



The Effect of Progressive Muscle Relaxation Using Audio-Visual Media on Blood Pressure Reduction in Elderly Hypertension Patients

Jajuk Kusumawaty*¹, Irpan Ali Rahman², Dedi Supriadi³, Fenny Dwi Lestari⁴, Tuti Hidayati⁵

^{1,2,3,4,5}Department of Nursing, STIKes Muhammadiyah Ciamis

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Corresponden author:

Jajuk Kusumawaty
STIKes Muhammadiyah Ciamis.
Jl. K.H. Ahmad Dahlan No.20,
Ciamis, Kec. Ciamis, Kabupaten
Ciamis, Jawa Barat 46216

E-mail:

jajuk09@yahoo.com

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Abstract. Introduction: Hypertension is one of the deadliest diseases in the world. Progressive muscle relaxation is one way of lowering blood pressure; this technique can control tension and anxiety by training patients to relax their body muscles deliberately. Choosing videos as a medium for health education is very suitable because the public can well receive them. This media offers an education that is more interesting and less monotonous. **Objective:** The study aimed to determine the effect of progressive muscle relaxation on blood pressure reduction in older adults with hypertension using audio-visual media. **Method:** This study used a pre-experimental method with one group pretest-posttest design. A total sample of 24 respondents was recruited using the purposive sampling technique. **Result:** The results found that the systolic blood pressure ($p < 0.001$) and diastolic blood pressure ($p < 0.05$) were significantly different before and after receiving the intervention. **Conclusion.** The progressive muscle relaxation affects blood pressure reduction in older people with hypertension with audio-visual media in the urban village linggarsari. **Recommendation:** Further studies are expected to be used as the basis for further research on the Effect of Progressive Muscle Relaxation with a combination of music or guided imagery on Blood Pressure Reduction. Clinical practice is expected to be used as a reference for more effective treatment of hypertension.

Keywords: audio-visual media, hypertension, progressive muscle relaxation



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INTRODUCTION

Hypertension often results in dangerous conditions that are often not realized and often do not cause complaints (1). Hypertension is a disease that can affect anyone, both young and old (2). According to World Health Organization (WHO), hypertension is abnormally high blood pressure. In general, hypertension occurs when the blood pressure is 140 mmHg systolic or 90 mmHg diastolic (3,4).

The elderly are a group that is very susceptible to infectious or non-communicable diseases because, with increasing age, a person will experience a decrease or change in functions such as physical, psychological, biological, spiritual, and social relationships. Of course, it influences various aspects of his life, one of which is his health (5,6). World Health Organization (WHO) stated that about 972 million people worldwide, or 26.4% worldwide, suffer from hypertension (7). Of the 972 million people with hypertension, 333 million are in developed countries, and the remaining 639 are in developing countries, including Indonesia, which also ranks 2nd out of the ten most common diseases (8).

Hypertension is the most common disease suffered by the elderly in Indonesia (9,10), as evidenced by the results of the 2013 Riskeddas concerning ten elderly health problems listed in InfoDATIN Elderly Situations (data center and information center for the Indonesian Ministry of Health) in Indonesia that hypertension ranks first as a disease of the elderly, namely with a prevalence of 45-64 years of age 45.9%, 57.6% of 65-74 years of age, and 63.8% of 75+ years of age (11)

Hypertension can be caused by various factors, one of which is psychological disorders (12). Psychological factors such as anxiety, stress, and depression significantly affect blood pressure; unstable emotional conditions can also trigger high blood pressure or hypertension (13). According to Purwanto (2013), one of the treatment efforts in patients with hypertension that can be

done is using progressive muscle relaxation therapy. Progressive muscle relaxation therapy is a therapy that focuses on muscle activity to reduce muscle tension by performing relaxation techniques to relax (14).

Audio-visual media has sound and image elements used to convey learning messages (15,16). The existence of the audio component allows the public to be able to receive learning messages through hearing. In contrast, the visual element allows creating learning messages through the form of visualization. Audio Visual Media is media that involves the senses of hearing and sight (17).

Progressive muscle relaxation for lowering blood pressure with audio-visual media can make learning more exciting and not monotonous (15,18). Research conducted by Rahmawati, Musviro & Deviantony (2018) on the effectiveness of Progressive Muscle Relaxation (PMR) showed a significant difference in the respondents' systolic and diastolic blood pressure. Before and after being given Progressive Muscle Relaxation (PMR) therapy.

OBJECTIVE

This study aims to measure the effect of Progressive Muscle Relaxation therapy using audio-visual media on reducing blood pressure among elderly with hypertension.

METHOD

Design

In a quasi-experimental study, one group pretest-posttest design approach was applied in this study. The location of the study was carried out in the Linggasari Village on 17-20 May 2021.

Sample and Sampling Technique

A total of 24 respondents were selected using purposive sampling. Inclusion criteria in this study were elderly with hypertension (systolic blood pressure 140 mmHg and or diastolic blood pressure 90 mmHg), age 45 - 59 years, have android, able to move, have good hearing and vision,

cooperative, and willing to be a respondent. Meanwhile, the exclusion criteria were the elderly who withdrew and had never had a stroke.

The instrument for data collection

The data collection instrument in this study used a sphygmomanometer, stethoscope, observation sheet, and a cellphone/android with the Whatsapp application. The progressive muscle relaxation exercise intervention was carried out twice in the morning and evening for 20-30 minutes. This is intended to maintain the physical health and physical fitness of the elderly and foster socialization among the elderly, prevent muscle stiffness, exercise, and indirectly improve the quality of life of the elderly. Flowchart of the data collection process and intervention process:

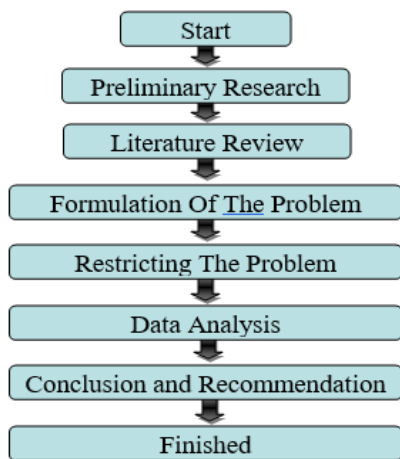


Figure 1. Flowchart intervention

Ethical consideration

This research has been approved by LPPM STIKes Muhammadiyah Ciamis with No: 007 /III.3.AU/D/2021

Data Analysis

The univariate analysis used the frequency, percentage, mean, and SD to describe the variables. The paired-sample t-test was used to describe the mean difference before and after receiving the intervention.

RESULTS

Table 1. Distribution of respondents by gender

Sex	n	%
Female	20	83.3
Male	4	16.7
Total	24	100

Based on the gender frequency distribution table, the results were obtained from 24 respondents, with female sex as many as 20 people with a percentage of 83.3% and male sex as many as four people with a percentage of 16.7%.

Table 2. Distribution of respondents by age

Age	n	%
45	3	12.5
46	5	20.8
47	7	29.22
48	4	16.7
52	4	16.7
59	1	4.2
Total	24	100

Based on the age frequency distribution table, the results obtained from 24 respondents, aged 45 years as many as 3 people with a percentage of 12.5%, age 46 years as many as 5 people with a percentage of 20.8%, age 47 years as many as 7 people with a percentage of 29.2 %, age 48 years as many as 4 people with a percentage of 16.7%, age 52 years as many as 4 people with a percentage of 16.7%, and age 59 years as many as 1 person with a percentage of 4.2%.

Table 3. mean difference of blood pressure before and after receiving progressive muscle relaxation with audio-visual media

Variables	Mean	SD	SE	p
Systole				
Pretest	161.25	12.959	2.645	0.000
Post-test	123.33	9.631	1.966	
Diastole				
Pretest	88.75	6.124	1.250	0.001
Post-test	84.17	5.036	1.028	

Table 3 shows the difference in systolic blood pressure before progressive muscle relaxation in an average (mean) of 161.25 mmHg. In contrast, after progressive

muscle relaxation in an average (mean) of 123.33 mmHg with p-value = 0.000 ($p < \alpha$) where it can be concluded that there is a significant difference in mean systolic blood pressure before and after being given progressive muscle relaxation with audio-visual media.

Table 3 shows that the difference in diastolic blood pressure before progressive muscle relaxation is on average (mean) 88.75 mmHg. At the same time, after progressive muscle relaxation, the average (mean) is 84.17 mmHg, with p-value = 0.0001 ($p < \alpha$). It can be concluded that there is a significant difference in the average diastolic blood pressure before and after progressive muscle relaxation with audio-visual media.

From the results of statistical tests using the paired t-test, the p-value systolic p-value = 0.000 and diastolic p-value = 0.001 (0.05). It is concluded that there is a significant effect of decreasing blood pressure before and after being given progressive muscle relaxation in the elderly with hypertension with audio-visual media.

DISCUSSION

Sex

Based on the results from table 1, the results were obtained from 24 respondents, where the female gender is higher than the male, 20 females with a percentage of 83.3% and male as many as four people with a percentage of 16.7%. This aligns with Andria, Widati, & Nurmala (2021), which stated that 137 people with hypertension were dominated by women (62.3%). This is due to hormonal factors in women as they age (19). It was due of the elderly are women, women were 20 people with a percentage of 83.3% and men - men as many as four people with a percentage of 16.7%.

Age

Based on table 2 of 24 respondents, it was found that patients with hypertension were aged 45 - 59 years. This is in line with research from Andria, Widati, & Nurmala (2021) ANDRIA, which explains that hypertension sufferers are dominated by the age group of 45 to 65 years (57.3%). This is because people aged > 45 years have

atherosclerosis, which allows the narrowing of blood vessels, causing the blood vessels to become stiff. This is in accordance with the theory of Potter and Perry (2005) in the article [37], which states that a person's age shows signs of willingness and ability, or physical activity because the older a person gets, the more transitions they will face, one of which is changes in health and functional abilities.

Decreasing Blood Pressure Before and After Giving Progressive Muscle Relaxation with Audio-Visual Media

Progressive muscle relaxation to decrease blood pressure carried out with audio-visual media can make learning more exciting and not monotonous. Based on the results from table 3, there is a significant effect of decreasing blood pressure before and after being given progressive muscle relaxation in the elderly with hypertension with audio-visual media with a systolic p-value of $p = 0.000$ and a diastolic p-value = 0.001 (0,05).

The results of this study follow the theory of Perry & Potter (2005). Progressive muscle relaxation reduces anxiety, stress, muscle tension, difficulty sleeping, and lower blood pressure (21,22). When the body and mind relax, automatically the tension that often makes the muscles tighten will be ignored. Muscle relaxation aims to reduce the sympathetic nervous system, increase parasympathetic activity, decrease metabolism, lower blood pressure and pulse, and reduce oxygen consumption (23).

Psychological disorders cause factors that cause blood pressure to increase in the elderly in anxiety, stress, and depression, which significantly affect the increase in blood pressure. Unstable emotional conditions can also trigger high blood pressure or hypertension. The changes in the cardiovascular system, precisely in the aorta, where there is a decrease in elasticity in the aortic vessel wall. This is what causes the hardening of the arteries to get worse and the blood pressure to get higher, causing hypertension in the elderly.

CONCLUSION

Researchers argue that progressive muscle relaxation is a self-management technique to inhibit the stress response and affects reducing systolic and diastolic blood pressure and is the easiest way because it can be done anywhere and anytime.

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