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## Research Article

# The Effect of Deep Breathing Relaxation on Changes of Blood Pressure on Hypertention Patients

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### Abstract

**Aims:** Hypertension is an increase in blood pressure above normal. The intended upgrade is if enhancement pressure systolic > 140 mmHg and diastolic > 90mmHg in 2 measurements measured in state calm or rest with hose 5 minutes time. If the blood pressure permanent for a period of time, can cause damage to organs such as kidneys, heart, and brain. Deep breathing relaxation is a non - pharmacologic therapy, It's capable of lighten up or lowering the blood pressure so that need to be conducted independently at home besides pharmacology therapy like taking hypertension drugs. The purpose of this study was to analyze the effect of deep breathing techniques on changes in blood pressure in hypertensive patients.

**Method:** The Method of this study were *pre-experimental design and one group pretest-posttest design with purposive sampling technique.*

**Result:** The results of this study shows that there is an effect of deep breathing techniques to lower blood pressure with P value = 0.000 or < 0.05.

**Conclusion:** The conclusion shows that there is an effect of deep breathing techniques to lower blood pressure. Nurses suggest to encourage the hypertention patients to do the deep breathing exercises on their own.

### Keywords:

Deep breathing, hypertension, relaxation

## INTRODUCTION

The prevalence of hypertension remains high in Indonesia. An increase in systolic blood pressure > 140 mmHg and diastolic blood pressure > 90 mmHg in two consecutive five-minute measurements with the patient calm or resting. Continuous (consistent) high blood pressure can harm the kidneys (kidney failure), the heart (coronary artery infection), and the brain (1)

In Indonesia, the prevalence of people who suffer from hypertension keeps rising. According to reports from the Republic of Indonesia's Manpower Health Office, there were 80,615 instances in 2015. Hypertension has a CFR (Casualty Rate) of

63.2% and is one of the leading causes of death in Indonesia, ranking third. DKI Jakarta Province has the highest prevalence of hypertension at 13.4%, followed by South Kalimantan at 13.3% and West Sulawesi at 12.3% (2)

Management of hypertension is divided into two types: pharmacological management and non-pharmacological management. Therapy pharmacology is the use of drugs to lower blood pressure, such as diuretics, blockers, and calcium channel blockers, and vasodilators (3) The second type of management therapy is non-pharmacological therapy, which is treatment delivered through straight forward techniques like deep breathing, meditation, acupuncture, and others (4)

An independent non-pharmacological nursing intervention called deep breathing relaxation seeks to lower blood pressure and anxiety in Indonesian patients with primary hypertension. In hypertensive individuals with anxiety-related hypertension, physiological breath relaxation can lower blood pressure; the sympathetic nervous system is responsible for raising blood pressure. Deep breathing exercises can help hypertension individuals feel more at peace and at ease with themselves, which will lower their blood pressure. (5,6)

**METHODS**

Research design is *pre - experimental design and one group pre-test and post- test design*. Population cover all the object under study.(7) As for the study's population, it consists of 86 patients with hypertension who were treated at the CCI Cikini Hospital between November 22, 2021, and December 6, 2021.

The sample is the subject of the study and is thought to represent the entire population.(7) There were 30 samples tested. The sampling procedure used in this study is purpose sampling, which meets both inclusive and exclusive criteria.(8) The study took place in CCI Cikini Hospital's rooms L and M2. The inclusion criteria were willing to be, systolic blood pressure greater than 140 mmHg, a medical diagnosis of hypertension, and no communication difficulties. While the exclusive criteria included patients who

were unwilling to be respondents, patients who had communication impairments, and patients who had low blood pressure.

Deep breath observation sheets and SOPs were utilized as data collecting equipment. The Health Research Ethics committee of the Faculty of Health Sciences, Immanuel Bandung, approved this study and pronounced it eligible with number 204/KEPK/STIKI-B/X/2021. The reason why this research was conducted was to see if deep breathing relaxation may affect the development of changes in blood pressure in hypertensive patients. Based On National Safety Council (2013) explain that the procedure of deep breathing relaxation techniques are:

1. The first phase asks the patient to sit or sleep relaxed and ask the patient to inhale through the nose, relax the body and concentrate
  2. The second phase give a pause before removing from the lungs
  3. The third phase is the exhalation process
  4. The fourth phase give a pause before doing the next breath
- Do this step in 15 minutes

The hypotheses in this study are:

H 1: Deep breathing relaxation techniques have an influence on blood pressure fluctuations in hypertensive individuals.

H2 : Deep breathing relaxation techniques have no influence on blood pressure in hypertensive patients.

**RESULTS**

**1. Univariate Analysis**

a. Distribution pressure blood systolic and diastolic Pre and PostTable 1

Variable	mean		min		Max		SE		SD	
	Before	After	Before	After	Before	After	Before	After	Before	After
Systoli c	151.33	136	140	120	160	150	1.333	1,702	7.303	9.322
diastole c	104	94.33	90	90	120	110	7.701	1.143	1,406	6.261

According to table 1, the pre-test respondents average systolic blood pressure was 151.33 and the diastolic blood pressure was 104. As the results, the average systolic blood pressure of the responders following the test was 136, and the average diastolic blood pressure was 94,33.

## 2. Bivariate Analysis

### a. Pressure results blood diastolic -P Before and After Table 3

Pressure blood diastolic	Means	p-value
Before	104	0.000
After	94.33	

According to table 3, the results Wilcoxon test statistic obtained a significance value of  $P = 0.000$  or  $< 0.05$ .

## DISCUSSION

Systolic blood pressure occurs when the heart contracts or when blood pumped from the heart leaves the body. Diastolic blood pressure occurs while the heart is at rest. The activity of pumping the heart creates pressing pressure in the blood vessels. Every time the heart beats, blood is pumped from the heart into a vein, where it is subsequently distributed throughout the body. This system relies on pressure to keep blood arteries open.(9)

Husna & Johan (10), stated that existence difference pressure blood systolic and diastolic in the elderly at Tresna Werdha Social Rehabilitation Saban Nan Aluih ring Padang Pariaman Regency moment before given deep breathing exercises.(10) Pressure blood systolic 192.38 mmHg and pressure blood diastolic 104.29 mmHg. Minimum value for pressure blood systolic is 160 mmHg and diastolic is 80 mm Hg. On the contrary score maximum pressure blood systolic is 240 mmHg and diastolic is 120 mmHg.

Deep breathing relaxation is an activity performed and learned to control breathing that involves the cerebral brain. Deep breaths are relaxed to achieve a respiratory rate of 6-10 breaths per minute from the preceding breath of roughly 16-19 breaths

per minute. This deep breathing relaxation can boost the creation of nitric oxide, which also penetrates the lungs and midbrain, relaxing people and decreasing high blood pressure. Deep breathing relaxation is inhaling deeply until you achieve maximal inhalation, then exhaling through your mouth at a hissing pace of 6-10 times per minute.

Another benefits that can be achieved are increased lung ventilation, blood oxygenation, and reduced pain intensity. Adults and the elderly can practice deep breathing as well.(11) Even in individuals receiving traditional pharmacological therapy, slow and deep breathing can reduce blood pressure in patients with critical and isolated systolic hypertension.

Deep breathing relaxation has a part in boosting the parasympathetic nervous system as well as the autonomic and central nervous systems. Blood pressure is influenced by the autonomic nervous system by lung stretch receptors and arterial baroreceptors. (12) During times of rest, the parasympathetic nervous system controls the respiratory and cardiovascular systems. Deep breathing that is relaxed can drop blood pressure by relaxing receptors, increasing vagal tone, and decreasing sympathetic nerve activity. (13) According to supporting research by Gayatri (2015), who studied patients from Atambua, East Nusa Tenggara, the deep breathing relaxation approach was successful in lowering blood pressure in hypertension

patients, with a p-value = 0.002. (14) Additional study is cited as evidence by Yanti (2020) can lower blood pressure by 0.000 for systolic and 0.006 for diastolic values from 30 respondents, respectively.

Deep breathing exercises can reduce sympathetic activity, stimulate stretch receptors, and boost vagal tone. Thus, blood pressure and heart rate are reduced. (15,16) Shallow breathing causes the Vulture-Breuer response and baroreflex sensitivity to become more sensitive, which lowers heart rate and blood pressure. (17,18)

## RECOMMENDATION

The recommendations are to socialize and teach deep breathing exercise techniques to hypertensive patients on a regular basis, and to encourage all patients to do deep breathing exercises on their own when suffering from hypertension.

## REFERENCES

1. Ministry of Health. (2014, May 17). *Information: Hypertension*. 2015 shows that around 1.13 billion people in the world suffer from hypertension.
2. Ministry of Health. (2019, May 17). *Hypertension is the most common disease in the community*. From <https://www.kemkes.go.id/article/view/19051700002/hypertensi-disease-most-many-diidap-Masyarakat.html>
3. Smeltzer, S., & Bare. (2016). Textbook of Medical Surgical Nursing. *Philadelphia: Lippincott Smeltzer*.
4. Sudoyo AW, SB (2015). Textbook of Internal Medicine, Edition 5. *Interna publishing*, 1035-1039.
5. Sahar, RH, Azwar, R., Musdalipa, & Kasmawati. (2018). The Effectiveness of Benson Relaxation and Deep Breathing Against Changes in Anxiety Levels in Elderly In Pstw Gau Mabaji Gowa. *BIMIKI | Volume 6 No. 1*, 20-32.
6. Anggraini, Y. (2020). The Effectiveness of Deep Breathing Relaxation Techniques Against Blood Pressure in Hypertensive Patients in Jakarta. *JKFT Journal: Universitas Muhammadiyah Tangerang*, 41-47.
7. Notoatmojo. (2012). *Qualitative Quantitative Research Methods*. Bandung: Alfabeta.
8. Nuraini, B. (2015). Hypertension Risk Factors. *J MAJORITY Volume 4 Number 5*, 10-19.
9. Sugiyono. (2012). *Research methods*. Bandung: Alfabeta.
10. Bianti. (2015) Risk Factors of Hypertension. *J MAJORITY*, Volume 4, Nomor 5.
11. Husna, N., & Johan, T. (2020). The Effect of Slow Deep Breathing Exercise on Blood Pressure in the Elderly in Pstw Sabai Nan Aluih, Sicincin Padang Pariaman. *Proceedings of the Syedza Sainika International Conference*, 25-33.
12. Sangthong, B., Jones, C., Pachirat, O., & Jones, DA (2016). Breathing Training for Elderly Patients with Controlled Isolated Systolic Hypertension. *Medicine and Science in Sports and Exercise*.
13. Joseph CN, Porta C, Casucci G, et al. (2005). Slow Breathing Increases Arterial Baroreflex Sensitivity and Lowers Blood Pressure in Essential Hypertension. *Hypertension*, 714-718.
14. Misra, S., Smith, J., Wareg, N., & Hodges, K. (2018). Take a Deep Breath: Randomized Control Trial of Pranayama Breathing in Uncontrolled Hypertension. *Advances in Integrative Medicine*.
15. Gayatri, D. (2015). The Effectiveness of Slow Deep Breathing in Lowering Blood Pressure in Primary Hypertension: A Randomized Controlled Trial in Patients In Atambua, East Nusa Tenggara. *PROBLEM: International Journal of Science and Technology*. 1, 1-14.
16. Fitriyah, R., Fernandez, GV, Samudera, WS, & Arifin, H. (2019). Deep Breathing Relaxation To Lower Blood Pressure In Patients With Hypertension. *Journal of Ners Vol 14, No. 3*, 141-145.

16. Jones, C., Sangthong, B., & Pachirat, O. (2010). Inspiratory load enhances the antihypertensive effect of home-based training with slow deep breathing: a randomized trial. *Journal of Physiotherapy*, 179-186.
17. Murwidi, IC, & Muhlis, R. (2021). Combination of Deep Breathing Relaxation with Acupressure Therapy in Lowering Blood Pressure in Hypertensive Patients. *HIJP*, 30-39.
18. Wardani, DW (2015). THE EFFECT OF DEPARTMENT OF BREATH RELAXATION TECHNIQUES AS ADDITIONAL THERAPY ON BLOOD PRESSURE REDUCTION IN LEVEL 1 HYPERTENSION PATIENTS (Case Study in Outpatient Clinic Internal Medicine Specialist Hospital Tugurejo Semarang). *Under the Graduate thesis*.

