Health Gate
Volume 2 Number 2 April 2024 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

DOI:https://doi.org/10.70111/hg2204
Submitted : January, 30 2024
Reviewed : February, 10 2024
Accepted : Apryl, 15 2024

EFFECTIVENESS OF EFFLEURAGE BACK MASSAGE AND SLOW DEEP BREATHING ON VITAL SIGNS IN HYPERTENSION PATIENTS AGE 45 – 54 YEARS

Tri Cahyo Sepdianto[1*], Suprajitno[2], Maria Diah Ciptaning Tyas[3]

[1,2,3]Departement of Nursing, Ministry of Health Polytechnic, Blitar, Indonesia,
cahyo_sepdianto@yahoo.com

ABSTRACT

There are quite a lot of hypertension sufferers in middle age in society, and they are easy to detect. Controlling hypertension requires lifelong medication and non-pharmacological measures. To reduce the side effects of treatment, non-pharmacological measures are needed, namely effleurage back massage and slow deep breathing. This study aimed to assess the effectiveness of effleurage back massage and slow deep breathing on vital signs, oxygen saturation, and anxiety in primary hypertension sufferers aged 45 - 54 years. The method in this research uses a quasi-experimental design with a non-randomized pretest-posttest control group design approach. The sample for this study was primary hypertension sufferers aged 45 - 54 years who received routine treatment at the Health UPTD in the Blitar City area, totalling 101 sufferers (51 in the treatment group, 50 in the control group). Inclusion criteria for patients were having systolic blood pressure of 140 – 180 mmHg and diastolic blood pressure of 90 – 100 mmHg, receiving a maximum of 2 standard antihypertensive treatments, and not smoking. Analysis used descriptive and t-tests. The results of this study showed that after effleurage back massage and slow deep breathing, there was a decrease in systolic blood pressure of 16.37 mmHg, diastolic blood pressure of 10.39 mmHg, pulse of 3.53 times/minute and respiration of 0.73 times per minute. Effleurage back massage and slow deep breathing are effective if done regularly, but they require a massage break after the sixth appointment.

Keywords: hypertension, effleurage back massage, slow deep breathing

Background

Hypertension in middle age has become a major cause of disability and death in almost all countries. Hypertension is also a factor that causes high mortality and morbidity rates in Indonesia (1). In Indonesia, the prevalence of hypertension, based on a doctor's diagnosis and treatment, reaches 8.84%, while in East Java, it reaches 8.59%. Based on the age group 45-54 years, the prevalence of hypertension is 13.3% (2).

Management of hypertension includes medication and lifestyle changes (non-pharmacological). The side effects and costs of antihypertensive drugs that must be consumed throughout life encourage the application of non-pharmacological management in hypertensive patients. Management includes weight loss, meal planning, reducing dietary sodium, physical activity, smoking cessation, relaxation techniques, and stress management. One useful relaxation technique is effleurage back massage, which has been proven to reduce vital signs (except body temperature) and anxiety levels in hypertensive patients after 10 minutes of

Correspondent*

Health Gate
Volume 2 Number 2 April 2024 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

massage (3). Back massage is also able to reduce systolic and diastolic blood pressure as well as mean arterial pressure in hypertensive patients (4).

Management of hypertension using pharmacology and non-pharmacology needs to be done to control blood pressure to normal. Providing non-pharmacological measures of effleurage back massage and slow deep breathing can reduce blood pressure, pulse, respiration and anxiety and increase oxygen saturation in primary hypertension patients. However, in Indonesia, this is not widely known. Based on the existing explanation, it is necessary to determine the effectiveness of effleurage back massage and slow deep breathing on vital signs, oxygen saturation and anxiety in primary hypertension sufferers aged 45 - 54 years. The research objective was to assess the effectiveness of effleurage back massage and slow deep breathing on vital signs, oxygen saturation and anxiety in primary hypertension sufferers aged 45 - 54 years.

Methods

This study used a quasi-experimental design with a non-randomized pretest-posttest control group design approach. The sample for this study was primary hypertension sufferers aged 45 - 54 years who received routine treatment at the Primary Health Service in the Blitar City area, with a total of 101 sufferers. The treatment group consisted of 51 hypertension sufferers, and the control group consisted of 50 hypertension sufferers. Inclusion criteria for patients were having systolic blood pressure of 140 – 180 mmHg and diastolic 90 – 100 mmHg, receiving standard antihypertensive treatment with a maximum of 2 drugs (Diuretics, ACE inhibitors/Calcium Channel Blockers), and not smoking. The independent variables were effleurage back massage and slow deep breathing, carried out for 21 minutes every 3 days for 6 massages and continued with slow deep breathing for 10 minutes before measuring vital signs. The dependent variables are blood pressure, pulse, respiration, oxygen saturation, and anxiety, measured before and after the procedure. The analysis used is descriptive and t-test..

Results

Table 1. Characteristics of Hypertension Patients

Variable	Treatment Group		Control Group		Total	
	f	%	f	%	f	%
Gender						
Man	18	35.3	17	34.0	35.0	34.7
Women	33	64.7	33	66.0	66.0	65.3
					101	**100**
Last Education						
Elementary School	13	25.5	11	22.0	24	23.8
Junior High School	12	23.5	13	26.0	25	24.7
Senior High School	20	39.2	21	42.0	41	40.6
College	6	11.8	5	10.0	11	10.9
					101	**100**
Anti-hypertension medication						
One	46	90.2	46	92.0	92	91.0
Two Type	5	9.8	4	8.0	9	9.0
					101	**100**
Check Blood Pressure						
Routine	30	58.8	22	44.0	52	51.5

Correspondent*

Health Gate
Volume 2 Number 2 April 2024 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

No	21	41.2	28	56.0	49	48.5
					101	**100**

The results of the analysis showed that more than half (53.3%) of hypertension sufferers were female, almost half (40.6%) had a high school education, most (91.0%) received one anti-hypertension drug and more than half (51.5%) %) routine control at the community health centre

Measurement of Vital Signs in the Control Group before and after being given a prone position on the bed for 21 minutes, Blitar September 2023

Table 2. Measurement of vital signs in the control group

Variabel	N	Mean	SD	*P value*
Tekanan Darah Sistolik : - Pre Test - Post Test	51	 152,65 146,67	 16,197 15,197	 0,004
Tekanan Darah Diastolik : - Pre Test - Post Test	51	 90,20 86,35	 9,693 7,205	 0,004
Nadi : - Pre Test - Post Test	51	 87,35 87,41	 13,431 10,153	 0,975
Respirasi : - Pre Test - Post Test	51	 20,43 20,37	 1,237 1,058	 0,757

The results of the analysis showed that in the control group, given the prone position on the bed for 21 minutes, there were changes in systolic and diastolic blood pressure. In the prone position, there were no changes in pulse and respiration.

Results of Vital Signs Measurement in the Treatment Group Before and After Effleurage Back Massage and Slow Deep Breathing, September 2023

Table 3 Measurement of vital signs in the treatment group at the first to sixth visits

Variabel	N	Mean	SD	*P value*
Tekanan Darah Sistolik : - Pre Test - Post Test	51	 160,90 144,53	 16,913 14,002	 0,000
Tekanan Darah Diastolik : - Pre Test - Post Test	51	 100,06 89,67	 10,563 10,563	 0,000
Nadi : - Pre Test - Post Test	51	 87,61 84,08	 7,990 5,854	 0,004
Respirasi : - Pre Test - Post Test	51	 20,27 19,55	 2,040 51,815	 0,000

Correspondent*

Health Gate
Volume 2 Number 2 April 2024 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

The analysis showed that in the treatment group, after effleurage, back massage was carried out for 21 minutes and continued with slow, deep breathing for 10 minutes; there were changes in systolic blood pressure, diastolic blood pressure, pulse and respiration.

4. Results of the independent sample t test for vital signs between the control group and the intervention group

Variabel	N	Mean	SD	*P value*
Tekanan Darah Sistolik : - Kontrol - Intervensi	51	 5,98 16,37	 14,072 12,277	 0,000
Tekanan Darah Diastolik : - Kontrol - Intervensi	51	 3,84 10,39	 9,210 9,802	 0,001
Nadi : - Kontrol - Intervensi	51	 -0,6 3,53	 13,306 8,240	 0,016
Respirasi : - Kontrol - Intervensi	51	 0,06 0,73	 1,348 1,234	 0,011

.

Discussion

The results of this study are in line with research, which shows that 70.8% of hypertensive patients are female (5). Other research supports which states that 66.7% of hypertension patients are female. This gender difference is related to blood vessel tone and the possible protective effect of female hormones, namely estrogen and progesterone (6). In menopausal conditions, there is a decrease in the hormones estrogen and progesterone so that the protective function of blood vessel tone decreases, causing an increase in vascular resistance, which has an impact on increasing blood pressure and the risk of cardiovascular disease. The research results showing the use of one type of anti-hypertension drug are also supported by research results (7). All hypertensive patients used a single antihypertensive drug. Hypertension treatment is given to achieve target blood pressure. A single combination pill can be given to increase patient compliance with taking medication (2).

The results of the analysis showed that in the control group, given the prone position on the bed for 21 minutes, there were changes in systolic blood pressure and diastolic blood pressure. In the prone position there are no changes in pulse, respiration and oxygen saturation.

The results of this study, which show that blood pressure changes with the prone position on the bed, align with the research resultsn(8). Systolic blood pressure decreases with the prone position for approximately 15 minutes. Systolic blood pressure decreases with the prone position for approximately 15 minutes. The prone position can cause increased nerve activity in the front part of the brain, the amygdala, and the posterior part, especially the precuneus tissue. This response can cause an increase in parasympathetic tone in the brain and, as a result, relaxation and a decrease in blood pressure.

The analysis results showed that in the treatment group, changes in both systolic and diastolic blood pressure, pulse, and respiration occurred in the sixth week of evaluation.

Correspondent*

This study's results align with research showing that blood pressure decreases in hypertensive older adults after having Swedish massage (9). Other research shows that primary hypertension patients experience decreased systolic blood pressure, diastolic blood pressure, pulse, and respiration after a Swedish back massage (10). A decrease in blood pressure, pulse, and respiration after effleurage back massage can occur because manual massage/massage therapy can release oxytocin, associated with stress-reducing effects such as decreasing blood pressure and pulse. Oxytocin is produced by the paraventricular nucleus (PVN) and supraoptical nucleus (SON). During massage, oxytocinergic fibres from the PVN cause the release of endogenous oxytocin into other brain areas, including the nucleus of the solitary tract (NTS) and locus coleus (LC), which play a central role in blood pressure regulation and reactions to stress (11). Massage puts pressure on the tissue so that tissue increases. An increase in tissue will increase the pressure gradient between tissue and blood vessels. This condition will increase fluid movement between tissues and blood vessels, thus having an impact on blood pressure. Hand raising also facilitates comfort and relaxation, reducing stress and lowering blood pressure. Massage also reduces the hormone cortisol and facilitates the release of endorphins, which impact blood vessel dilation and cause a decrease in blood pressure.

The massage process should be done up to 5 times, followed by a rest phase. The results showed that after Swedish massage was performed twice a week for 4 weeks, there was a decrease in systolic blood pressure of 6.44 mmHg, diastolic blood pressure of 4.77 mmHg, and respiration of 0.94 breaths per minute (10). Another similar study showed that after massage for one hour per week for 4 weeks, there was a reduction in systolic blood pressure of 12 mmHg and diastolic blood pressure of 5 mmHg. Effleurage back massage, which is part of Swedish massage, is an action that manipulates soft tissue and muscles, which will increase circulation, increase parasympathetic stimulation, and increase the release of hormones. These endorphins cause a decrease in heart rate, blood pressure, and respiration (12).

Slow deep breathing is a relaxation technique that involves slowly adjusting the frequency and depth of breathing until it relaxes the body. Based on previous research, slow, deep breathing exercises five times a day with a rhythm of six cycles per minute for one month can lower blood pressure. Providing effleurage back massages and slow deep breathing interventions can strengthen the effectiveness of relaxation in hypertension sufferers.

The analysis showed differences in vital signs between the group that received effleurage back massages and slow, deep breathing and those that did not. Effleurage back massage and slow deep breathing can lower blood pressure, pulse, and respiration.

This study's results align with research showing that effleurage back massage performed for 21 minutes can reduce systolic blood pressure, diastolic blood pressure and respiration (13).

Conclusion and Recommendations

Effleurage back massage and slow deep breathing can reduce systolic blood pressure by 16.37 mmHg, diastolic blood pressure by 10.39 mmHg, pulse by 3.53 times/minute, and respiration by 0.73 times per minute. They are effective if done regularly and require a massage break after the sixth appointment. Effleurage back massage and slow deep breathing can be nursing interventions to control blood pressure and prevent complications.

Primary hypertension patients should receive effleurage back massages for 21 minutes every three days as an accompaniment to pharmacological management to reduce blood pressure and respiratory rate and increase oxygen saturation.

Primary hypertension patients maintain a healthy lifestyle, have regular check-ups at health services, and take regular medication according to instructions from health workers to control blood pressure and prevent complications.

Correspondent*

Acknowledgment

We would like to thank the director of Primary Health Service in the Blitar City who has provided the opportunity to carry out research.

References

1. PERKI. Pedoman penetalaksanaan Hipertensi Pada Penyakit Kardiovaskuler. PERKI; 2015.
2. PERHI. Konsensus Penatalaksanaan Hipertensi. Indonesian Society Hipertensi Indonesia,; 2019.
3. Yaşayan Yaşlılarda Sırt Masajının Yaşamsal Bulgular ve Anksiyete Düzeyine Etkisi H, Bilimleri Fakültesi Hemşirelik Dergisi S, ebnem ÇINAR A, Eşer İ, Khorshid L. The Effects of Back Massage on the Vital Signs and Anxiety Level of Elderly Staying in a Rest Home. [Internet]. Hacettepe University; 2009. Available from: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+Effects+of+Back+Massage+on+the+Vital+Signs+and+Anxiety+Level+of+Elderly+Staying+in+a+Rest+Home.+&btnG=
4. Lestari NKY, Suardana IK, Trisnadianti NW. Back Massage and Noni Fruit (Morinda citrifolia) Reduced Blood Pressure in People with Hypertension. urnal Ners Dan Kebidanan Indones. 2018;5(3).
5. Azmy LU, Subrata IM, Suariyani NLP. Efficacy of sport and slow stroke back massage as a non-pharmacological therapy to lower blood pressure in elderly with chronic hypertensio. Public Heal Prev Med Arch. 2021;9(1). https://doi.org/10.15562/phpma.v9i1.324
6. Astuti NLS, Dharma Wisnawa IN, Satria Astawa IG. The Impact of Effleurage Technique Massage on Blood Pressure toward Elderly Hypertension in Peguyangan Village. Nurs Heal Sci J. 2022;2(3). https://doi.org/10.53713/nhs.v2i3.155
7. Laura A, Darmayanti A, Hasni D. Evaluasi Penggunaan Obat Antihipertensi Kota Padang Periode 2018. J Hum Care, [Internet]. 2020;5(2). Available from: https://ojs.fdk.ac.id/index.php/humancare/article/view/712. https://doi.org/10.32883/hcj.v5i2.712
8. Meftahi N, Bervis S, Taghizadeh S, Ghafarinejad F. The Effect of Lying in Prone Position on Blood Pressure and Heart Rate with and without Massage. Jrsr [Internet]. 2014;1(1). Available from: http://jrsr.sums.ac.ir/index.php/jrsr/article/view/14
9. Adawiyah R, Febriani N, Fithriana D. Pijat Swedia Terhadap Perubahan Tekanan Darah Pada Pasien Lansia Dengan Hipertensi. J Penelit Dan Kaji Ilm Kesehatan, [Internet]. 2020;6(1). Available from: https://jurnal.poltekmfh.ac.id/index.php/JPKIK/article/view/54
10. Moghadasi M, Mohebbi Z, Homayouni K, Nikoo MH. Cardiorespiratory effect of Swedish back massage in hypertensive patients: a randomized clinical trial. Arter Hypertens [Internet]. 2021;25(4). Available from: https://doi.org/10.5603/AH.a2021.0026
11. Muller J, Ekström A, Harlén M, Lindmark U, Handlin. Mechanical massage and mental training programs effect employees' heart rate, blood pressure and fingertip temperature—An exploratory pilot study. Eur J Integr Med. 2016;8(5). https://doi.org/10.1016/j.eujim.2016.06.002
12. Supa'at I, Zakaria Z, Maskon O, Aminuddin A, Anita NMMN. Effects of swedish massage therapy on blood pressure, heart rate, and inflammatory markers in hypertensive women. Evidence-Based Complement Altern Med. 2013; https://doi.org/10.1155/2013/171852

Correspondent*

13. Epdianto TC, Suprajitno, Tyas MDC. The Effectiveness of Effleurage Back Massage on Vital Signs, Oxygen Saturation, and Anxiety of Patients with Hypertension. Nurseline J [Internet]. 2022;7(2). Available from: https://jurnal.unej.ac.id/index.php/NLJ/article/view/34555. https://doi.org/10.19184/nlj.v7i2.34555

Correspondent*