

The Effect of Slow Stroke Back Massage on Blood Pressure in Elderly Patients with Hypertension

Gusti Ayu Made Diah Dwi Meidayanti¹, Sang Ayu Ketut Candrawati^{2*}, Ni Kadek Yuni Lestari²

¹ Bachelor of Nursing Program, STIKes Wira Medika Bali, Denpasar, Indonesia

² Department of Nursing Program, STIKes Wira Medika Bali, Denpasar, Indonesia

*Corresponding author's email: candrawati@stikeswiramedika.ac.id

Abstract

Hypertension is a non-communicable disease that is often diagnosed in the elderly population in the world. Some previous studies have also suggested that slow stroke back massage, is effective in lowering blood pressure in hypertensive patients. However, limited studies examine this therapy in elderly group. This study aims to determine the effect of slow stroke back massage on blood pressure in elderly hypertensive patients. This research method uses a type of quantitative research using quasi experimental design with two group pre-post-test nonequivalent control group design. The number of samples used were 44 respondents. Sampling using the simple random sampling technique was carried out 3 times a week with a duration of 10 minutes for 4 weeks. Inclusion criteria in this study were hypertension sufferers who were willing to be respondents, patients aged 45-74 years both male and female and patients taking hypertension medication. Exclusion criteria were patients who experienced burns, bruises, skin rashes, inflammation of the skin of the back, patients who had spinal fractures. The analysis used was univariate and bivariate using the parametric paired sample t-test and independent t-test. The results obtained mean a decrease in systolic and diastolic blood pressure in the intervention group was 21.04 mmHg and 11.68 mmHg, p-value (0.000 < 0.05). Meanwhile, the mean reduction in systolic and diastolic blood pressure in the control group was 3.00 mmHg with a p-value (0.071 > 0.05) and 2.04 mmHg with a p-value (0.081 > 0.05). The results of data analysis using the independent sample t-test obtained a p-value of 0.000 < 0.05, which means that there is an effect of slow stroke back massage on blood pressure in hypertension sufferers. This study recommended slow stroke back massage as an alternative or supporting therapy in managing hypertension in elderly individuals because it does not cause side effects.

Keywords: Blood pressure; elderly; hypertension; slow stroke back massage

INTRODUCTION

Changes in human lifestyle along with the influence of urbanization, modernization, and globalization have led to an increase in non-communicable diseases (NCDs). Hypertension is one of NCDs (Pusdatin Kementerian Kesehatan Republik Indonesia [Kemenkes RI], 2012). Hypertension is a global health problem due to its high prevalence in causing cardiovascular and chronic kidney diseases (Mills et al., 2017). According to the World Health Organization (2017), hypertension occurs in 1.13 billion people worldwide. It is estimated that every year 9.4 million people die from hypertension and complications. From the prevalence of hypertension in Indonesia of 34.1%, it is known that 8.8% are diagnosed with hypertension and 13.3% of people diagnosed with unmedicated hypertension and 32.3% do not take medication regularly (Kemenkes RI, 2018). Hypertension is one of non-communicable diseases that ranks third out of the ten most diagnosed diseases in Bali (Dinas Kesehatan Provinsi Bali, 2019).

DOI: 10.14710/hnhs.6.1.2023.30-37

Received: 14 February 2023; Revised: 10 July 2023; Accepted 10 July 2023; Online 20 July 2023

There are two ways to manage hypertension in general, including pharmacology and non-pharmacology. Pharmacological management is treatment with medical drugs that not only have beneficial effects but also have side effects such as bronchospasm in the use of beta blockers (Udjianti, 2014). Non-pharmacological therapies that can be used to reduce hypertension are herbal therapy, lifestyle changes, diet, medication compliance and relaxation therapy (Udjianti, 2014). Muttaqin (2009) explains relaxation therapy must be given to people with hypertension. One of the relaxation therapies that can be provided to decrease blood pressure without causing side effects is slow stroke back massage (Muttaqin, 2009). Slow stroke back massage is a relaxation therapy in the form of massage to lower blood pressure (Pinasthika, 2018). The advantages of slow stroke back massage therapy compared to other therapies are that this relaxation therapy is easier, safer, simpler and cheaper. In addition, this therapy can be done by therapists and taught without the need for special training to families whose members have high blood pressure (Ode, 2017).

Slow stroke back massage is a type of relaxation therapy using massage or massage methods on the back area. This back massage is able to stimulate the endorphin gland which gives a calm and relaxed effect so that blood pressure drops (Nurul & Nisak, 2018). The therapy is carried out with slow strokes for 3-10 minutes which have a relaxing effect on muscles, tendons and ligaments. This therapy has a relaxing effect by reducing sympathetic nerve activity and increasing vasodilation of blood vessels and then lowering blood pressure (Punjastuti & Fatimah, 2020).

Non-pharmacological therapies such as slow stroke back massage can be an attractive alternative in the management of headache pain in the elderly with hypertension, especially for those who have contraindications or intolerance to medication for headache pain. The management of headache pain in the elderly with hypertension focuses not only on controlling blood pressure, but also on reducing the use of headache medications that may have side effects. In line with the results of research by (Shinta et al., 2015) on slow stroke back massage intervention to reduce blood pressure in middle age women with pre-hypertension conditions, it was found that there was a significant effect of slow stroke back massage on reducing systole blood pressure by 9.09% and diastole blood pressure by 10.42% in middle-age women with pre-hypertension conditions. However, research on the effectiveness and mechanism of action of slow stroke back massage in the elderly population with hypertensive headache is still limited. This study aims to determine the effect of slow stroke back massage on blood pressure in elderly hypertensive patients.

METHOD

This study was a quasi experimental pre and post test with control group with simple random sampling technique. The intervention group received slow stroke back massage intervention and antihypertensive medication, while the control group only took antihypertensive medication. The population in this study were patients with hypertension. A total of 44 samples were selected using a lottery, with the even-numbered samples as the intervention group and the odd-numbered samples as the control group. Twenty two respondents were allocated to the treatment group, and the other 22 respondents were the control group. Sample selection was based on inclusion criteria including hypertensive patients who were willing to become respondents, age 45-74 years, and taking antihypertensive drugs.

Ethical approval was provided by the ethics committee of the Health Research Ethics Commission, ITTEKES BALI Letter number: 04.0563/KEPITEKES-BALI/X/2022. All participants were asked to fill an informed consent form and sign it voluntarily after receiving information about the study and their right to participate or not in the study. The researcher assured their privacy and confidential information with utmost security. The data collection instrument in this study is using observation sheets. Data collected in November 2022 using the

observation sheet. All participants informed about the purpose and stages of this study and asked to fill out an informed consent form. First, a pretest was conducted to measure blood pressure in the intervention group and control group. Second, the implementation of slow stroke back massage was carried out 3 times a week for 4 weeks with 10 minutes at each meeting for the intervention group while the control group was not given any treatment. Third, after getting slow stroke back massage therapy in the fourth week the respondents were given a 5-10 minute break and after that a post test was carried out to measure blood pressure in the intervention group and the control group also being measured. Blood pressure measurements were taken using a calibrated aneroid sphygmomanometer in a lying position. Measurements were taken on the left upper arm, with the center point of the cuff approximately 2-3 cm above the elbow.

Data were analyzed using SPSS. Characteristics of the respondents in the treatment and control groups were analyzed using frequencies and percentages. The data normality test was the Shapiro Wilk test, because the number of respondents is less than 50 respondents (44 respondents). The results of the data normality test were obtained in the intervention group and the control group ($p\text{-value} > 0.005$), so the hypothesis test used was the paired t-test and the independent t-test to compare the groups.

RESULTS

Characteristics of Subjects Based on Age and Gender

Table 1 explains that the majority of respondents were in the age range of 45-59 years (pre-elderly) in the intervention (63.6%) and control groups (54.5%). Based on gender, the majority of respondents were female in the intervention (63.6%) and control groups (59.1%).

Table 1. Frequency Distribution of Subjects Characteristics (n=44)

Characteristics	Intervention		Control	
	f	%	f	%
Age				
45-59	14	63.6	12	54.5
60-74	8	36.4	10	45.5
Gender				
Male	8	36.4	9	40.9
Female	14	63.6	13	59.1

Results of Blood Pressure Identification in Patients with Hypertension Before and After Slow Stroke Back Massage

Table 2 describes that systolic and diastolic blood pressure averages in the intervention group before intervention were 157.27 mmHg and 97.54 mmHg and after intervention were 136.22 mmHg and 85.86 mmHg. In the control group, systolic and diastolic blood pressure averages in pre-test were 161.63 mmHg and 93.45 mmHg and the post-test value were 158.63 mmHg and 91.40 mmHg.

Table 2. Blood Pressure of Subjects Pre and Post Intervention (n=44)

Group	Variables	Min-max	Average
Intervention	Systolic Pre Test	145-173	157.27
	Diastolic Pre Test	90-105	97.54
	Post Test Systolic	125-148	136.22
	Diastolic Post Test	80-94	85.86

Table 2. Blood Pressure of Subjects Pre and Post Intervention (continued)

Group	Variables	Min-max	Average
Control	Pre Test systolic	150-170	161.63
	Diastolic Pre Test	85-100	93.45
	Post Test Systolic	150-167	158.63
	Diastolic Post Test	83-98	91.40

Results of Analysis of Blood Pressure Differences Before and After Slow Stroke Back Massage in the Intervention and Control Groups

Table 3 shows that there is a significant effect of slow stroke back message in pre and post in the intervention group (p -value < 0.05) on systolic and diastolic blood pressures comparing with the control group (p -value > 0.05).

Table 3. Paired t-test Results of Differences in Blood Pressure Before and After Intervention (n=44)

Group	Variables	Mean	Difference	p-value
Intervention	Pre Test Systolic	157.27	21.04	0.000
	Post Test Systolic	136.22		
	Pre Test Diastolic	97.54	11.68	0.000
	Post Test Diastolic	85.86		
Control	Systolic Pre Test	161.63	3.00	0.071
	Systolic Post Test	158.63		
	Pre Test Diastolic	93.45	2.04	0.081
	Post Test Diastolic	91.40		

Results of Analysis of the Effect of Slow Stroke Back Massage on Blood Pressure in the Intervention Group and Control Group of Hypertension Patients

Table 4 shows the results of testing using the independent t-test obtained post test of systole and diastole in the intervention and control groups obtained an average difference in systolic and diastolic pressure of 22.40 and 5.63 with a p -value < 0.05 . This shows that there is a significant effect after providing slow stroke back massage in the intervention group.

Table 4. Independent t-test Results The Effect of Slow Stroke Back Massage on Blood Pressure (n=44)

Variables	Variables	Mean	Mean Difference	p-value
Systolic BP	Control	158.63	22.40	0.000
	Intervention	136.22		
Diastolic BP	Control	91.40	5.63	
	Intervention	85.86		

DISCUSSION

Changes in systolic and diastolic blood pressure can decrease. This result is supported by Fikriana (2018) explaining management in patients with hypertension includes two things, namely pharmacological therapy with drugs and nonpharmacology that can reduce blood pressure and prevent complications caused by hypertension without causing side effects, another is doing slow stroke back massage (Irfan, 2012).

This research is supported by Wowor et al. (2022) describing that before providing slow stroke back massage, the average blood pressure of respondents was 150.65 mmHg and 94.04 mmHg after slow stroke back massage, the average systole blood pressure of respondents was

142.32 mmHg while the average diastole blood pressure of respondents was 82.93 mmHg. The results obtained in this study are also in line with research conducted by Pinasthika, (2018) getting the average value of systolic and diastolic blood pressure before slow stroke back massage therapy is 156.67mmHg and 83.67 mmHg, while the average value of systolic and diastolic blood pressure after the therapy is 129.67 mmHg and 78.67 mmHg.

According to researchers, from the data above before being given a slow stroke back massage, there are still many respondents' blood pressure in the high range. This happens because no treatment has been given. The decrease in blood pressure in the intervention group after being given a slow stroke back massage due to the relaxing effect of the massage or massage given so as to provide a sense of comfort and reduce muscle tension and blood vessels (Kartika et al., 2019). While in the control group there was no significant decrease in blood pressure because the control group was only given antihypertensive drugs and blood pressure measurements were taken without a slow stroke back massage intervention.

Conceptually, slow stroke back massage can stimulate the production of endorphin hormone, which is a hormone that can provide a calm effect on patients and cause vasodilation in blood vessels so that blood vessels will become wider and relaxed, and a decrease in blood pressure (Kartika et al., 2019). In this study, slow stroke back massage was only given to the intervention group for 10 minutes, carried out 3 times a week for 4 weeks in accordance with the Standard Operating Procedure (SOP) attached to this study.

This is supported by Wibowo (2018) explaining that there was a difference in blood pressure reduction before and after the treatment both in systolic dan diastolic blood pressure. This research is also in line with the research of Silaban and Jumaiyah, (2018). The results of this study indicate that there is a significant difference before and after being given slow stroke back massage against blood pressure in elderly hypertension patients.

According to the researchers, the difference in blood pressure is more significant in the intervention group and there is no difference in blood pressure in the control group. This happens because touching or pressing smoothly on the surface of the skin repeatedly can increase blood flow which affects the decrease in heart rate, respiratory frequency, and relaxes the muscles so that blood pressure will drop. Whereas in the control group there was no difference in blood pressure because it was only given hypertension drug therapy without being given slow stroke back massage therapy so that in the control group the muscles and blood vessels were stiff causing blood flow not smoothly.

Physiologically, slow stroke back massage therapy is a stimulation or stimulation caused by massage on the tissue is a complex response from neurohormonal in the hypothalamic axis (HPA), the stimulation is delivered through the spinal cord to the hypothalamus which is interpreted as a relaxation response. Touch or pressure on the skin relaxes muscles, tendons and ligaments, increasing parasympathetic activity to release the neurotransmitter acetylcholine to inhibit sympathetic nerve activity in the heart muscle which has an impact on lowering blood pressure (Hartati, 2018).

The results of this study are in line with a study conducted by Kusumoningtyas and Ratnawati (2018) showing a significant value between pre-post systole of the intervention group) and significant between pre-post diastole of the intervention group. The results in the control group showed an insignificant value in pre-post systole and an insignificant value in pre-post diastole. The conclusion is that there is an effect of slow stroke back massage in overcoming blood pressure in the elderly in RW 001 Jombang Village, Ciputat District, South Tangerang City. This research is line with Mahfuzah et al. (2023) showing that there is an effect of slow stroke back massage technique on reducing head pain and blood pressure in elderly people with hypertension in Batu Belah Village, Air Tiris Health Center Working Area.

According to the investigators, the results of the effect of blood pressure in the intervention and control groups after being given a slow stroke back massage, there is a more

significant effect on blood pressure in the intervention group and there is no effect on blood pressure in the control group. This happens because touching or pressing on nerve points will provide stimuli that are delivered to the brain to increase the parasympathetic nervous system which has an impact on lowering blood pressure, besides that touching or pressing nerve points on the body can provide a feeling of comfort, calmness so that the body will relax and make blood flow smoothly. While in the control group there was no effect because the control group was only given anti-hypertensive drugs and blood pressure measurements without slow stroke back massage therapy in the form of touching or pressing which caused relaxation in the blood vessels.

AUTHOR CONTRIBUTION

All authors contribute for the study design, data collection, data analysis, manuscript writing, review, and revision.

CONFLICT OF INTEREST

All authors declare no conflict of interest in this article.

CONCLUSIONS AND SUGGESTIONS

The conclusions of this study are that there is an effect of slow stroke back massage on blood pressure of elderly people with hypertension. Slow stroke back massage is recommended as an alternative or supporting therapy in managing elderly with hypertension. Based on the findings of this study, the recommended for further research is to conduct a randomized clinical trial with a larger sample size to strengthen the evidence regarding the effectiveness of slow stroke back massage in the management of hypertension in the elderly. This will provide stronger data and increase the generalizability of the findings.

REFERENCES

- Dinas Kesehatan Provinsi Bali. (2019). *Profil kesehatan Provinsi Bali 2018*. <https://www.diskesbaliprov.go.id>
- Fikriana. (2018). *Sistem kardiovaskuler*. Deepublish.
- Hartati, U. T. (2018). Pengaruh penambahan deep breathing pada slow stroke back massage terhadap tekanan darah pada Lansia hipertensi. [Skripsi, Universitas ‘Aisyiyah Yogyakarta]. <http://digilib.unisayogya.ac.id/4246/>
- Irfan. (2012). *Fisioterapi bagi insan stroke* (2nd Ed.). Graha Ilmu.
- Kartika, A. (2019). *Perbandingan slow stroke back massage dan amlodiphine terhadap penurunan tekanan darah dalam upaya pencegahan kegawatdaruratan pada pasien hipertensi*. [Skripsi, Politeknik Kesehatan Kalimantan Timur]. <https://repository.poltekkes-kaltim.ac.id/185/7/Skripsi%20Ayu%20Repository.pdf>
- Kementerian Kesehatan Republik Indonesia. (2018). *Riskesmas 2018*. https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-riskesmas-2018_1274.pdf
- Kusumoningtyas, D. N., & Ratnawati, D. (2018). Efektifitas terapi slow stroke back massage terhadap tekanan darah pada Lansia di RW 001 Kelurahan Jombang Kecamatan Ciputat Kota Tangerang Selatan. *JIKO (Jurnal Ilmiah Keperawatan Orthopedi)*, 2(2), 39–57. <https://doi.org/10.46749/jiko.v2i2.15>

- Mahfuzah, Alini, & Ridha, H. (2023). Pengaruh teknik slow stroke back massage (SSBM) terhadap penurunan nyeri kepala dan tekanan darah pada Lansia penderita hipertensi di Desa Batu Belah wilayah Kerja Puskesmas Air Tiris. *Jurnal Ners Universitas Pahlawan*, 7(23), 521–522. <https://doi.org/10.31004/jn.v7i1.8006>
- Mills, K. T., Bundy, J. D., Kelly, T. N., Reed, J., Kearney, P., Reynolds, K.... He, J. (2017). Global disparities of hypertension prevalence and control: A systematic analysis of population-based studies from 90 countries. *Physiology & Behavior*, 176(3), 139–148. <https://doi.org/10.1161/CIRCULATIONAHA.115.018912>
- Muttaqin, A. (2009). *Buku ajar asuhan keperawatan klien dengan gangguan sistem kardiovaskular dan hematologi*. Salemba Medika.
- Nurul, H. & Nisak, R. (2018). *Terapi komplementer untuk mahasiswa keperawatan*. Samudra Biru.
- Ode, L. (2017). *Asuhan keperawatan gerontik berstandarkan NANDA, NIC, dan NOC dilengkapi teori dan contoh kasus askep*. (2nd Ed.). Nuha Medika.
- Pinasthika, S. (2018). Pengaruh terapi slow stroke back massage (SSBM) terhadap perubahan tekanan darah pada pasien stroke non hemoragik di Ruang Melati 4 RSUP. Dr. Soeradji Tirtonegoro Klaten. *Jurnal Keperawatan Global*, 3(1), 34–42. <https://doi.org/10.37341/jkg.v3i1.47>
- Punjastuti, B., & Fatimah, M. (2020). Pengaruh slow stroke back massage terhadap tekanan darah pada Lansia dengan hipertensi: Literature review. *Jurnal Kesehatan Madani Medika*, 11(02), 167–175. <https://doi.org/10.36569/jmm.v11i2.120>
- Pusdatin Kementerian Kesehatan Republik Indonesia. (2012). Buletin-PTM. <https://www.depkes.go.id/Download.Php?File=Download/Pusdatin/Buletin/Buletin-Ptm.Pdf>
- Shinta, A. A. A., Winaya, I. M. N., & Tianing, N. W. (2015). Pemberian intervensi slow stroke back massage menurunkan tekanan darah pada wanita middle age dengan kondisi pre-hypertension di Banjar Batan Buah, Desa Kesiman, Kecamatan Denpasar Timur, Bali. *Majalah Ilmiah Fisioterapi Indonesia*, 2(3). <https://doi.org/10.24843/MIFI.2015.v03.i02.p07>
- Silaban, R. E., & Jumaiyah, W. (2018). Pengaruh slow stroke back massage terhadap penurunan tekanan darah pada pasien stroke di Ruang Neurologi RSUD Koja Jakarta Utara. [Skripsi, Universitas Muhammadiyah Jakarta]. http://perpus.fikumj.ac.id/index.php?p=show_detail&id=4504&keywords=
- Udjianti, W. J. (2014). *Keperawatan kardiovaskuler*. Salemba Medika.
- Warjiman., Unja, E. E., Gabrilinda, Y., & Hapsari, F. D. (2020). Skrining dan edukasi penderita hipertensi. *Jurnal Suaka Insan Mengabdi*, 2(1), 15–26. <https://doi.org/10.51143/jsim.v2i1.215>
- Wibowo, T. A. (2018). Pengaruh slow stroke back massage (SSBM) terhadap penurunan tekanan darah pada hipertensi Lansia. *Jurnal Keperawatan*, 2(2), 119–131.
- Wowor J. T., Aisyiah, & Seftya, M. (2022). Pengaruh slow stroke back massage terhadap

perubahan tekanan darah pada Lansia di Desa Kutaampel Jawa Barat. *Malahayati Nursing Journal, 4(5), 9–25*. <https://doi.org/10.33024/mnj.v4i5.6268>