

Effectiveness of Combination of Health Education and Stress Management on Blood Pressure in Patients with Hypertension

Wahyu Dini Candra Susila¹, Nurwahidah^{2*}, Wahyu Dini Metrikayanto³

¹Program Study of Nursing, STIKES Adi Husada, Surabaya, Indonesia

²Universitas Airlangga Hospital, Surabaya, Indonesia

³Program Study of Nursing, Faculty of Health Sciences, Universitas Tribhuwana Tunggaladewi, Malang, Indonesia

*Correspondence author: nurwahidah.wdcs@gmail.com

Submitted : 10-21-2023 ; Accepted : 04-18-2024

Doi: <https://doi.org/10.36858/jkds.v12i1.683>

ABSTRACT

Hypertension is an important health problem that the public needs to be aware of, because hypertension is also known as the silent killer. Hypertension treatment is lifelong so it needs to be combined with non-pharmacological treatment, such as the combine intervention of health education, deep breath relaxation, and progressive muscle relaxation. Pharmacological management aims to reduce complications and prevent death by achieving and maintaining normal blood pressure. The purpose of this study was determining the effectiveness of the combination of health education, deep breath relaxation, and progressive muscle relaxation in reducing blood pressure. This study combines health education with deep breathing relaxation and progressive muscle relaxation. This study used a Pre-Experimental Design research design with One Group Pretest-Posttest Design. The sampling technique used non-probability sampling technique, namely accidental sampling. The sample taken was 17 people. Respondents were selected using inclusion and exclusion criteria. The data obtained was then analyzed using the dependent t-test. This study covers the characteristics of respondents consisted of age, gender, education and duration of illness. The results of the t test for measuring blood pressure (pre and post), both systolic and diastolic, showed a p-value <0.05 (0.000). There is a reduction in systolic and diastolic blood pressure after being given a combination of education and stress management interventions: progressive muscle relaxation and deep breath relaxation. The conclusion in this study is that the combination of education and stress management in people with hypertension has an influence on patient blood pressure.

Keyword: Blood Pressure; Education; Hypertension; Stress management.

ABSTRAK

Hipertensi merupakan masalah kesehatan penting yang perlu diwaspadai oleh masyarakat, karena hipertensi juga dikenal sebagai pembunuh diam-diam (silent killer). Pengobatan hipertensi bersifat seumur hidup sehingga perlu dikombinasikan dengan pengobatan non-farmakologis, seperti intervensi kombinasi edukasi kesehatan, relaksasi nafas dalam, dan relaksasi otot progresif. Penatalaksanaan farmakologis bertujuan untuk mengurangi komplikasi dan mencegah kematian dengan mencapai dan mempertahankan tekanan darah normal. Tujuan penelitian ini mengetahui efektivitas kombinasi edukasi kesehatan, relaksasi nafas dalam, dan relaksasi otot progresif dalam menurunkan tekanan darah. Penelitian ini mengkombinasikan pendidikan kesehatan dengan relaksasi nafas dalam dan relaksasi otot progresif. Penelitian ini menggunakan desain penelitian Pre-Experimental Design dengan rancangan One Group Pretest-Posttest Design. Teknik pengambilan sampel menggunakan teknik non-probability sampling yaitu accidental sampling. Sampel yang diambil sebanyak 17 orang. Responden dipilih dengan menggunakan kriteria inklusi dan eksklusi. Data yang diperoleh kemudian dianalisis dengan menggunakan uji t dependen. Penelitian ini meliputi karakteristik responden yang terdiri dari usia, jenis kelamin, pendidikan dan lama sakit. Hasil uji t pengukuran tekanan darah (pre dan post), baik sistolik dan diastolik menunjukkan p-value <0,05 (0,000). Terdapat perubahan penurunan tekanan darah sistolik dan diastolik setelah diberikan dan sebelum diberikan kombinasi intervensi edukasi dan manajemen stres: relaksasi otot progresif dan relaksasi nafas dalam. Kesimpulan dalam penelitian ini adalah kombinasi edukasi dan manajemen stres pada penderita hipertensi memiliki pengaruh terhadap tekanan darah pasien. Terdapat perubahan penurunan tekanan darah pada responden hipertensi setelah diberikan dan sebelum diberikan intervensi.

Kata Kunci: Hipertensi; Edukasi; Manajemen stres; Tekanan darah.

*Correspondence author: nurwahidah.wdcs@gmail.com

How to Cite : Susila, W.C.D., Nurwahidah., Metrikayanto., W.D., (2024). Effectiveness of Combination of Health Education and Stress Management on Blood Pressure in Patients with Hypertension. Jurnal Kesehatan dr. Soebandi Vol. 12, No.1, 16-22

Introduction:

Blood pressure is the state in which blood is pumped from the heart to the tissues (Nuraini, 2015). If a person has a blood pressure above 140/90 mmHg, it is categorised as hypertension (Kemenkes RI, 2019). Hypertension which if not treated properly will lead to serious complications. According to Riskesdas 2018, the prevalence of hypertension in the population aged 18 years is 34.1%. The prevalence of hypertension in East Java Province ranked sixth at 36.32% (Kemenkes RI, 2019). Overall, the prevalence of hypertension in adults ranges from 30% to 45%, with the prevalence increasing progressively with age. It is notable that the prevalence exceeds 60% in individuals aged over 60 years (Kemenkes RI, 2021). Hypertension is caused by two factors, including modifiable and non-modifiable factors. Non-modifiable factors of hypertension include gender, age, and genetics. Modifiable factors include overweight or obesity, smoking, alcohol consumption, dyslipidaemia, excessive salt consumption, lack of physical activity and stress (P2PTM Kemenkes RI, 2019). Other studies have also proven that stress contributes 50 to 70% to the onset of several diseases, including cardiovascular, metabolic disorders, cancer, hormonal disorders and so on. (Musradinur, 2016). One research result shows that as many as 30% of respondents with hypertension have psychological problems so that the high blood pressure experienced by respondents can be associated with various symptoms of psychological stress (Dewi et al., 2019).

Hypertension causes physical impacts and results in complications if not controlled properly. The impact of hypertension is also felt on a person's psychosocial aspects (Yulianti, 2017). One study showed that as many as 30% of respondents with hypertension had psychological problems so that the high blood pressure experienced by respondents could be associated with various symptoms of psychological stress (Dewi et al., 2019). Psychosocial conditions also have an impact on patients' blood pressure, so efforts are needed to control psychosocial conditions to support hypertension treatment.

Nurses provide health services through efforts to carry out nursing care, both individually, families, groups or communities. One intervention that can be carried out is non-pharmacological therapy such as stress management, namely providing health education or education that can be combined with progressive muscle relaxation (PMR) and deep breath relaxation. Deep breath relaxation will help to control the body's response to perceived tension and anxiety. Deep breath relaxation is able to reduce oxygen consumption, respiratory frequency, heart frequency, metabolism, muscle tension and also blood pressure so it will be beneficial for people with hypertension. (Anggraini, 2020). Progressive muscle relaxation is one of the systematic relaxation techniques that aims to provide a relaxed state. Progressive muscle relaxation will utilise exercises on skeletal muscles by tensing and relaxing so that the muscles become relaxed and can be used as a treatment to lower blood pressure in people with hypertension. (Norma & Supriatna, 2019). Health education or education is needed to provide an understanding that controlling hypertension is important to prevent more severe complications.

In addition, health education is needed as a strategy to prevent more serious complications. In line with research by Sari & Priyantari (2019) which states that there is an effect of health counselling on hypertension in the elderly in preventing hypertension at the Budhi Dharma Nursery House, Yogyakarta. The health education in this study explained the definition of hypertension, signs and symptoms of hypertension, risk factors, and what kind of foods people with hypertension should limit.

A combination of health education and stress management interventions such as progressive muscle relaxation and deep breath relaxation can be an alternative for people to help stabilize blood pressure. This therapy is one of the relaxation methods that is quite efficient, easy to do, has no side effects, and can make the mind calmer so that the body will feel more relaxed. Several previous studies have proven that progressive muscle relaxation and deep breath relaxation are able to lower blood

pressure in people with hypertension (Amelia, 2019).

Methods:

This research combines health education and stress management interventions which include progressive muscle relaxation and deep breath relaxation. This research uses Pre-Experimental Design with One Group Pretest-Posttest Design. The sampling technique used was non-probability sampling with accidental sampling technique. This variable was measured before and after a combination intervention through providing educational education and stress management on the blood pressure of people with hypertension.

The first step is to provide research explanations and informed consent to research respondents. Respondents who have signed the informed consent will have their blood pressure measured. The intervention in this study combined health education and stress management interventions which included progressive muscle relaxation and deep breathing relaxation. After completing the intervention for one week, blood pressure was measured on the respondents as an evaluation. Blood pressure was taken when the respondents were at rest or calm.

This research was carried out in the Bulak Banteng area, Bubutan Village, RT.04/RW.07, Surabaya, East Java on 9 – 15 December 2022. The sample is determined with certain considerations. The hypertensive population was 25 people, the sample taken was 17 people who were given the treatment. The respondents were selected based on the inclusion criteria: experiencing hypertension, aged over 45 years, being able to communicate and speaking Indonesian. Meanwhile, refusal to participate served as an exclusion criterion. The data obtained was then analyzed using the t-dependent test. The instruments used in this study were leaflets related to hypertension and stress management, and a digital sphygmomanometer standardized by Kemenkes RI. This research has passed the ethical clearance at STIKes Adi Husada with No. 725.1/PPM/STIKES-AH/XII/2022.

Results:

General data was obtained, including the characteristics of the respondents. This research covers the characteristics of respondents consisted of age, gender, education and duration of illness.

Table 1. Characteristics of respondents based on age, gender, duration of illness and education

No.	Variables	Frequency	Percentage (%)
1.	Gender		
	a. Male	0	0
	b. Female	17	100
	Total	17	100
2.	Age		
	a. 45-50 years old	6	35,3
	b. > 50 years old	11	64,7
	Total	17	100
3.	Education		
	a. No School	2	11,8
	b. Elementary school	10	58,8
	c. Junior high school	3	17,6
	d. Senior high school	2	11,8
	Total	17	100
4.	Duration of illness		
	a. < 5 years	10	58,8
	b. ≥ 5 years	7	41,2
	Total	17	100

Based on table 1, it shows that all respondents were female (100%). In terms of the age of the respondents, the highest proportion was found among those aged 50 years or older, accounting for 64.7% (11 respondents). Regarding respondents' education, the majority had completed elementary school, comprising 58.8% (10 respondents). Meanwhile, in terms of the duration of illness or suffering, the majority had been ill for less than 5 years, accounting for 58.8% (10 respondents).

In this study, the results of blood pressure at the before intervention and after intervention were looked at for respondents who were given a combination of education and stress management

intervention. The systolic and diastolic blood pressure results were obtained as in tables 2. Table 2. Results of initial systolic and diastolic blood pressure and after intervention combined education and stress management on blood pressure

Variable	Group	Category								*p-value	
		Normal		Pre-Hypertension		Hypertension Stage 1		Hypertension Stage 2			
		n	%	n	%	n	%	n	%		
Blood Pressure	Systolic	Pre	0	0	3	17,6	12	70,6	2	11,8	0,000
		Post	0	0	7	41,2	10	58,8	0	0	
	Diastolic	Pre	0	0	9	52,9	8	47,1	0	0	0,000
		Post	5	29,4	8	47,1	4	23,5	0	0	

Based on the table 2 above, it shows that there are differences in pre and post systolic blood pressure after providing a combination of education and stress management, progressive muscle relaxation and deep breath relaxation. The results of the t test for measuring systolic blood pressure showed a p-value <0.05 (0.000). There is a reduction in systolic blood pressure before and after being given a combination of education and stress management interventions: progressive muscle relaxation and deep breath relaxation. The results of the t test for measuring diastolic blood pressure showed a p-value <0.05 (0.000). There is a reduction in diastolic blood pressure before and after a combination of education and stress management interventions: progressive muscle relaxation and deep breath relaxation.

Discussion:

Health education is needed as a strategy to prevent more serious complications. Research by Sari & Priyantari (2019) which states that there is an influence of hypertension health education for the elderly in preventing hypertension. A combination of health education and stress management interventions such as progressive muscle relaxation and deep breathing relaxation can be an alternative for people to help stabilize blood pressure. This therapy is a relaxation method that is quite efficient, easy to do, does not cause side effects, and can make the mind calmer so that the body will feel more relaxed. Several previous studies have proven that progressive muscle relaxation and deep breathing relaxation can reduce blood pressure in people with hypertension (Amelia, 2019).

Complaints that are often felt by respondents are neck pain, headaches, trembling hands, body weakness, and stiffness in the nape of the neck. This is in line with research by Rahmanti & Pamungkas (2022) which states that the symptoms that appear in hypertension sufferers are headaches, usually in the nape and neck. By offering a combination of education and stress management techniques such as deep breathing relaxation and progressive muscle relaxation, patients can experience a sense of calmness regarding their illness

Peace of mind can make patients feel comfortable and can put aside pain and disturbing thoughts (Sriyono et al., 2020). If the patient is calmer and can control the medication, it is hoped that the effect will lead to the reduction of patient's blood pressure because the patient will not feel stressed and anxious. As research conducted by Baltazar et al. (2019) shows that adequate strategies for providing non-pharmacological therapy provide effective results in reducing stress.

This study shows that there are differences in blood pressure before and after the intervention combination of education and stress management, progressive muscle relaxation and deep breath relaxation. The results of the t test for measuring blood pressure systolic showed a p-value <0.05 (0.000). In this research, it shows that all 17 respondents were female (100%). Hypertension that occurs in some women is caused by hormonal factors. Incidence of hypertension is higher in women than men (P2PTM Kemenkes RI, 2019; Pebrisiana et al., 2022). In terms of the age of the respondents, the highest proportion

was found among those aged 50 years or older, accounting for 64.7% (11 respondents). This is supported by research Amin & Puspitasari (2013) that blood pressure in the elderly is influenced by several factors, one of which is age.

Respondents' education was dominated by respondents with elementary school education, about 58,8% (10 respondents). Meanwhile, for length of illness or long suffering, it was found that respondents with a duration of illness <5 years were dominating, about 58,8% (10 respondents). According to research conducted by Wulandari (2019) involving 328 people with hypertension at the Pajang Community Health Center, people with hypertension described that they generally did not know the meaning, signs and symptoms of hypertension.

One intervention that can be carried out is non-pharmacological therapy such as stress management, namely providing health education or education that can be combined with progressive muscle relaxation and deep breath relaxation. Deep breath relaxation will help to control the body's response to perceived tension and anxiety. Deep breath relaxation is able to reduce oxygen consumption, respiratory frequency, heart frequency, metabolism, muscle tension and also blood pressure so it will be beneficial for people with hypertension. (Anggraini, 2020). Deep breath relaxation has a good effect on lowering blood pressure (Nababan, 2020).

Progressive muscle relaxation is a systematic relaxation that is useful for provide a relaxed state. Progressive muscle relaxation will utilise exercises on skeletal muscles by tensing and relaxing so that the muscles become relaxed and can be used as a treatment to lower blood pressure in people with hypertension. (Norma & Supriatna, 2019). Progressive muscle relaxation (PMR) can help in lowering or controlling blood pressure (Azizah et al., 2021). Health education or education is needed to provide an understanding that controlling hypertension is important to prevent more severe complications. The management of hypertension needs to be done in order to reduce the risk of blood pressure rise and as a treatment strategy for hypertension (Hasanah et al., 2022).

The mechanism for carrying out deep breathing relaxation therapy on the respiratory system is by inhaling and exhaling with a breathing frequency of 6 to 10 times per minute. Meanwhile, progressive muscle relaxation is performed one to two times per day, with each session lasting 15 minutes, over the course of one to two weeks. During the exercise, muscles are tensed for 5 to 7 seconds and then relaxed for 10 to 20 seconds (Masnina & Setyawan, 2018). A combination of health education and stress management interventions such as progressive muscle relaxation and deep breathing relaxation can be an alternative for people to help stabilize blood pressure.

Progressive muscle relaxation (PMR) and deep breathing relaxation is one of the relaxation methods that is quite efficient, easy to do, has no side effects, and can make the mind calmer so that the body will feel more relaxed. Several previous studies have proven that progressive muscle relaxation and deep breath relaxation are able to lower blood pressure in people with hypertension (Amelia, 2019). The results of the t-test on blood pressure measurements showed a P value of <0.05 (0.000). There is a change in systolic and diastolic blood pressure before and after receiving a combination of education and stress management interventions, including progressive muscle relaxation and deep breathing exercises.

For future research, it is essential to assess other potential factors contributing to unstable blood pressure. Additionally, further investigation is needed into how individuals with hypertension perceive their fluctuating blood pressure and their strategies for maintaining their health. A limitation of this study is the small sample size of respondents, suggesting that future research should involve a larger participant number.

Conclusions:

The conclusion of this study is that the combination of education and stress management in individuals with hypertension influences their blood pressure. There was a notable decrease in systolic and diastolic blood pressure among respondents with hypertension after undergoing therapy compared to before. This finding is

reinforced by respondents' motivation to engage in health education and stress management techniques, such as deep breathing relaxation and progressive muscle relaxation interventions. Additionally, respondents showed enthusiasm for learning and implementing these techniques as a form of therapy to lower their blood pressure

Acknowledgement:

We thanks to the chairman of STIKes Adi Husada and his staff. We also thanks to the policy makers of Bulak Banteng area, Bubutan Village, RT.04/RW.07, Surabaya, East Java on December 9 - 15, 2022, the research team and fellow lecturers at STIKes Adi Husada and participants in this study.

References:

- Amelia, D. (2019). Pengaruh Pemberian Teknik Relaksasi Otot Progresif Terhadap Penurunan Tekanan Darah Hipertensi Pada Lansia Di Posyandu Akcaya. *Skripsi, Universitas Muhammadiyah Pontianak*. <http://repository.unmuhpnk.ac.id/id/eprint/1057>
- Amin, M., & Puspitasari, F. (2013). Hubungan Antara Kadar Glukosa Darah Dengan Tekanan Darah Pada Lansia Di UPT PSTW Bondowoso. *Jurnal Kesehatan Dr. Soebandi*, 4(2), 241–249.
- Anggraini, Y. (2020). Efektifitas Teknik Relaksasi Nafas Dalam Terhadap Tekanan Darah Pada Pasien Hipertensi di Jakarta. *JKFT: Universitas Muhammadiyah Tanggerang*, 5(1), 41–47.
- Azizah, C. O., Hasanah, U., Pakarti, A. T., Dharma, A. K., & Metro, W. (2021). Penerapan Teknik Relaksasi Otot Progresif Terhadap Tekanan Darah Pasien Hipertensi Implementation of Progressive Muscle Relaxation Techniques To Blood Pressure of Hypertension Patients. *Jurnal Cendikia Muda*, 1(4), 502–511.
- Baltazar, M., Västfjäll, D., Asutay, E., Koppel, L., & Saarikallio, S. (2019). Is it me or the music? Stress reduction and the role of regulation strategies and music. *Music and Science*, 2, 1–16. <https://doi.org/10.1177/2059204319844161>
- Dewi, C. F., Demang, F. Y., Suryati, Y., Djerubu, D., & Banul, M. S. (2019). Hubungan Antara Psychological Distress Dengan Hipertensi Pada Masyarakat Di Kabupaten Manggarai. *Journal of Chemical Information and Modeling*, 15(2), 9–25.
- Hasanah, U., Sari, S. A., Ludiana, Inayati, A., & Supardi. (2022). Pendidikan Kesehatan Tentang Pencegahan Dan Perawatan Dengan Pengaturan Diet Pada Pasien Hipertensi. *Seandanan: Jurnal Pengabdian Pada Masyarakat*, 2(1), 32–34. <https://doi.org/10.23960/seandanan.v2i1.24>
- Kemendes RI. (2019). Laporan Nasional RISKESDAS 2018. In *Badan Penelitian dan Pengembangan Kesehatan* (p. 674). Lembaga Penerbit Balitbangkes. http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf
- Kemendes RI. (2021). *Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MENKES/4634/2021 tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana Hipertensi Dewasa*.
- Masnina, R., & Setyawan, A. B. (2018). Terapi Relaksasi Nafas Mempengaruhi Penurunan Tekanan Darah Pada Pasien Lansia Dengan Hipertensi. *Jurnal Ilmu Dan Teknologi Kesehatan*, 5(2), 119–128.
- Musradinur. (2016). Stres Dan Cara Mengatasinya Dalam Perspektif Psikologi. *JURNAL EDUKASI: Jurnal Bimbingan Konseling*, 2(2), 183. <https://doi.org/10.22373/je.v2i2.815>
- Nababan, T. (2020). Tekanan Darah Pada Penderita Hipertensi. *Kesehatan*, 4(1), 80–86.
- Norma, N., & Supriatna, A. (2019). Pengaruh Teknik Relaksasi Otot Progresif Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi Di Puskesmas Mariat Kabupaten Sorong. *Nursing Arts*, 12(1), 31–35. <https://doi.org/10.36741/jna.v12i1.71>
- Nuraini, B. (2015). Risk Factors of Hypertension. *J Majority*, 4(5), 10–19.
- P2PTM Kemenkes RI. (2019). *Faktor risiko penyebab Hipertensi*. <https://p2ptm.kemkes.go.id/infographic->

p2ptm/hipertensi-penyakit-jantung-%09dan-pembuluh-darah/faktor-risiko-penyebab-hipertensi

- Pebrisiana, P., Tambunan, L. N., & Baringbing, E. P. (2022). Hubungan Karakteristik dengan Kejadian Hipertensi pada Pasien Rawat Jalan di RSUD Dr. Doris Sylvanus Provinsi Kalimantan Tengah. *Jurnal Surya Medika*, 8(3), 176–186. <https://doi.org/10.33084/jsm.v8i3.4511>
- Rahmanti, A., & Pamungkas, K. A. S. (2022). Penerapan Kompres Hangat pada Leher terhadap penurunan skala nyeri kepala pada pasien hipertensi. *Jurnal Fisioterapi Dan Ilmu Kesehatan Sisthana*, 4(2), 36–43.
- Sari, Y. R., & Priyantari, W. (2019). Pengaruh pendidikan kesehatan tentang hipertensi terhadap pengetahuan lansia dalam mencegah hipertensi di panti wherdha budhi dharma Yogyakarta. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699.
- Sriyono, S., Nursalam, N., & Hamzah, H. (2020). Islamic-based family resilience training to increase family resilience, coping, and disaster preparedness. *Systematic Reviews in Pharmacy*, 11(6), 1148–1151. <https://doi.org/10.31838/srp.2020.6.167>
- Wulandari, E. (2019). *Gambaran Tingkat Pengetahuan Penderita Hipertensi Tentang Kualitas Hidup*.
- Yulianti, T. (2017). Asuhan Keperawatan pada Ny. S dengan Congestive Heart Failure di RSUD Dr. R. Goeteng Taroenadibrata Purbalingga. *Universitas Muhammadiyah Purwokerto2*, 18, 8–23. [http://repository.ump.ac.id/3981/3/SefrizalArifin BAB II.pdf](http://repository.ump.ac.id/3981/3/SefrizalArifin%20BAB%20II.pdf)