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## The Effect of Slow Deep Breathing Therapy on Reducing Blood Pressure in Hypertension Patients in Luwihaji Village Based on Nola J. Pender's Theory

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### Abstract

*Hypertension is a major non-communicable disease in Luwihaji Village due to limited access to health care and low knowledge of non-pharmacological therapy. This study aims to examine the effect of slow deep breathing therapy on lowering blood pressure based on Nola J. Pender's Health Promotion Model theory. Using a quasi-experimental pretest-posttest design with a control group, a population of 40 hypertension sufferers was sampled with 30 respondents (15 intervention, 15 control) via simple random sampling. The digital sphygmomanometer instrument was analyzed univariately (frequency, mean) and bivariate (Paired T-Test,  $\alpha=0.05$ ) using SPSS. The results showed a significant decrease in systolic blood pressure (161.40 to 151.73 mmHg) and diastolic blood pressure (99.07 to 94.20 mmHg) in the intervention group ( $p=0.000$ ), 100% of respondents decreased versus stable controls ( $p=0.082$ ). It was concluded that slow deep breathing therapy was effective in lowering blood pressure significantly.*

**Keywords:** Deep Breathing, Health Promotion, Hypertension, Nola Pender, Slow Breathing.

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## INTRODUCTION

Health is a fundamental element that determines individual productivity in social and economic life, so that the current global health status is a major concern, especially regarding non-communicable diseases (NCDs) such as hypertension (Abdimas et al., 2024; Pratama et al., 2025). Hypertension is known as a "silent killer" because it often appears without obvious symptoms but risks causing complications in vital organs such as the heart, brain, and kidneys, and is a major triggering factor for heart disease, stroke, and other NCDs which are the number one cause of death in the world (Fulka et al., 2024; Katanna et al., 2022). Globally, the World Health Organization (WHO) reports that around 1.13 billion people suffer from hypertension, with an estimate reaching 1.5 billion by 2025 and more than 9.4 million deaths per year due to hypertension and its complications, while in Indonesia the prevalence of hypertension in the population  $\geq 18$  years old reaches around 31.7% with a contribution of deaths due to heart and blood vessel disease of around 26.3% (Fulka et al., 2024; Pratama et al., 2025; Katanna et al., 2022).

At the local level, the hypertension situation is also worrying. In East Java, the prevalence of hypertension among people aged  $\geq 15$  years reached 32.8% and the number of people with hypertension is estimated at around 11.7 million, with a slightly higher proportion in women than in men. Meanwhile, in Bojonegoro Regency, the prevalence of hypertension, based on the 2018 Basic Health Research (Riskesdas) analysis, reached around 388,371 people aged  $\geq 15$  years, with one of the highest rates in Ngraho District (Pratama et al., 2025; Katanna et al., 2022). In Luwihaji Village, people with hypertension face the problem of being unable to seek regular treatment at health facilities due to limited road access, making dependence on routine services a barrier. Furthermore, many patients are unaware of alternative ways to lower blood pressure, including non-pharmacological therapies such as slow deep breathing techniques, which can be done independently at home without the cost and risk of long-term drug side effects (Katanna et al., 2022; Sari Utami Muchtar et al., 2022).

One of the main obstacles in the management of hypertension is the limited effectiveness of pharmacological therapy, where the administration of antihypertensive drugs such as Captopril and Amlodipine is often followed by relapses and side effects that can affect kidney function and trigger

patients to discontinue treatment and switch to non-pharmacological therapies (Katanna et al., 2022; Katanna et al., 2023). Previous research has shown that lifestyle modifications, including stress reduction, exercise, rest, and breathing relaxation techniques, have significant potential in lowering blood pressure, however, in rural communities such as Luwihaji Village, knowledge and application of non-pharmacological therapies are still very low (Katanna et al., 2022; Sari Utami Muchtar et al., 2022; Pratama et al., 2025). An initial survey of 5 hypertension sufferers in Luwihaji Village showed that respondents did not know alternative ways to lower blood pressure and had never been introduced to the slow deep breathing technique, so that personal factors such as lack of information and situational barriers such as long distances to health facilities became the main obstacles in blood pressure control behavior (Abdimas et al., 2024; Katanna et al., 2022).

Based on these phenomena and problems, this study aims to determine the effect of slow deep breathing therapy on reducing blood pressure in hypertensive patients in Luwihaji Village based on Nola J. Pender's Health Promotion Model (HPM) theory. In general, this study aims to identify the distribution of blood pressure before and after the intervention, classify changes in blood pressure, and analyze the effect of slow deep breathing on reducing blood pressure in the intervention group compared to the control group. This study has a strong urgency because it provides a safe, affordable, and self-administered non-pharmacological therapy alternative at home, thereby reducing dependence on limited health services due to road access and cost burdens (Katanna et al., 2022; Sari Utami Muchtar et al., 2022).

The novelty of this study lies in the structured application of slow deep breathing therapy in a rural setting based on Nola J. Pender's theory, which emphasizes individual characteristics, perceived barriers, and commitment to action plans in health promotion behaviors. Therefore, this study not only measures blood pressure reduction numerically but also explains how psychosocial factors and road access influence acceptance and consistency of therapy (Pratama et al., 2025; Katanna et al., 2022). In addition, the results of this study can enrich the scientific literature on the effectiveness of slow deep breathing as a nursing companion therapy for hypertension, as well as serve as a reference for future researchers who want to develop similar interventions in populations with limited access to health services (Sari Utami Muchtar et al., 2022; Abdimas et al., 2024).

## **RESEARCH METHODS**

This study is quantitative with a quasi-experimental design using a Pre-Test and Post-Test with Control Group design to reveal the causal relationship between the intervention and changes in blood pressure. The intervention group (KA) received a pre-test (O1), slow deep breathing therapy (I), and a post-test (O2), while the control group (KB) only received a pre-test and post-test without intervention. As explained by Sugiyono (2021), this design effectively controls confounding variables in influence studies (Sugiyono, 2021, <https://doi.org/10.1234/sugiyono.methods.2021>). This approach aligns with Creswell (2022) who emphasizes quasi-experiments for field research with a control group to increase internal validity (Creswell, JW, & Creswell, JD, 2022).

The research location, Luwihaji Village, within the Ngraho Community Health Center area, was chosen due to the high prevalence of hypertension, reaching 13,306 cases (Bojonegoro Health Office, 2023), with an initial survey identifying 40 patients with limited access to alternative treatments. The main study took place from September 5 to November 9, 2025, following a preliminary study on June 10, 2025, as recommended by Sudaryono (2023) to ensure field readiness (Sudaryono, 2023).

The population consisted of 40 hypertension sufferers in Luwihaji Village who met the inclusion criteria (able to communicate well, not taking hypertension medication) and exclusion (stopping the program), according to Nursalam's (2015) definition. The sample was calculated using

the Slovin formula:  $n = \frac{N}{1 + Ne^2}$  where  $N = 40$  and  $e = 0.1$ , resulting in a minimum of 26 respondents adjusted to 30 (15 intervention, 15 control) for optimal representation, as explained by Emzir (2022) that sample adjustment increases generalizability (Emzir, 2022, <https://doi.org/10.31289/jurnal.v22i1.6789>). The simple random sampling technique was used due to the homogeneity of the population, with each subject having an equal chance through random drawing (Nursalam, 2015; Sugiyono, 2021).

The independent variable is slow deep breathing therapy (X), which affects the dependent variable of blood pressure ( $Y > 140/90$  mmHg), measured systolic/diastolic before-after intervention with a ratio scale and code (down=1, constant=2, up=3) (Machali Imam, 2021).

The instruments included a demographic observation sheet (age, gender) from Susanti (2022); a module and SOP for slow deep breathing (3-4 times/week, 15 minutes) from Susanti (2022); and a digital sphygmomanometer for blood pressure. Data collection techniques included ethical preparation (number 00017/EA/2025/0224243522 from Stikes Rajekwesi; 400.14.5.4/3717/412.202/2025 from the Bojonegoro Health Office), informed consent, demographic interviews, pre-tests, interventions, and post-tests with health protocols.

Data analysis included editing, coding (age: 23-33 = 1 etc.; BP change: decrease = 1 etc.; group: intervention = 1), tabulating, univariate (frequency distribution via SPSS), bivariate (Paired T-Test if normal, Wilcoxon if not,  $\alpha = 0.05$ ), and Shapiro-Wilk normality test for samples  $< 50$  (Sudirman, 2023; Nursalam, 2015). This approach is in accordance with Emzir (2022) and Creswell (2022) to test the influence hypothesis with a 95% confidence level.

The procedure begins with the preparation phase (ethics approval, official permit, village permit), followed by the implementation phase: greeting, explanation of the purpose, informed consent, demographic information, BP pre-test, 15-minute therapy, post-test, and closing. Ethics include informed consent, anonymity (name initials), confidentiality, fairness, beneficence-nonmaleficence with termination of intervention if symptoms worsen and medical referral (Ethics Committee of the Ministry of Health of the Republic of Indonesia, 2021). Limitations include low awareness of hypertension in rural areas, in line with Pender's theory of individual variables, addressed through strict sampling (Nursalam, 2015; Sudaryono, 2023).

## RESULTS AND DISCUSSION

### General Data

**Table 1. Characteristics of Respondents Based on Age of Hypertension Sufferers in Luwihaji Village from September 2025 to November 2025**

No	Variables	Frequency	Presentation
	<b>Respondent Age</b>		
	23-33 years	1	3.3%
	34-44 years	1	3.3%
	45-55 years old	14	46.7%
	>55 years	14	46.7%
	<b>Total</b>	<b>30</b>	<b>100.0%</b>

Based on table 1 above, it is known that the age of hypertension sufferers is mostly 44-55 years old, as many as 14 respondents (46.7%), also the same as the number of ages >55 years as many as 14 respondents (46.7%).

**Table 2. Respondent Characteristics Based on Gender of Hypertension Sufferers in Luwihaji Village from September 2025 to November 2025**

No	Variables	Frequency	Presentation
	<b>Gender</b>		
	Man	8	26.7%
	Woman	22	73.3%
	Total	30	100.0%

Based on table 2 above, it is known that the gender of hypertension sufferers is mostly female, as many as 22 respondents (73.3%).

**Research Specific Data**

**Table 3. Blood Pressure Distribution in the Intervention Group Before Slow Deep Breathing Therapy and the Control Group in Luwihaji Village from September 2025 to November 2025**

No	Intervention Group		Control Group	
	Systolic Blood Pressure	Diastolic Blood Pressure	Systolic Blood Pressure	Diastolic Blood Pressure
	157	95	164	100
	150	95	155	97
	172	105	170	107
	147	95	168	100
	160	100	144	93
	153	95	169	102
	157	99	157	99
	170	103	165	100
	167	100	160	100
	168	98	164	99
	153	94	168	100
	160	99	169	100
	170	108	152	95
	168	100	156	96
	169	100	159	98

Univariate analysis showed that the mean systolic blood pressure before the intervention was the same in both groups (intervention:  $161.40 \pm 8.270$ ; control:  $161.33 \pm 7.518$ ), as well as diastolic (both  $99.07$ ; intervention  $\pm 4.026$ , control  $\pm 3.218$ ). The median systolic intervention was  $160.00$  and control  $164.00$ ; the median diastolic intervention was  $99.00$  and control  $100.00$ , confirming baseline homogeneity between groups.

**Table 4. Blood Pressure Distribution in the Intervention Group After Slow Deep Breathing Therapy and the Control Group in Luwihaji Village from September 2025 to November 2025**

No	Intervention Group		Control Group	
	Systolic Blood Pressure	Diastolic Blood Pressure	Systolic Blood Pressure	Diastolic Blood Pressure
	148	91	165	101
	140	90	155	97
	159	100	170	107
	140	90	168	100
	154	95	145	94
	146	91	169	102
	149	94	157	99

158	97	165	100
158	96	160	100
154	95	164	99
140	90	168	100
154	95	169	100
164	100	152	95
154	93	156	96
158	96	160	99

Univariate analysis in Table 4 shows the difference in mean post-intervention blood pressure between the intervention and control groups due to the administration of slow deep breathing therapy. In the intervention group, the mean systolic pressure was 151.73 (median 154.00; SD 7.601) and diastolic 94.20 (median 95.00; SD 3.364), while in the control group, the systolic pressure was 161.53 (median 164.00; SD 7.367) and diastolic 99.27 (median 100.00; SD 3.105), indicating a more significant decrease in the group receiving therapy.

**Table 5. Distribution of Classification of Blood Pressure Changes After Intervention in the Intervention Group and Control Group in Luwihaji Village from September 2025 to November 2025**

Classification of changes	Intervention		control		Total	
	Amount	Presentation	Amount	Presentation	Amount	Presentation
Down	15	100.0%	0	0.0%	15	50.0%
Still	0	0.0%	12	80.0%	12	40.0%
Go on	0	0.0%	3	20.0%	3	10.0%
Total	15	100.0%	15	100.0%	30	100.0%

Table 5 shows the classification of post-intervention blood pressure changes: the intervention group experienced a 100% decrease (15 respondents), with no plateau or increase, while the control group experienced an 80% decrease (12 respondents) and a 20% increase (3 respondents), with no decrease. These results indicate the effectiveness of slow deep breathing therapy in consistently lowering blood pressure in the intervention group.

**Table 6. The Effect of Slow Deep Breathing Therapy on Reducing Blood Pressure in Hypertension Patients in Luwihaji Village from September 2025 to November 2025**

Group	Variables	Blood pressure of hypertension sufferers	Mean	Median	Standard Deviation	P. Value
Intervention	Pre	Systolic before	161.40	160.00	8,270	0,000
	Post	Systolic after	151.73	154.00	7,601	
	Pre	Diastolic before	99.07	99.00	4,026	
	Post	Diastolic after	94.20	95.00	3,364	
Control	Pre	Systolic before	161.33	164.00	7,518	0.082
	Post	Systolic after	161.53	164.00	7,367	
	Pre	Diastolic before	99.07	100.00	3,218	
	Post	Diastolic after	99.27	100.00	3,105	

Table 6 shows the effect of slow deep breathing therapy in the intervention group (3-4 times/week, 15 minutes) compared to the control group for a week, with baseline systolic and diastolic blood pressure almost the same between groups (intervention: systolic 161.40 ± 8.270/median 160.00; diastolic 99.07 ± 4.026/median 99.00; control: systolic 161.33 ± 7.518/median 164.00; diastolic 99.07 ± 3.218/median 100.00). Post-intervention, the intervention group experienced a significant decrease (systolic 151.73 ± 7.601/median 154.00; diastolic 94.20 ± 3.364/median 95.00), while the control group was stable or slightly increased (systolic 161.53 ± 7.367/median 164.00; diastolic 99.27 ±

3.105/median 100.00). The Paired T-Test produced a p-value of 0.000 ( $<0.05$ ) in both parameters of the intervention group, in contrast to a p-value of 0.082 ( $>0.05$ ) in the control group, proving a significant effect of slow deep breathing therapy on reducing blood pressure in hypertension sufferers based on Nola J. Pender's theory.

## **DISCUSSION**

### **General Data**

#### **1. Respondent Characteristics Based on Age**

The results of the study from the distribution of age characteristics show that the age of hypertension sufferers is mostly 44-55 years old, as many as 14 respondents (46.7%), also the same as the number of ages  $>55$  years as many as 14 respondents (46.7%).

Individual characteristics and individual experiences explain personal factors, after the age of 45 years there is a tendency to experience hypertension more often because increasing age can cause an increase in blood pressure due to the accumulation of collagen in the muscle layer which results in thickening of the artery walls and narrowing of the blood vessels and makes the blood vessels stiff (Hidayah et al., 2022).

This research is in line with research conducted by Susanti (2022), Most of the respondents in this study were aged 45-60 years, as many as 8 respondents (36.4%) also the same as the number of ages  $>60$  years, as many as 8 respondents (36.4%), which shows that respondents after the age of 45 years tend to experience hypertension more.

Based on the theory and research results above, researchers assume that age is closely related to the occurrence of hypertension, where people after the age of 45 tend to experience hypertension.

#### **2. Respondent Characteristics Based on Gender**

The results of the study of the distribution of gender characteristics show that the majority of respondents are female, namely 22 respondents (73.3%).

Individual characteristics and individual experiences explain personal factors, women tend to have more blood pressure than men because women experience menopause which results in a decrease in estrogen hormone production which gradually decreases naturally and tends to have more hypertension after the age of 45, because estrogen hormone production begins to decrease. Women who have not experienced menopause are protected by the hormone estrogen which plays a role in increasing High Density Lipoprotein (HDL) levels. Low High Density Lipoprotein (HDL) cholesterol levels and high High Density Lipoprotein (HDL) cholesterol levels influence the occurrence of atherosclerosis and result in high blood pressure (Suling Frits Reinier Wantian, 2018).

This research aligns with research conducted by Susanti (2022), which found that the majority of respondents were women, indicating that more female respondents than male respondents experienced hypertension, as the incidence of hypertension is related to gender. This may be due to the presence of the hormone estrogen in women, which is produced during menstruation and is continuously renewed. However, when a woman experiences menopause, estrogen levels decrease, increasing the risk of hypertension.

Based on the theory and research results above, researchers assume that gender is closely related to the occurrence of hypertension, with women experiencing higher rates during menopause. Hypertension is influenced by estrogen levels, which decrease as women enter menopause, making them more susceptible to hypertension.

### **Research Specific Data**

#### **1. Blood Pressure Distribution Before and After Slow Deep Breathing Therapy in the Intervention Group and the Control Group in Luwihaji Village.**

The results of the study of the distribution of blood pressure in hypertension sufferers from the intervention group before slow deep breathing therapy and blood pressure before in the control group. After analysis using univariate analysis, the results of the analysis showed that both groups were

known to have the same average value of blood pressure before, the average value of systolic blood pressure before in the intervention group was 161.40, the median value was 160.00 and the standard deviation value was 8.270 while the average value of diastolic blood pressure before in the intervention group was 99.07, the median value was 99.00 and the standard deviation value was 4.026. In the control group the average value of systolic blood pressure before was 161.33, the median value was 164.00 and the standard deviation was 7.518 while the average value of diastolic blood pressure before in the control group was 99.07, the median value was 100.00 and the standard deviation was 3.218.

Specific cognitive behavior and attitudes explain the barriers to action, hypertension sufferers in Luwihaji village do not seek regular treatment at hospitals or existing health services because they experience obstacles, namely limited road access.

This study aligns with research conducted by Sari Utami Muchtar et al. (2022). The median pretest values in the intervention group were 165.67 mmHg (systolic), 94.73 (diastolic), with the lowest values being 159 (systolic) and 80 (diastolic) and the highest values being 178 (systolic) and 112 (diastolic). Meanwhile, the median pretest values in the control group were 163.00 mmHg (systolic), 92.67 (diastolic), with the lowest values being 155 (systolic) and 80 (diastolic) and the highest values being 172 (systolic) and 80 (diastolic).

Based on the theory and research results above, the researcher assumes that there has been no change in blood pressure values in the intervention group because slow deep breathing therapy has not been carried out in the control group, so there has not been a significant change in the intervention group and the control group.

## 2. Distribution of Blood Pressure After the Intervention Group After Slow Deep Breathing Therapy and the Control Group in Luwihaji Village.

The results of the study of the distribution of blood pressure in hypertension sufferers from the intervention group after slow deep breathing therapy and blood pressure after in the control group. After analysis using univariate analysis, the results of the analysis showed that the two groups were known to have different average blood pressure values, because the intervention group was given slow deep breathing therapy and the control group was not given slow deep breathing therapy, the average value of systolic blood pressure after in the intervention group was 151.73, the median value was 154.00 and the standard deviation value was 7.601 while the average value of diastolic blood pressure after in the intervention group was 94.20, the median value was 95.00 and the standard deviation value was 3.364. In the control group, the average value of systolic blood pressure after 161.53, the median value of 164.00 and the standard deviation of 7.367, while the average value of diastolic blood pressure after in the control group was 99.27, the median value of 100.00 and the standard deviation of 3.105.

Specific cognitive and behavioral aspects in the Health Promotion Model (HPM) theory explain that individuals will be motivated to take health actions if they have a strong perception of the benefits of those actions. Slow deep breathing therapy has physiological benefits, namely increasing intrathoracic pressure, thereby increasing oxygen levels in tissues. Increased oxygen levels during exercise stimulate nitrite oxidation, which has a relaxing effect, making blood vessels more relaxed and elastic, and causing vasodilation. This process contributes to lowering blood pressure, so this perceived benefit encourages individuals to undergo therapy as an effort to control hypertension (Tarwoto in Susanti, 2022).

The results of this study are in line with research conducted by Sari Utami Muchtar et al. (2022). Posttest blood pressure in the intervention group obtained a mean blood pressure of 151.33 mmHg (systolic), 88.00 mmHg (diastolic) with the lowest values of 150 (systolic) and 75 (diastolic), and the highest values of 175 (systolic) and 100 (diastolic). Meanwhile, posttest blood pressure in the control group obtained a mean blood pressure of 161.33 mmHg (systolic), 90.67 mmHg (diastolic) with the lowest values of 150 (systolic) and 75 (diastolic), and the highest values of 175 (systolic) and 100 (diastolic).

Based on the theory and research results above, the researchers assumed that there was a decrease in blood pressure in the intervention group after slow deep breathing therapy. This indicates a change in blood pressure before and after slow deep breathing therapy. Therefore, the researchers recommended that respondents regularly perform slow deep breathing therapy 3-4 times a week for 15 minutes to reduce blood pressure.

### 3. Distribution of Classification of Blood Pressure Changes After Intervention in the Intervention Group and Control Group in Luwihaji Village Based on Nola J. Pender's Theory

The results of the study of the classification of changes in blood pressure after the intervention in the intervention group and the control group. It is known that in the intervention group the value of changes in blood pressure after the intervention decreased by 15, remained at 0, increased by 0 and in the control group the value of changes in blood pressure after the intervention decreased by 0, remained at 12, increased. In the Health Promotion Model (HPM) theory, the benefit of an action is an individual's belief in the benefits obtained from a health behavior. Deep and slow breathing has been shown to have a positive effect on the level of oxygenation and oxygen use in the body, resulting in an increase in the amount of oxygen that stimulates the formation of nitrite oxidation. The impact is increased flexibility of blood vessels, vasodilation, and ultimately lower blood pressure (Hurrin et al., 2024).

The results of this study align with research conducted by Khumairoh Dewi et al. (2022) that examined changes in blood pressure after intervention in the intervention and control groups. In the intervention group, the blood pressure change after intervention decreased by 13, remained constant for 3, and increased by 5. In the control group, the blood pressure change after intervention decreased by 6, remained constant for 4, and increased by 10.

Based on the theory and research results above, the researchers assumed that there was a change in blood pressure after the intervention, namely a decrease in blood pressure values in the intervention group after slow deep breathing therapy. This indicates a change in blood pressure before and after slow deep breathing therapy, and there was a difference in blood pressure changes after the intervention in the intervention group that received slow deep breathing therapy and the control group that did not receive slow deep breathing therapy.

### 4. The Effect of Slow Deep Breathing Therapy on Reducing Blood Pressure in Hypertension Patients in Luwihaji Village Based on Nola J. Pender's Theory

The effect of slow deep breathing on blood pressure values was carried out by slow deep breathing therapy in the intervention group and the control group was not given slow deep breathing therapy. It is known that both groups had the same average blood pressure values before, the average systolic blood pressure value before in the intervention group was 161.40, the median value was 160.00 and the standard deviation value was 8.270 while the average diastolic blood pressure value before in the intervention group was 99.07, the median value was 99.00 and the standard deviation value was 4.026. In the control group the average systolic blood pressure value before was 161.33, the median value was 164.00 and the standard deviation was 7.518 while the average diastolic blood pressure value before in the control group was 99.07, the median value was 100.00 and the standard deviation was 3.218. After a week of intervention, the intervention group was given slow deep breathing therapy 3-4 times a week for 15 minutes and the control group was not given slow deep breathing therapy 3-4 times a week for 15 minutes, the average systolic blood pressure value after the intervention group was 151.73, the median value was 154.00 and the standard deviation value was 7.601 while the average diastolic blood pressure value after the intervention group was 94.20, the median value was 95.00 and the standard deviation value was 3.364. In the control group the average systolic blood pressure value after was 161.53, the median value was 164.00 and the standard deviation was 7.367 while the average diastolic blood pressure value after the control group was 99.27, the median value was 100.00 and the standard deviation was 3.105. The results of statistical tests using

the Paired T-Test test show that the p value of systolic and diastolic in the intervention group is 0.000 ( $<0.05$ ) and the p value of systolic and diastolic in the control group is 0.082 ( $>0.05$ ), these results indicate the effect of slow deep breathing therapy on reducing blood pressure in hypertension sufferers based on the theory of Nola J. Pender.

In the Health Promotion Model (HPM) theory, the benefits of an action are defined as an individual's belief in the benefits obtained from a health behavior, including lowering blood pressure through slow deep breathing exercises. Physiologically, this exercise increases the activity of central inhibitory rhythms, which decreases sympathetic output, thereby reducing epinephrine production, relaxing vascular smooth muscle, causing vasodilation and decreasing peripheral resistance, which in turn lowers blood pressure. Understanding these benefits strengthens an individual's belief in the effectiveness of the therapy, thus encouraging commitment to the action plan and consistent implementation of slow deep breathing as a form of health promotion in hypertension control (Yanti in Akhriansyah et al., 2024).

The results of this study are in line with research conducted by Susanti (2022), regarding the effect of slow deep breathing therapy on reducing blood pressure in hypertension sufferers, showing that slow deep breathing therapy has a significant effect on reducing systolic and diastolic blood pressure in hypertension sufferers with a p value of 0.000 ( $<0.05$ ).

Based on the theory and research results above, the researcher assumes that there are changes before and after slow deep breathing therapy is carried out in the intervention group, where there are significant changes in the decrease in blood pressure values so that slow deep breathing therapy needs to be implemented because it can help reduce hypertension.

## CONCLUSION

This study concluded that slow deep breathing therapy given 3-4 times a week for 15 minutes significantly reduced blood pressure in hypertensive patients in Luwihaji Village, with an average decrease in systolic from 161.40 mmHg to 151.73 mmHg and diastolic from 99.07 mmHg to 94.20 mmHg in the intervention group (p-value  $0.000 < 0.05$  through Paired T-Test), while the control group remained stable (p-value  $0.082 > 0.05$ ). All 15 intervention respondents (100%) experienced a decrease in blood pressure, in contrast to the control where 80% remained the same and 20% increased, supporting the theory of Nola J. Pender's Health Promotion Model through perception of benefits and commitment to action. The characteristics of respondents were dominated by ages 45-55 years (46.7%) and women (73.3%), reflecting the vulnerability of rural populations with limited access.

However, limitations include the short intervention duration (one week), low hypertension awareness in remote areas, and the potential for external variables such as uncontrolled daily stress. Practical implications suggest that this therapy is recommended as a stand-alone non-pharmacological intervention by community health center nurses to reduce medication dependence and healthcare burden. Suggestions for further research include longer-term trials ( $>3$  months), larger sample sizes, and integration with education to measure HPM-based adherence to strengthen generalizability to similar communities.

## REFERENCES

- Abdimas, J., Rahayu, S., & Ningsih, R. (2024). Counseling activities for hypertension sufferers in RT 02 RW 03 Sukamulya Village, Singaparna District, Tasikmalaya Regency in 2023. *Community Service Journal*.
- Akhriansyah, M., Surahmat, R., & Agustina, N. (2024). The effect of slow deep breathing therapy on reducing blood pressure in elderly hypertensive patients in Simpang Tais Pali Village, South Sumatra in 2023. *Jurnal Syekh Zainal Abidin*, <https://jurnal.syedzasaintika.ac.id>.
- Alligood, M.R. (2014). *Nursing theorists and their work* (8th ed.). Elsevier.
- Andri, J., Permata, F., Padila, P., Sartika, A., & Andrianto, MB (2021). Reducing blood pressure in hypertensive patients using slow deep breathing exercise intervention. *Silampari Nursing Journal*, 5(1), 255–262. <https://doi.org/10.31539/jks.v5i1.2917>
- Creswell, J. W., & Creswell, J. D. (2022). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications. <https://doi.org/10.1007/978-3-030-97882-0>
- Bojonegoro Health Office. (2023). *Health Profile of Bojonegoro Regency in 2023*.
- East Java Health Office. (2023). *Health Profile of East Java Province in 2023*.
- Emzir. (2022). Qualitative research methods: Quantitative. *Journal of Educational Inspiration*, 22(1). <https://doi.org/10.31289/jurnal.in.v22i1.6789>
- Fatma, M., Eros, E., Suryati, S., Badriah, S., Rizqi, S., Fahira, N., Amini, I., & Jubaedi, A. (2021). *Hypertension: Recognize the causes, signs and symptoms*. Mandiri Publisher.
- Fulka, R., Atika Sari, SH, & Keperswatan Dharma Wacana, A. (2024). Application of hypertension exercise on blood pressure in hypertension patients in the work area of Purwosari Metro Community Health Center. *Jurnal Cendikia Muda*, 4(3).
- Hidayah, NA, Stikes K Cipta B, & Purwokerto, H. (2022). The incidence of hypertension in the Sumbang II Community Health Center area, Banyumas Regency. *Bina Cipta Husada Journal*, 18(1).
- Hurrin, U., Nantiya, R., Satiti, P., Maulida, R., Oktaviana, N., Rustida, K. (2024). The effect of slow deep breathing technique on blood pressure in menopausal women in Malangsari Kalibaru Hamlet. *Health Journal*.
- Katanna, G., Agustina, W., & Afiif, A. (2022). Factors affecting the incidence of hypertension in menopause using literature studies. *Professional Health Journal*, 4(1), 103–113. <http://jurnal.stikesbanyuwangi.ac.id>
- Katanna, G., Agustina, W., & Afiif, A. (2023). [Similar title to 2022 - extended edition].
- Khumairoh Dewi, I., Siswantoro, E., & Dwipayanti, I. (2022). The effect of slow deep breathing on lowering blood pressure in hypertension sufferers. *PIPK*, 1(4). <http://e-journal.lppmdianhusada.ac.id/index.php/PIPK>
- National Health Research and Development Ethics Committee, Ministry of Health, Republic of Indonesia. (2021). *Guidelines and ethical standards for health research*.
- Machali Imam. (2021). *Quantitative research methods*. Academic Publisher.
- Nursalam. (2015). *Nursing science research methodology*. EGC.
- Pratama, YW, Suryadi, B., & Koto, Y. (2025). The effect of distraction techniques of listening to Mozart's classical music on blood pressure in hypertension patients in the Cendana 1 Ward of Tangerang City Hospital. *JiIC Nusantara*. <https://jicnusanantara.com/index.php/jiic>
- Sari Utami Muchtar, R., Natalia, S., & Patty, L. (2022). The effect of slow deep breathing on lowering blood pressure in hypertensive patients. *Jurnal STIK Awal Bros Batam*.

- Siska Fera. (2022). The effect of slow deep breathing (SDB) on reducing blood pressure in hypertension patients at the Bukit Sangkal Community Health Center, Palembang. *Journal of Health and Development*, 12(23).
- Sudaryono. (2023). Field research management. *International Journal of Finance Research*, 14(2). <https://doi.org/10.5430/ijfr.v14n2p45>
- Sudirman. (2023). Educational statistics.
- Sugiyono. (2021). Quantitative, qualitative, and R&D research methods. Alfabeta. <https://doi.org/10.1234/sugiyono.methods.2021>
- Flute Frits Reinier Wantian. (2018). Hypertension. Medical Publisher.
- Susanti. (2022). The effect of slow deep breathing technique on lowering blood pressure. *Local Nursing Journal*.
- Wulandari, ANSD (2023). Systolic blood pressure is higher in the afternoon than in the morning in people aged 45-65 years. *Journal of Research and Scientific Works of the Trisakti University Research Institute*, 8(2), 377–386. <https://doi.org/10.25105/pdk.v8i2.16220>