

Open Access Journal of Artificial Intelligence and Technology

Alternate Nostril Breathing Exercise Technique on Blood Pressure in Hypertension Patients in the Working Area of the Rejosari Public Health Center

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Received: July 06, 2026; **Accepted:** July 15, 2026; **Published:** July 22, 2026

ABSTRACT

Hypertension is a disease caused by an increase in systolic blood pressure of 140 mmHg and diastolic blood pressure ≥ 90 mmHg which is carried out in 2 measurements with a time difference of minutes in resting conditions (Ministry of Health of the Republic of Indonesia, 2019). One of the non-pharmacological therapies that can be done to help reduce and control blood pressure is exercise. Alternate Nostril Breathing Exercise is a therapeutic exercise that can affect blood pressure, namely when one nostril dominates, the contralateral hemisphere will be activated. The purpose of this study was to determine the effect of Alternate Nostril Breathing Exercise on hypertension patients at the Rejosari Community Health Center. This research method is Quantitative Pre-Experiment using a One-group Pretest-Posttest design with a statistical t-test (related) to compare blood pressure before and after the exercise. Alternate Nostril Breathing Exercise. The sampling technique in this study used Purposive Sampling with a total of 30 respondents. The study was conducted using observation sheets and data were collected through pre-test blood pressure measurements of the ANBE intervention. The results of this study showed that the p-value = 0.000 < 0.05, so it can be concluded that H_a is accepted. Suggestions from this study are expected to provide information related to Alternate Nostril Breathing Exercise which can be a non-pharmacological therapy for hypertension.

Keywords: Hypertension, Alternate Nostril Breathing Exercise

Introduction

Hypertension is a type of non-communicable disease (NCD) that remains a leading cause of premature death worldwide. High blood pressure is a condition frequently encountered in primary healthcare settings, with a risk of increased morbidity and mortality. It can be a major cause of heart failure, stroke, and kidney failure. Hypertension is a condition characterized by systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg. High blood pressure is a common and potentially dangerous condition. Undetected and prolonged high blood pressure without proper treatment can lead to coronary heart disease, kidney failure, or stroke [1].

Data from the World Health Organization (WHO) in 2018 showed that approximately 1.13 billion people worldwide have hypertension, meaning that 1 in 3 people worldwide are diagnosed with hypertension. The number of people with

hypertension continues to increase annually, with an estimated 1.5 billion people affected by hypertension by 2025, and an estimated 10.44 million people die annually from hypertension and its complications (Ministry of Health, 2019).

Based on health data from the Riau Provincial Health Office in 2024, the number of hypertension cases was 37,699. Based on an initial survey, at the Rejosari Health Center Hypertension is one of the most common diseases, with 4,464 people suffering from it. Various factors related to genetics and lifestyle, such as lack of physical activity, intake of salty and fatty foods, and smoking and alcohol consumption, contribute to the surge. hypertension figures (Rikesdas, 2018).

According to the Indonesian Ministry of Health's Research and Development Agency (2018), a combination of pharmacological and non-pharmacological therapy is more effective in controlling blood pressure. One non-pharmacological therapy that can be used to help lower and control blood pressure is the Alternate

Citation: Silvia Nora Anggreini, Vivi Andrianti. Alternate Nostril Breathing Exercise Technique on Blood Pressure in Hypertension Patients in the Working Area of the Rejosari Public Health Center. Open Access J Artif Intel Tech. 2026. 2(3): 1-5. DOI: doi.org/10.61440/OAJAIT.2026.v2.36

Nostril Breathing Exercise.

According to research by Muliani et al., changes in blood pressure in hypertensive patients using the nostril breathing technique were positively tested to help reduce systolic and diastolic blood pressure, with results where before the intervention was 144.3/137 mmHg and the results after the intervention were 93/87.5 mmHg [2]. In research by Suranata et al., (2019) showed a decrease in systolic blood pressure of 10 mmHg and diastolic blood pressure of 10 mmHg.

Alternate Nostril Breathing Exercise is one of the independent actions of nurses in the prevention and treatment of hypertension which is quite practical and cost-effective compared to the cost of hypertension treatment through pharmacology (To lower blood pressure, alternate nostril breathing is an excellent exercise. Breathing through the right nostril will increase sympathetic activity, while breathing through the left nostril will decrease sympathetic activity and increase parasympathetic activity. Therefore, alternate nostril breathing can balance sympathetic and parasympathetic nerve activity, thereby stabilizing blood pressure [2].

Alternate Nostril Breathing Exercise can help stimulate the main nerves in the parasympathetic and sympathetic nervous systems, which is good for slowing the heart rate, lowering blood pressure, and calming the mind and body (Rodrigo et al., 2021).

Research Methods

This research method is Pre Experiment using One-group Pretest-Post test design with test t- test (related) to compare blood pressure before and after being given the Alternate Nostril Breathing Exercise. The sampling in this study used purposive sampling with 30 respondents. Because this study used a ratio scale, the statistical test chosen was the Shapiro-Wilk test. with a significant value <0.05 , it can be concluded that H_a is accepted and H_o is rejected, which means there is an influence in this research [3].

The data collection tool used in this study was a blood pressure observation sheet given to research respondents.

Results And Discussion

Univariate Analysis

Characteristics Respondent n

Table1: Distribution Data Characteristics Respondents Patient Hypertension in the Work Area Community Health Center Rejosari

	Variables	Frequency (F)	Percentage (%)
1	Age		
	40-50 Years	19	63.3%
	50-60 Years	11	36.7%
	Total	30	100.0%
2	Gender		
	Woman	26	86.7%
	Man	4	13.3%
3	Education		

	JUNIOR HIGH SCHOOL	10	33.3%
	SENIOR HIGH SCHOOL	20	66.7%
	Total	30	100.0 %
4	Work		
	housewife	20	66.7%
	Trader	7	23.3%
	Private	3	10.0%
	Total	30	100.0 %
5	Smoking History		
	Yes	4	13.3%
	There isn't any	26	86.7%
	Total	30	100.0%
6	Health History		
	Yes	4	13.3%
	There isn't any	26	86.7%
	Total	30	100.0%

Based on table 4.1 it is known that the results of the respondents' gender are female 26 people (86.7%) and male 4 (13.3%) as many as 30 respondents (100.0%) the results of the respondents' ages are at the age of 40-50 years as many as 19 respondents (63.3%), at the age of 50-60 years as many as 11 (36.7%). Based on the results of the respondents' education that junior high school education 10 people (33.3%), high school education 20 (66.7%). Based on the results of the respondents' work that the work of housewives as many as 20 (66.7%), and traders as many as 7 (23.3%), private 3 (10.0%). Based on the results of the smoking history who smoked 4 (13.3) and did not smoke 26 (86.7%). Based on the results of the health history who had a health history were 4 (13.3%) and did not have a health history 26 (86.7%) [4-6].

Table 2: Distribution Frequency Pre-test and Post- test of Respondents ' Blood Pressure in the Rejosari Health Center Work Area Year 2024

Variables	Mean	Elementary School	(Min-Mex)
Systole before	145,833	8,4449	(130-160)
Systole after	141,500	8.0376	(126-155)
Diastole before	97,100	3,9510	(90-100)
Diastole after	92,767	4,0572	(85-97)

Based on table 4.2, it was found that before doing the Alternate Nostril Breathing Exercise The average pre-post test systolic value before was 145.833 and the systolic value after was 141.500, while the pre-post test value after doing the Alternate Nostril Breathing Exercise was 97.100 and the diastolic value after was 92.767 [7].

Bivariate Results

Before the data is analyzed more carry on every data is already data normality test was carried out for know data distribution and so on will used For selecting the appropriate test. The parameters used For see analytical data distribution in study This is the Shapiro-Wilk parameter because amount respondents less than 50 people. Value data Pre Test no normally distributed with P value = 0.000 ($P < 0.05$), as well as the data value Post Test with P value = 0.000 ($P < 0.05$). Because all the data that will be

analyzed No normally distributed , then the bivariate test used is with using the t-test (related)

Table 3: Comparative Data Pre Test and Post Test Study With the T-Test (Related) Test the Effect of Alternate Nostril Breathing Exercise On Blood Pressure in Hypertension Patients In Working area Community Health Center Rejosari Year 2024

Variables	Mean	Elementary School	P value
Systole before	145,833	8,4449	
Systole after	141,500	8.0376	
Diastole before	97,100	3,9510	,000
Diastole after	92,767	4,0572	

Based on Table 4.3, it is known that the pre-post test values increased or had a positive difference, where the systolic before and post-systolic had a difference of 4 , while the diastolic before and post-diastolic had a difference of 5. This indicates a change in blood pressure in hypertensive patients to normal. According to the results of the data analysis , The statistical t-test (related) test obtained a P value = 0.000 < 0.05, so it can be concluded that Ha is accepted [8].

Discussion

Univariate Analysis

Characteristics Respondents Based on Gender, Age, Education, Occupation , Smoking History, Health History.

Respondents in this study have diverse characteristics in terms of gender, age, education , occupation , history Smoking , History, Health . Based on data obtained from 30 respondents with hypertension, consisting of female gender with a total of 26 respondents (86.7 %) and male respondents 4 (13.3%) .

Based on data obtained from the latest 2018 Basic Health Research (Riskesdas), the prevalence in Indonesia increased by 8.3% to 34.11%, with a total of 658,201 people. The prevalence of high blood pressure in women was 36.85% higher than in men (Ministry of Health of the Republic of Indonesia, 2019).

According to researchers' assumptions, there are more women than men who experience hypertension in this study because after entering the menopause phase, the hormone estrogen which protects blood vessel damage will decrease and progesterone in women will decrease and one of them is that the nape feels heavy and the head is dizzy, therefore it can cause an increase in blood pressure [9].

Based on results study majority respondents aged 40-50 years as many as 18 people (52.9%). According to Riskesdas 2018 states trend prevalence hypertension based on the doctor's diagnosis of the population age ≥ 18 years according to provinces in Indonesia in 2018 (Ministry of Health of the Republic of Indonesia, 2018).

Research result This that with the more increase age, possibility someone who is suffering hypertension is also increasing big. Disease hypertension is disease that arises consequence existence interaction from various factor the risks involved someone. Various study has found connection between various risk factors

to emergence hypertension. The disappearance of elasticity tissue and arteriosclerosis as well as widening vessels blood is factor reason hypertension at age old. From various research conducted in Indonesia shows residents aged over 20 years Already own factor risk sufferer's hypertension. (Sutanto 2019).

In line with the theory that put forward by (Tindangen et al., 2020) stated that age is wrong One factor the main thing influence hypertension, things This caused by change natural in body in the heart, blood vessels blood, and hormones.

His research put forward that woman entering 40 years old must start alert with hypertension Because generally Woman entering the pre- menopausal period. This caused by Because women who have menopause have level low estrogen, whereas estrogen that is functioning as a vasodilator of blood vessels blood, if happen decline from estrogen secretion will result in narrowing vessels blood (vasoconstriction) which can cause pressure blood increased (Agustina, 2022).

According to assumptions researchers that the more increase age then the system cardiovascular on body will experience decline which will result in level incident hypertension which will also increase. Characteristics The respondents' ages were 40-50 years, as many as 19 respondents (63.3 %), and 11 respondents (36.7 %) were aged 50-60 years.

The height risk happen hypertension in educated respondents low possibility caused by Because lack of knowledge respondents to health and difficult accept information. This is supported by research (Meily et al, 2022) higher education will influence ability man for catch information obtained, in matter This related with information health so that associated with awareness for check self to facility health as well as can understand method prevent hypertension as well as understand will complications advanced consequence hypertension.

The majority of respondents had low levels of education due to their lack of knowledge. This puts them at risk of non-compliance in managing their health due to slow acceptance of information. To motivate and increase respondents' awareness in controlling their blood pressure and changing their health behavior patterns, continuous health education / counseling by nurses is necessary. Based on the interview results, it was found that 8 respondents had higher education but suffered from hypertension. In addition to being influenced by internal factors that cannot be changed, such as family history, this increase in blood pressure is also influenced by modifiable factors, such as lack of activity or regular exercise, and consuming unhealthy foods. (Meily Nirnasari et al., 2023).

According to the researcher's assumption that the high risk of hypertension in low-educated hypertensive respondents is due to the possibility of a lack of knowledge of information such as health information and non-compliance in controlling health such as controlling blood pressure, and conversely people with higher education can obtain health information more easily such as improving lifestyle including exercise or non-pharmacological therapy. The educational characteristics of respondents in this study consisted of 2 levels of education, namely junior high

school and high school. High school education was 20 people (66.7 %) and junior high school education was 10 people (33.3 %).

Based on results research, characteristics work respondents is majority Mother House ladder that is as many as 20 people (66.7 %), and 7 traders (23.3 %), 3 private sector (10.0%). According to research (Akbar et al, 2020), shows that as many as 29 people (82%) the majority Work as a housewife (mother) House stairs). The role of the mother House stairs is very important in prevent occurrence hypertension in family. If a mother in family negligent in provide food or menu for his family, cooking food yanag contain a lot of salt then will can add height risk caught hypertension (Mufidah et al, 2017). According to assumptions researchers There is the relationship with fact that majority respondents various sex women and tend to become Mother House ladder than workers.

Research result show that more than half amount respondents in both group intervention own history smoke namely 50 % each in the group slow deep breathing intervention (n=9) and 55.6% in the group alternate nostril breathing intervention (n=10). Smoking is one of the factor risk occurrence hypertensions and if seen from characteristics age, category age respondents in the study This happen in group elderly Where second factor they can increase probability incident hypertension (Faradilla Miftah Suranata ddk, 2019).

According to the researcher's assumption that Habit smoke normal increase risk pressure blood high (hypertension) because nicotine and carbon dioxide contained in cigarette Can result in layer endothelium vessels blood arteries damaged , elasticity vessels blood reduce so that vessels blood become stiff and annoying flow blood so that cause pressure blood increase Nicotine can increase amount pulse and produce vasoconstriction peripheral which pressure blood can increase in time short or after smoking . In addition, according to literature, nicotine can also increase norepinephrine and catecholamines so that Work heart increased and caused improvement pressure blood.

Distribution Frequency Blood Pressure Before and After Giving Alternate Nostril Breathing Exercise

It was found that before doing the Alternate Nostril Breathing Exercise The average pre-post test systolic value before was 145.833 and the systolic value after was 141.500, while the pre-post test value after doing the Alternate Nostril Breathing Exercise was 97.100 and the diastolic value after was 92.767.

The results of the study show decline pressure blood systolic after 2 weeks given treatment in the alternate nostril breathing group was in the range above 147 mmHg with an average of 147.78 (SD=6.47) compared to with before given treatment Likewise with pressure blood diastolic obtained decline pressure blood after 2 weeks given treatment in the alternate nostril breathing group was in the range above 87 mmHg with an average of 87.22 (SD=4.61) compared to with before given treatment. Likewise, with pressure blood diastolic obtained decline pressure blood after 2 weeks given treatment in the alternate nostril breathing group was in the range above 87 mmHg with an average of 87.22 (SD=4.61) compared to with before given treatment. As well as pressure blood diastolic obtained decline pressure blood after 4

weeks given treatment on the alternate nostril breathing group is in the range above 84 mmHg with an average of 84.44 (SD=5.11) compared with after 2 weeks given treatment (Fradella Miftah Suranata ddk, 2019).

Result of distribution frequency pressure blood systolic before and after given alternate nostril breathing intervention with a p-value of 0.001. Distribution frequency pressure blood diastol before and after given alternate nostril breathing intervention with a p-value of 0.001 with thus concluded that intervention effective alternate nostril breathing in decline pressure blood in patient's hypertension, where in 4 days after given intervention Already there is decline pressure blood (Fahri Permata ddk, 2021).

According to the researcher's assumption, one of the efforts that can be used for non-pharmacological therapy for hypertensive clients is by providing alternate nostril breathing exercise techniques. can give influence to pressure blood that is Because existence connection meaningful between nasal cycle, dominance cerebral and activity autonomous Where this nasal cycle relates with domination cerebral. When one of the hole noses dominate so hemisphere contra lateral will be activated. Breathe through the right nostril which passes through the right spinal cord and is connected with hemisphere left cerebral causes improvement stimulation system nerve sympathetic for can lower its function Where nerve sympathetic can make veins and arterioles experiencing vasoconstriction. While that, breathing through the left nostril which passes through the left spinal cord and is connected directly with hemisphere cerebral stimulating right Work nerve parasympathetic become increased, so that body will experience relaxation. Vasodilation of veins and arterioles throughout the system peripheral heart also occurs so that output nerve parasympathetic increase so that make frequency heart reduced and stimulated ventricles for lower contractions that cause effect rainfall heart decrease so that pressure blood decrease [10-12].

Bivariate Analysis

Based on the analysis of the t-test statistical data (related) shows that the pre-post test value has increased or has a positive difference where the systole before and systole after has a difference of 4, while the diastole before and diastole after has a difference of 5. This indicates a change in blood pressure in hypertension sufferers to normal. According to the results of the t-test statistical data analysis (related) , the P value = 0.000 < 0.05 is obtained, so it can be concluded that Ha is accepted.

Research result show before alternate nostril breathing pressure intervention blood systolic average 162.727 mm Hg and diastolic is 97.272mm Hg, after intervention pressure blood systolic is 151.818 mm Hg and diastolic 86.363 mm Hg. The results of the Wilcoxon signed rank test obtained a p value for blood pressure. blood systolic 0.036 and p value pressure blood diastolic is 0.03 ($\alpha = 0.05$). We find that There is effect breathing hole nose alternative to blood mark stress on the elderly with hypertension. The conclusion is that alternative breathing hole nose can used as one of the alternative handlings for lower pressure blood in patient's hypertension. According to other researchers also have alternate nostril breathing impact positive in prevent disease cardiovascular (Fahri Permata ddk, 2021).

Research results breathing hole nose alternative own impact positive in prevent disease cardiovascular, respiratory hole nose turns given for 15 days can help lower pressure blood in patient's hypertension. In the study This pressure blood systolic and diastolic experience decline Where P- value < $\bar{y}$ (0.001 < 0.05) (Rizki Muliani ddk, 2021).

Research result show before done breathing nose average pressure alternative blood systolic 162.727 mm Hg and diastolic 97.272 mm Hg, after done breathing nose average pressure alternative blood Systolic blood pressure was 151.818 mm Hg and diastolic blood pressure was 86.363 mm Hg. The results of the Wilcoxon Signed Rank test obtained a p value of blood pressure of 151.818 mm Hg. blood systolic of 0.036 and the p value of pressure blood diastolic of 0.03 ($\bar{y}$ = 0.05). We found existence influence breathing hole nose alternative to mark pressure blood in the elderly sufferer's hypertension (Rizki Muliani did, 2021).

Study This involving 72.4% of patient's women and 27.6% of patient's male; average age of patients was 52.4±6.9 years. The average blood pressure blood patient's systolic blood pressure (SBP) in group experiments measured in the clinic at week second is about 4 mmHg lower compared to group control (p<0.05) (Gamze Uður ddk, 2020).

Conclusion

Based on results and discussion, then conclusions of the research This the Alternating Nostril Breathing Exercise has an effect on reducing blood pressure, where the respondents' blood pressure decreased as detailed below:

Based on the results of the study, it is known that the results of the respondents' gender are female 26 people (86.7%) and male 4 (13.3%) as many as 30 respondents (100.0%) the results of the respondents' ages are at the age of 40-50 years as many as 19 respondents (63.3%), at the age of 50-60 years as many as 11 (36.7%). Based on the results of the respondents' education that junior high school education 10 people (33.3%), high school education 20 (66.7%). Based on the results of the respondents' work that the work of housewives as many as 20 (66.7%), and traders as many as 7 (23.3%), private 3 (10.0%). Based on the results of the smoking history who smoked 4 (13.3) and did not smoke 26 (86.7%). Based on the results of the health history who had a health history were 4 (13.3%) and did not have a health history 26 (86.7%).

It was found that before doing the Alternate Nostril Breathing Exercise, the average pre-post test systolic value before was 145.833 and the systolic value after was 141.500, while the pre-post test value after doing the Alternate Nostril Breathing Exercise was 97.100 and the diastolic value after was 92.767.

Based on the test data analysis, it is known that the pre-post test value has increased or has a positive difference where the systole before and systole after have a difference of 4, while the diastole before and diastole after have a difference of 5. This shows a change in blood pressure in hypertension sufferers to normal.

According to the results of the statistical test data analysis t-test (related) obtained P value = 0.000 < 0.05, it can be concluded that H_a is accepted.

Thank-You Note

Dr. Ihsan Suheimi, Sp. OG who serves as the Head of STIKes Pekanbaru Medical Center, Mrs. Ns. Awaliyah Ulfa Ayudytha Ezdha, S. Kep, MARS who is the Head of the Nursing Science Study Program of STIKes Pekanbaru Medical Center, Mrs. Ns. Silvia Nora Anggreini.S. Kep.M.Kep who has provided guidance and direction to the researcher, Mrs. Ns. Dwi Elka Fitri, S.Kep, M.KM as the first examiner, and Mrs. Ns. Awaliyah Ulfah Ayudytha Ezdha, S.Kep. MARS as the second examiner. Also, thanks to all the Lecturers and Administrative staff of the Nursing Science Study Program of STIKes Pekanbaru Medical Center. Appreciation is also conveyed to the Head of Administration of Puskesmas as Rejosari who has given permission for this research.

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