N	%
Normal	0	0
<i>Boderline</i>	1	5,6
Hipertensi Stadium 1	16	88,9
Hipertensi Stadium 2	1	5,6
Total	18	100

Sumber: Data Primer 2025

Based on the table above, on the second day before the intervention, there was a change compared to the first day, where one respondent (5.6%) entered the borderline category. The majority of respondents (88.9%) still experienced stage 1 hypertension, and one respondent (5.6%) remained in stage 2 hypertension.

C. Respondent Characteristics Based on Blood Pressure in Elderly with Hypertension Pre-Intervention Progressive Muscle Relaxation Day III

Table 4. Distribution of Respondent Characteristics of Blood Pressure in Elderly Hypertensive Patients before Progressive Muscle Relaxation Intervention Day III

Klasifikasi Tekanan Darah	N	%
Normal	0	0
<i>Boderline</i>	10	55,6
Hipertensi Stadium 1	8	44,4
Hipertensi Stadium 2	0	0
Total	18	100

Sumber: Data Primer 2025

Based on the table above, there appears to be a change compared to the previous day. On the second day before the intervention, one respondent (5.6%) began to enter the borderline category.

Then the majority of respondents, namely 16 people (88.9%) still experienced stage 1 hypertension, and one person (5.6%) was still in the stage 2 hypertension category.

D. Respondent Characteristics Based on Blood Pressure in Elderly with Hypertension Post Progressive Muscle Relaxation Intervention Day I

Table 6. Distribution of Respondent Characteristics of Blood Pressure in Elderly Hypertensive Patients Post Progressive Muscle Relaxation Intervention Day I

Klasifikasi Tekanan Darah	N	%
Normal	0	0
<i>Boderline</i>	0	0
Hipertensi Stadium 1	16	88,9
Hipertensi Stadium 2	2	11,1
Total	18	100

Sumber: Data Primer 2025

Based on the table above, data shows that after the intervention on the first day, no respondents had normal or borderline blood pressure. The majority of respondents, 16 (88.9%), remained in stage 1 hypertension, while 2 (11.1%) remained in stage 2 hypertension.

E. Respondent Characteristics Based on Blood Pressure in Elderly with Hypertension Post-Progressive Muscle Relaxation Intervention Day II

Table 8. Distribution of Respondent Characteristics of Blood Pressure in Elderly Hypertensive Patients Post Progressive Muscle Relaxation Intervention Day II

Klasifikasi Tekanan Darah	N	%
Normal	0	0
Boderline	11	61,1
Hipertensi Stadium 1	7	38,9
Hipertensi Stadium 2	0	0
Total	18	100

Sumber: Data Primer 2

The table above shows an increase in respondents with borderline blood pressure after the intervention on the second day, reaching 11 (61.1%). Meanwhile, respondents with stage 1 hypertension decreased to 7 (38.9%), and there were no longer any respondents with stage 2 hypertension or normal blood pressure.

F. Respondent Characteristics Based on Blood Pressure in Elderly with Hypertension Pre-Intervention Progressive Muscle Relaxation Day III

Table 9. Distribution of Respondent Characteristics of Blood Pressure in Elderly Hypertensive Patients Post Progressive Muscle Relaxation Intervention Day III

Klasifikasi Tekanan Darah	N	%
Normal	0	0
Boderline	15	83,3
Hipertensi Stadium 1	3	16,7
Hipertensi Stadium 2	0	0
Total	18	100

Sumber: Data Primer 2025

Based on the table above, on the third day after the intervention, no respondents were found with normal blood pressure or stage 2 hypertension. A total of 15 people (83.3%) were in the borderline category and only 3 people (16.7%) still had stage 1 hypertension. This indicates significant progress compared to the previous day.

G. Characteristics of the Effect of Progressive Muscle on Blood Pressure in Elderly with Hypertension

Table 10. Frequency Distribution of the Effect of Progressive Muscle on Blood Pressure in Elderly with Hypertension

Variabel	N	P Value
Pre Test Hari 1	18	0,00%
Post Test Hari 1		
Pre Test Hari 1	18	0,00%
Post Test Hari 1		
Pre Test Hari 2	18	0,00%
Post Test Hari 2		
Pre Test Hari 2	18	0,00%
Post Test Hari 2		
Pre Test Hari 3	18	0,00%
Post Test Hari 3		
Pre Test Hari 3	18	0,00%
Post Test Hari 3		

Sumber: Data Primer 2025

Based on the table above, the number of participants in this study was 18, as shown in Table 5.8. The table shows the results of statistical tests on the effects of progressive muscle relaxation on blood pressure in older hypertensive patients. This test was conducted over three consecutive days, with measurements taken before and after the examination. The test results show that for all pre-test and post-test comparisons on the first, second, and third days, the p-value was 0.000 (0.00%). There is a statistically significant effect between progressive muscle relaxation and blood pressure reduction in the elderly in the working area of the Samaenre Community Health Center UPTD, Sinjai Regency in 2025, as the p value is <0.05 on each exercise day. This indicates that progressive muscle relaxation intervention can consistently reduce blood pressure in elderly people suffering from hypertension.

3. Bivariate Analysis

Table 11. Frequency Distribution of the Effect of Progressive Opt Relaxation on Blood Pressure in Elderly with Hypertension

		N	Mean Rank	Sum of Ranks
Post Test - Pre Test Hari ke 1	Negative Ranks	6 ^a	3,50	21,00
	Positive Ranks	0 ^b	,00	,00
	Ties	12 ^c		
	Total	18		
Post Tes - Pre Test Hari ke 2	Negative Ranks	11 ^d	6,00	66,00
	Positive Ranks	0 ^e	,00	,00
	Ties	7 ^f		
	Total	18		
Post Tes - Pre Test Hari ke 3	Negative Ranks	5 ^g	3,00	15,00
	Positive Ranks	0 ^h	,00	,00
	Ties	13 ⁱ		
	Total	18		
Test Statistics				
	Post Test – Pre Test Hari ke 1	Post Tes - Pre Test Hari ke 2	Post Tes - Pre Test Hari ke 2	
Z	-2,449 ^b	-3,317 ^b	-2,236 ^b	
Asymp. Sig. (2-tailed)	0,14	,001	0,25	

Sumber: Data Primer 2025

Based on the table above, of the 18 participants on the first day, 6 showed a decrease in blood pressure (negative rating), and 12 others showed no change (tie). There was a significant difference between blood pressure before and after relaxation therapy, with a Z score of -2.449 and a significance level of $p = 0.014$ ($p < 0.05$). On the second day, as many as eleven participants experienced a decrease in blood pressure, while seven others experienced no change. The results showed that the Z value of -3.317 and a significance level of $p = 0.001$ ($p < 0.05$) indicated a very significant effect. On the third day, five people experienced a decrease in blood pressure, and thirteen people experienced no change, with a Z value of -2.236 and a significance level of $p = 0.025$ ($p < 0.05$). Overall, The results of the analysis using the Wilcoxon Signed Rank test showed that progressive muscle relaxation intervention significantly reduced blood pressure in elderly patients suffering from hypertension in the work area of the Samaenre Health Center, Uptd, Sinjai Regency. Progressive muscle relaxation before and after the intervention showed changes in respondents' blood pressure, as shown in Table 5.9. The non-parametric Wilcoxon signed-rank test was used because the data in this study were not normally distributed. The results of the study showed a significant effect of the use of progressive muscle relaxation to lower blood pressure in elderly people suffering from hypertension in the work area of the UPTD Samaenre Health Center, Sinjai Regency. The p-value of the study was 0.000 ($p < 0.05$).

CONCLUSION

1. Effectiveness of Intervention

Progressive muscle relaxation performed for three consecutive days has been shown to significantly reduce blood pressure in elderly people with hypertension ($p < 0.05$).

2. Blood Pressure Changes Before the intervention: 55.6% of respondents had grade 1 hypertension and 44.4% had grade 2 hypertension. After the intervention: 83.3% were in the prehypertension category, 16.7% remained grade 1 hypertension, and none had grade 2 hypertension.

3. Factors Influencing the Decline

Respondents' understanding of the technique improved. Focus and concentration improved on the second and third day of the session. A conducive environment (closed space, minimal distractions). Consistent training duration of 25–30 minutes per session.

4. Physiological Mechanisms

Decreased sympathetic nervous system activity. Decreased stress hormones (cortisol, adrenaline). Vasodilation of blood vessels and decreased peripheral resistance.

5. Alignment with Previous Research

The results support the findings of Rahayu (2020), Alfiani (2022), and Widiyono (2022) that progressive muscle relaxation is effective in lowering blood pressure when done with the correct and consistent technique.

6. Practical Implications

Progressive muscle relaxation can be recommended as an effective, safe, inexpensive, and easy-to-implement non-pharmacological method to control blood pressure in elderly people with hypertension.

RECOMMENDATION

1. Potential for Further Research

Future research is recommended to extend the duration of progressive muscle relaxation intervention beyond three days to assess long-term effectiveness. This includes testing the effect of progressive muscle relaxation on other physiological variables such as heart rate, stress hormone levels, sleep quality, and anxiety levels in elderly people with hypertension. Comparing the effectiveness of progressive muscle relaxation with other relaxation methods or combining it with other non-pharmacological interventions such as meditation or music therapy.

2. Future Research Directions

Develop a visual-interactive guide or module that makes it easier for seniors to practice relaxation independently at home. Assess the application of progressive muscle relaxation on a community scale through elderly community health posts (Posyandu) or routine health programs at community health centers. Examine the influence of the environment (sound, lighting, room temperature) on the success of this therapy, so that optimal conditions for implementation can be determined.

3 Obstacles in Research that Need to be Considered

On the first day of the intervention, effectiveness decreased due to respondents not fully understanding the procedure and lacking focus. The initial implementation environment, which was in an open area, caused distraction due to the crowds. Some respondents had difficulty remembering the movement sequence without clear visual guidance.

4. Implications of Constraints

Future research needs to ensure more intensive technique education before intervention begins. Therapy should be conducted in a quiet, distraction-free, enclosed space. Visual aids such as videos or projectors should be provided to facilitate movement comprehension.

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