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Original Research

ANALYSIS OF THE APPLICATION OF DEEP BREATHING RELAXATION TECHNIQUES IN REDUCING BLOOD PRESSURE IN HYPERTENSION PATIENTS

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Abstract

Background: Untreated hypertension will cause various cardiovascular problems. The hypertension treatment can be done using two methods, namely pharmacological and non-pharmacological. One way of non-pharmacological management is deep breathing relaxation therapy which focuses on breathing activity.
Objective: This paper aims to see an analysis of the application of deep breathing relaxation to changes in blood pressure in hypertensive patients based on empirical studies in the last ten years
Methods: The design of this research is a literature review of five journals that match the topic using the PICO framework method. The secondary data were taken from the Google Scholar database over the last ten years using an experimental design.

Results: The results show that deep breathing relaxation techniques influence reducing blood pressure in hypertensive patients. Deep breathing relaxation is very effective and easy for hypertension sufferers to decrease blood pressure.
Conclusion: Deep breathing relaxation is effective as a non-pharmacological therapy to reduce blood pressure in hypertensive patients.

Keywords: Deep Breath Relaxation, Hypertension, Lowering Blood Pressure

Introduction

Hypertension or high blood pressure can be defined as systolic pressure (blood pressure when the heart contracts) > 140 mmHg and diastolic pressure (blood pressure when it expands) > 90 mmHg obtained through two consecutive measurements to confirm the diagnosis of hypertension (1)

Until now, it is not decided how many causes of hypertension attack the community and is the cause of death and morbidity, which is usually called the silent killer in Indonesia
(Priyo, Margono & Hidayah, 2018). At the age of >45 years, Blood pressure should be paid more attention to because the risk of hypertension increases with age (2).

The World Health Research Agency WHO in 2012 showed that around the world around 982 million people or 26.4% of the world's inhabitants suffer from hypertension, with a ratio of 26.6% of men and 26.1% of women. This number will likely increase to 29.2% in 2025 (3). According to the Ministry of Health 2015 in Indonesia, the number of hypertension sufferers reached 32% in 2015 with an age range of over 25 years.

According to Riskesdas (2018), it was found that the prevalence of hypertension in Indonesia obtained through measurements ≥ 18 years of age was 34.1%, the highest in East Kalimantan (39.8%).

The prevalence of hypertension in the Acehnese population based on male gender is 31.3%, and female is 36.9%. Based on age, the number of hypertension sufferers aged 18-24 years is 13.2%, 25-34 years is 20.1%, 35-44 years is 31.6%, 45-54 years is 45.3%, 55-56 years as much as 55.2%, 65-74 years as much as 63.2%, and at age 75 years and over as much as 69.5% (4)

To prevent the further consequences of hypertension, treatment and care are needed to reduce the symptoms of hypertension correctly and appropriately. The hypertension treatment can be done pharmacologically and non-pharmacologically. Pharmacological treatment uses drugs to help lower and stabilize blood pressure. The use of medical drugs not only has beneficial effects but also has side effects such as bronchospasm when using beta blockers. The use of medical medications not only has beneficial effects but also has side effects such as bronchospasm when using beta blockers (5)

Non-pharmacological treatment is a form of treatment service that uses methods, tools, or materials that are used as an alternative or complement to certain medical treatments (Kozier, Erb, Berman, & Synder dalam Afrila, Dewi, dan Erwin). Various methods can be used to control or reduce blood pressure, both pharmacologically and non-pharmacologically. pharmacologically by using drugs and non-pharmacologically it can also be done by improving lifestyle, not smoking, exercising diligently and being able to manage stress (6). The stress that appears can influence the occurrence of an increase in blood pressure. This is related to an increase in hormones in the body, so preventing this can be done by administering therapy (7)

One non-pharmacological therapy that can lower blood pressure is deep breathing relaxation therapy (8). Research results (3) showed that blood pressure in hypertension at the Bendosari Community Health Center, Sukoharjo Regency before deep breathing relaxation technique therapy was an average systolic blood pressure of 177.33 mmHg and an average diastolic of 95.87 mmHg. In a case at the Bendosari Community Health Center, Sukoharjo Regency, blood pressure in hypertension after deep breathing relaxation technique therapy was carried out, namely an average systolic blood pressure of 173.20 mmHg and an average diastolic blood pressure of 90.57 mmHg. There was an effect of deep breathing relaxation technique therapy on reducing blood pressure in hypertensive patients at the Bendosari Community Health Center, Sukoharjo Regency.

Based on the above phenomenon, the author is interested in analyzing the application of deep breathing relaxation therapy in reducing blood pressure in hypertension patients**.**

Methods

Study Design

The strategy used to search for articles using the PICO framework*: Population/*Problem. The population or problem analyzed in this literature review is the population or problem in hypertensive patients. *The intervention* is a management action for individual or community cases. Giving decoction of bay leaves lowers blood pressure. *Compari*son means no other treatments are used as comparisons in this literature review. *Outcome*, the results or outcomes obtained in the research in this literature review were a decrease in blood pressure after being given deep breathing relaxation technique therapy

Samples/Participants

Researchers found journals that matched the 223 keywords. The research journals were then screened a total of 211 journals were excluded because they were published in 2010 and below and used languages other than English and Indonesian. Assessment of the feasibility of 13 journals, published journals, and journals that did not meet the inclusion criteria were excluded, resulting in 5 journals being reviewed.

Data Collection

The data in this research is secondary data taken from the Google Scholar database over the last ten years and uses an experimental design. So, five articles were reviewed.

Data Analysis

Data analysis in this research was carried out using the PICO method *(Population/Problem, Intervention, Comparison, Outcome)*

Results

This literature review was synthesized using a narrative method by grouping similar extracted data according to the results measured to answer the objectives. Research journals that meet the inclusion criteria are then collected and a journal summary is made including the name of the researcher, year of publication, title, research methods, and results as well as the database.

Table 1 List of articles resulting from disbursement

No	Name	Year	Vol	Title	Method	Results	Databases
1.	(9)	2019	Vol 6, no 1	The Effect of Deep Breathing Relaxation Techniques on Reducing Blood Pressure in Hypertensive Patients at Dr. Hospital. Soeratno Gemolong 2018	D: *pra expreriment* dan *one grup pretest posstest* S: 25 pasien V: hipertensi, tekanan darah, teknik relaksasi nafas dalam I: sphygmomanometer digital A: uji *paired t-test*	showed that from 25 hypertensive patients, the average pre-systolic blood pressure was 153.80 mmHg, pre-diastolic blood pressure was 94.40 mmHg, the standard deviation for pre-systole was 9.211, and pre-diastole was 10.206. The pre-systolic blood pressure results in hypertensive patients obtained the lowest value of 142 mmHg and the highest value of 170 mmHg. While the pre-diastolic blood pressure results in hypertensive patients obtained the lowest value of 77 mmHg and the highest value of 121 mmHg. From the interval estimation results, it can be concluded that it is 95% certain that the average pre-systolic blood pressure in hypertensive patients is 150.00 to 157.60, while pre-diastolic is 90.19 to 98.61 .	Google Scholar
2.	(10)	2017	Vol 6, no 2	The effect of deep breathing exercises on changes in blood pressure in patients with essential hypertension at the Putri Ayu Community Health Center, Jambi City	D: *pre-expreriment* S: 30 orang V: hipertensi, Teknik relaksasi nafas dalam I: *sphygmomanometer digital* dan stetoskop A: *paired t-test.*	The results of this study showed that the mean value of systolic blood pressure decreased from 158.00 mmHg to 131.00 mmHg. Meanwhile, the mean value of diastolic blood pressure decreased from 117.33 mmHg to 73.00 mmHg. From the table above, the mean and median values of systole in respondents before and after giving the deep breathing exercise intervention showed a significant decrease. The results of research conducted on 30 respondents suffering from essential hypertension at the Putri Ayu Community Health Center, Jambi City Before and after deep breathing exercise intervention for three days showed that the mean in systole was 27.00 mmHg, while the mean in diastole was 40.00 mmHg.	Google Scholar
3.	(3)	2019	Vol 6, No 1	Reducing blood pressure using deep breathing techniques in hypertensive patients at the Bendosari Community Health Center, Sukoharjo Regency	D: *Pra Eksperimental* S: 30 orang V: Teknik Nafas Dalam, Penurunan Tekanan Darah, Hipertensi I: *sphygmomanometer* A: uji *paired t-test*	Statistical test results using a paired t-test on systolic blood pressure obtained a value of p= 0.000, and diastolic blood pressure obtained a value of p= 0.000, meaning that at an alpha of 5%, there was a significant difference between the average blood pressure in hypertensive patients before and after the procedure deep breathing technique therapy, namely Ho is rejected and Ha is accepted, which means there is an effect of deep breathing technique on reducing blood pressure in hypertensive patients at the Bendosari Community Health Center, Sukoharjo Regency .	Google Scholar
4.	(11)	2019	Vol 3, no 1	The effectiveness of deep breathing relaxation techniques in reducing blood pressure	D: *quasy expreriment desaign* S: 34 orang V: Hipertensi, Tekanan Darah, Relaksasi Nafas Dalam	The results showed a decrease in diastolic blood pressure values before and after being given the deep breathing relaxation technique intervention (deep breathing) with a mean before the intervention of 103.82 and after being	Google Scholar

				in hypertensive patients at the Cibatu Community Health Center, Garut Regency	I: *sphygmomanometer* A: *paired T-test*	given the intervention of 89.41. The difference in systolic blood pressure values was 14.412 with a standard deviation of 5,040. The statistical test results obtained a p-value of 0.000 (p<0.05), which means there is a significant difference between the diastolic blood pressure values before and after the deep breathing relaxation technique intervention.	
5.	(8)	2016	Vol IX, no 1	Deep Breathing Relaxation Therapy Lowers Blood Pressure in Hypertension Patients	D: *quasy expreriment desaign* S: 20 respondents V: relaksasi, nafas dalam, tekanan darah, hipertensi I: *sphygmomanometer* A: *paired sample T-test*	The results of this study showed that the average value of systolic blood pressure after being given deep breathing relaxation therapy decreased by 18.46 mmHg and the average diastolic blood pressure decreased by 6.54 mmHg. In this study, the confidence level taken was 95% with α 5% (0.05). Based on statistical analysis using paired sample T-test, the systolic blood pressure ρvalue was 0.001 and the diastolic blood pressure ρvalue was 0.001. This means that the ρvalue is smaller than the α value of 5% (0.05), so H0 is rejected, which means there is an effect of deep breathing relaxation therapy on reducing blood pressure in hypertensive patients in Kesesi Village, Kesesi District, Pekalongan Regency.	Google Scholar

According Cahyati (2017). In the title, The Effect of Deep Breathing Relaxation Techniques on reducing blood pressure in hypertensive patients at Dr. Hospital. Soeratno gemolong in 2018. With a research design using pre-experiment and one group pretest-posttest, the population used was accidental sampling. The dependent variables in this study were hypertension, blood pressure, and deep breathing relaxation techniques. The instrument used in this research was a digital sphygmomanometer. Data analysis in this study used Univariate (paired t-test). The results of this study showed that of 25 hypertensive patients, the average pre-systolic blood pressure was 153.80 mmHg pre-diastolic blood pressure was 94.40 mmHg and the standard deviation for pre-systole was 9.211 and pre-diastole was 10.206. The pre-systolic blood pressure results in hypertensive patients obtained the lowest value of 142 mmHg and the highest value of 170 mmHg. The pre-diastolic blood pressure results in hypertensive patients obtained the lowest value of 77 mmHg and the highest value of 121 mmHg. From the interval estimation results, it can be concluded that it is 95% believed that the average pre-systole blood pressure in hypertensive patients is 150.00 to 157.60 while pre-diastole is 90.19 to 98.61(10).

According to (10). In the title The effect of deep breathing exercises on changes in blood pressure in sufferers of essential hypertension at the Putri Ayu Community Health Center, Jambi City, with a research design using pre-experiment, the population used was purposive sampling. The dependent variable in this research is sport, deep breathing, essential hypertension, and blood pressure. Data analysis in this study used Univariate and Bivariate (Paired T-Test). The results of this study showed that the mean value of systolic blood pressure decreased from 158.00 mmHg to 131.00 mmHg.

Meanwhile, the average diastolic blood pressure value decreased from 117.33 mmHg to 73.00 mmHg. From the table above, respondents' mean and median systole values before and after being given the deep breathing exercise intervention showed a significant decrease. The results of research conducted on 30 respondents suffering from essential hypertension at the Putri Ayu Community Health Center, Jambi City before and after deep breathing exercise intervention for 3 days showed a mean systole of 27.00 mmHg, while the mean diastole was 40.00 mmHg.

According to (12). In the title Reducing blood pressure using deep breathing techniques in hypertensive patients at the Bendosari Community Health Center, Sukoharjo Regency. With a research design using Pre-Experimental. The population used was Purposive Sampling. The dependent variables in this study are the Deep Breathing Technique, Lowering Blood Pressure, and Hypertension. The instrument used is a sphygmomanometer. Data analysis in this study used Univariate and Bivariate (Paired T-Test). From the results of statistical tests using a paired t-test on systolic blood pressure, the value of p = 0.000 obtained for diastolic blood pressure, meaning that at an alpha of 5%, there was a significant difference between the average blood pressure in hypertensive patients before and after therapeutic action of deep breathing technique, namely Ho is rejected and Ha is accepted, which means there is an effect of deep breathing technique on reducing blood pressure in hypertensive patients at the Bendosari Health Center, Sukoharjo Regency.

According to (11). The effectiveness of deep breathing relaxation techniques in reducing blood pressure in hypertensive patients at the Cibatu community health center, Garut district. The research design uses quasi-experimental. The population used was accidental sampling. The dependent variables in this study are hypertension, blood pressure, and deep breathing relaxation. The data analysis used Univariate and Bivariate (Paired T-Test). The results showed a decrease in diastolic blood pressure values before and after being given the deep breathing relaxation technique intervention (deep breathing) by a mean before the intervention of 103.82 and after the intervention of 89.41. The difference in systolic blood pressure values was 14.412 with a standard deviation of 5,040. The statistical test results obtained a p-value of 0.000 ($p<0.05$), which means there is a significant difference between the diastolic blood pressure values before and after the deep breathing relaxation technique intervention.

According to (8). In the title Deep Breath Relaxation Therapy Lowers Blood Pressure in Hypertension Patients with a Research Design using Quasi-experiment. The population used was total purposive sampling. The dependent variables in this study were relaxation, deep breathing, blood pressure, and hypertension. The data analysis in this study used a paired sample T-test. The results of this study showed that the average value of systolic blood pressure after being given deep breathing relaxation therapy decreased to 18.46 mmHg, and the average diastolic blood pressure decreased to 6.54 mmHg. The confidence level was 95% with α 5% (0.05). Based on statistical analysis using paired sample T-test, the systolic blood pressure ρ-value was 0.001, and the diastolic blood pressure ρvalue was 0.001. It means that the ρvalue is smaller than the α value of 5% (0.05), so H0 is rejected, which means there is an effect of deep breathing relaxation therapy on reducing blood pressure in hypertensive patients in Kesesi Village, Kesesi District, Pekalongan Regency.

Discussion

Based on the five journals that have been analyzed, show that there is an effect of deep breathing relaxation on reducing blood pressure in hypertensive patients. This is because deep breathing relaxation therapy can reduce blood pressure, both systolic and diastolic pressure. The work of this therapy can provide cardiopulmonary stretching. Stretching stimulation in the aortic arch and carotid sinus is received and transmitted by the vagus nerve to the medulla oblongata (cardiovascular regulation center), and then the baroreceptor reflex increases. Afferent impulses from baroreceptors reach the heart center which will stimulate the parasympathetic nerves and inhibit the sympathetic center, resulting in systemic vasodilation, decreased heart rate, and contractions (11)

According to the researchers' assumptions based on the analysis carried out in the five journals, the decrease in blood pressure in hypertension sufferers depends on the age of patients because as age increases, the elasticity of blood vessels decreases. This is supported by research by (13), which states that blood pressure increases with age. In general, hypertension appears at the age of 30-50 years. The incidence rate increases at the age of 50-60 years. This is caused by physical decline and weakened heart strength. Age also affects baroreceptors in blood pressure measurement. Age also affects the elasticity of the arteries so that the pressure in the blood vessels increases.

From the results of the analysis carried out by researchers from the first and second journals, it was found that in the first journal, relaxation was carried out for 30 days for 7 times per minute, and for 25 hypertensive patients the average systolic blood pressure before the deep breathing relaxation technique was carried out was 153.80 mmHg. and the average diastolic blood pressure before the deep breathing relaxation technique was carried out was 94.40 mmHg. Meanwhile, the average systolic blood pressure after the deep breathing relaxation technique was carried out was 84.80 mmHg. This shows a difference in systolic and diastolic blood pressure in hypertensive patients after and before deep breathing relaxation techniques.

From the results of the analysis carried out by researchers from the first and second journals, it was found that in the first journal, relaxation was carried out for 30 days for 7 times per minute, and for 25 hypertensive patients the average systolic blood pressure before the deep breathing relaxation technique was carried out was 153.80 mmHg. and the average diastolic blood pressure before the deep breathing relaxation technique was carried out was 94.40 mmHg. Meanwhile, the average systolic blood pressure after the deep breathing relaxation technique was carried out was 84.80 mmHg. This shows a difference in systolic and diastolic blood pressure in hypertensive patients after and before deep breathing relaxation techniques.

Then from the results of the analysis of journals three, four, and five, it was found that the third journal only conducted research with the intervention group, in the third journal it was also explained that the reduction in blood pressure for each respondent had different results due to the factors that influenced it.

Meanwhile, in the fourth journal, a statistical analysis intervention was carried out using a paired sample T-test, and the p-value for systolic blood pressure was 0.001 ($p<\alpha=0.05$). This shows that deep breathing relaxation therapy is effective in hypertensive patients. According to the author's assumption, deep breathing relaxation carried out regularly will be able to maintain the level of blood pressure that it should be in patients suffering from hypertension if bad habits such as consuming foods containing high levels of salt and smoking are reduced, then this can be accompanied by carrying out activities. like light exercise.

Conclusion

The application of deep breathing relaxation is effective as a non-pharmacological therapy for lowering blood pressure in hypertensive patients because this therapy is a therapy that works based on the sympathetic and parasympathetic nervous systems, thus producing physiological responses such as relaxing breathing. The results are comparable to the theory that deep breathing relaxation can reduce blood pressure in hypertensive patients.

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References

1. Nur Dina Kamelia, Anita Dwi Ariyani, Rudiyanto R. Terapi Akupresur pada Tekanan Darah Penderita Hipertensi: Studi Literatur. Nurs Inf J. 2021;1(1):18–24.
2. Widiyanto A. Faktor yang mempengaruhi kejadian hipertensi pra lansia. Fakt Yang Mempengaruhi Kejadian Hipertens Pra Lansia. 2020;2(12):159–67.
3. Hastuti RT, Rini Tri Hastuti I. PENURUNAN TEKANAN DARAH DENGAN MENGGUNAKAN TEHNIK NAFAS DALAM (DEEP BREATHING) PADA PASIEN HIPERTENSI DI PUSKESMAS

BENDOSARI KABUPATEN SUKOHARJO Rini Tri Hastuti, Insiyah. 2005;130–5.
4. Riskesdas. Hasil Utama Riskesdas 2018. 2018;6–7.
5. Afrila N, Dewi AP. EFEKTIFITAS KOMBINASI TERAPI SLOW STROKE BACK MASSAGE DAN AKUPRESUR TERHADAP PENURUNAN TEKANAN DARAH PADA PENDERITA HIPERTENSI. JOM. 2015;17(3):56–64.
6. Dewiyulian D. Cerdik Dalam Menurunkan Tekanan Darah Pada Penderita Hipertensi. E-Jurnal Med Udayana. 2024;13(3):20.
7. Pertiwi ER, Juwita R. Keefektifitasan Aromaterapi Lavender Dalam Menurunkan Stres Pada Mahasiswa Keperawatan Tingkat Akhir. J Kesehat Hesti Wira Sakti. 2023;11(01):82–90.
8. Hartanti RD. Terapi Relaksasi Napas dalam Menurunkan Tekanan Darah Pasien Hipertensi. Jurnal Ilmiah Kesehatan (JIK), 9(1). Maret 2016 ISSN 1978-3167. J Ilm Kesehat. 2016;IX(1).
9. Wijayanti S, Setiyo WE. Pengaruh Teknik Relaksasi Nafas Dalam Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi Di RSUD dr. LOEKMONO HADI KUDUS. J Chem Inf Model. 2017;53(9):287.
10. Cahyanti L, Febriyanto. Pengaruh Teknik Relaksasi Nafas Dalam Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi Di Rsud Dr. Soeratno Gemolong Tahun 2018. 2017;6(2).
11. Lutfi M, Fauziyah J L, Abdillah A. Hubungan antara diet tinggi serat dengan derajat hipertensi pada lansia di wilayah kerja Puskesmas Kecamatan Bangkalan Komunitas dan Keluarga , STIKes Ngudia Husada Madura , Bangkalan. J Ilm Ilmu Keperawatan. 2019;
12. Lestari TRP. UPAYA MENGHASILKAN TENAGA PERAWAT BERKUALITAS Nursing Education : Effort to Produce Quality Nurses Personnel. Aspirasi. 2014;5:1–10.
13. Hamarno R, Keperawatan FI, Studi P, Ilmu M, Keperawatan K, Bedah M. UNIVERSITAS INDONESIA PENGARUH LATIHAN RELAKSASI OTOT PROGRESIF KLIEN HIPERTENSI PRIMER. 2010.