


The Effect of Green Color Breathing Therapy on Blood Pressure in Patients at Risk of Hypertensive Crisis

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Article Info	ABSTRACT
<p>Article history: Received September 05, 2023 Revised October 06, 2023 Accepted November 06, 2023</p> <hr/> <p>Corresponding Author: Noor Fitriyani Nursing Study Program Diploma Three, Faculty of Health Sciences, Universitas Kusuma Husada Surakarta, Indonesia</p> <p>Email: pipit.nizam@ukh.ac.id</p>	<p>Background: About 71% of non-communicable diseases (PTM) cause death, one of which is hypertension. The later phases of hypertension are the increased risk of hypertensive crisis, occurring in all types of hypertension. Hypertensive crisis is a medical emergency and requires appropriate management. Non-pharmacological management is a complementary therapy to pharmacological therapy, one of which is green color breathing therapy. Objective: This study aims to determine the effect of green color breathing therapy on blood pressure in patients at risk of hypertensive crisis. Methods: This study used the pre and post-test method without control group design. The measuring instrument for this study used SOP green color breathing therapy and evaluated blood pressure with a sphygmomanometer. The research sample used a total sampling of 31 respondents. Bivariate data analysis using the Wilcoxon test. Results: Based on statistical tests with analysis of the Wilcoxon Test ($p=0.001$). This shows that the p value <0.05, there is a significant effect of green color breathing therapy on the blood pressure of patients at risk of hypertensive crisis. Conclusion: Green color breathing therapy can reduce blood pressure in patients at risk of hypertensive crisis.</p> <p>Keywords: Hypertensive Crisis; Blood Pressure; Green Color Breathing Therapy</p> <p>This article is licensed under a Creative Commons Attribution 4.0 International License.</p> 

1. INTRODUCTION

According to WHO in 2021, around 71% of the causes of death in the world are non-communicable diseases (NCDs). Hypertension is one of the NCDs, 31% of sufferers and 17% of the causes of death [5]. The prevalence of hypertension in the population aged 18 years and over increased from 25.8% to 34.1%. According to Riskesdas in 2018, 32.3% of hypertension sufferers did not take medication as a result of feeling healthy [9].

A further phase of hypertension is an increased risk of hypertensive crisis [14]. The most frequent causes of hypertensive crises are undiagnosed chronic hypertension patients and patients who do not comply with taking anti-hypertension medication [19]. Improper management of hypertensive patients causes atherosclerotic cardiovascular disease, coronary heart disease, stroke and kidney failure (Indonesian Association of Hypertension Doctors [20].

Pharmacological management of hypertensive patients by administering blood pressure lowering drugs and non-pharmacological management. Non-pharmacological management is a companion therapy to pharmacological therapy, such as a healthy lifestyle, relaxation therapy [25]. Relaxation therapy, the body through the brain will produce endorphins as an analgesic, activating the parasympathetic nervous system which functions to reduce heart rate, respiratory rate and blood pressure [13]. One relaxation therapy that can be used is green color breathing therapy. The green color breathing therapy technique is a combination of breathing therapy interventions by focusing the mind to imagine the color green [24].

Relaxation techniques with green color therapy can balance the body and are calming, so they can reduce tension and lower blood pressure [13]. The mechanism of green therapy is by suppressing the activity of the

sympathetic nervous system, dilating capillaries, stimulating the pituitary to release various neurohormones such as serotonin, beta endorphins which can reduce blood pressure [21]. The results of research [2], green color therapy has an effect on reducing systolic blood pressure in elderly people with hypertension. According to research [8], green color therapy is effective in reducing systolic and diastolic blood pressure in elderly people with hypertension.

Management of hypertension with other relaxation techniques through respiratory therapy. Appropriate breathing therapy is done slowly, deeply and regularly. Respiratory regulation increases parasympathetic activity thereby reducing cardiac output and total peripheral resistance, lowering blood pressure [11]. Research by [24], there is an effect of green color breathing therapy on reducing stress levels in hemodialysis patients and the elderly.

The aim of the research was to determine the effect of knowing the effect of green color breathing therapy on blood pressure in patients at risk of hypertensive crisis at the UPTD of the Grogol Health Center.

2. METHODS

The design in this study was quasi-experimental with a pre and post test approach without control, namely one treatment group was observed 2 times, namely before and after the intervention [6]. The population in this study, based on the results of a preliminary study in October 2022 at the UPTD Puskesmas Grogol, a number of 31 hypertensive elderly at the Cemani elderly Posyandu (Data UPTD Puskesmas Grogol, 2022). Sampling in this study used the total sampling technique, which is a sampling technique where all members of the population are used as samples [18]. The total sample of this study was 31 respondents according to the criteria, namely hypertension, no visual impairment, willing to be a respondent, following the course of the research from start to finish.

The study was conducted in March 2023. The measuring instrument for this study used SOP green color breathing therapy and a Spigmomanometer was used to measure blood pressure after the post-intervention evaluation. Implementation of green color breathing therapy is carried out 2 times a week for 10 -15 minutes. The research carried out has fulfilled ethical principles with number: 047/UKH.L.02/EC/IX/2022.

3. RESULTS AND DISCUSSION

The majority of the characteristics of the 31 respondents included genetics (61.3%), female gender (80.6%), duration of diagnosis more than 5 years (48.4%), history of secondary school education (45.2%), pre-intervention blood pressure in the grade 2 category (80.6%) and post-intervention blood pressure in grade 1 category (74.2%). The following characteristics of the respondents in this study can be seen in table 1 below:

Table 1. Characteristics of Respondents

Identity	Characteristics	Percentage	
		n	%
Genetic	Yes	19	61.3
	No	12	38.7
Type	Man	6	19.4
Sex	Woman	25	80.6
Diagnosis Time	< 1 year	4	12.9
	15 years	12	38.7
	> 5 years	15	48.4
Education	No school	1	3.2
	SD	10	32.3
	JUNIOR HIGH SCHOOL	14	45.2
	SENIOR HIGH SCHOOL	5	16.1
	D3/ S1/ S2	1	3.2

Based on table 2, information was obtained before being given green color breathing therapy, the majority of respondents at risk of hypertensive crisis had pre-intervention blood pressure in the grade 2 category (80.6 %) and after that post-intervention blood pressure the majority were in the grade 1 category (74.2 %).

Table 2. Identification of Blood Pressure Before and After *Green Color Breathing Therapy*

Blood pressure	Hypertension Criteria	Percentage	
		n	%
Pre	Degree 1	2	6.5
	Degree 2	25	80.6
	Degree 3	4	12.9
Post	Pre Hypertension	2	6.5
	Degree 1	23	74.2
	Degree 2	6	19.4

Based on table 3, information on the interpretation of research results was obtained using *the Wilcoxon test*. Comparison of blood pressure before and after the intervention, there were 29 respondents with blood pressure in the lower category than before the intervention and 2 respondents in the category of constant hypertension. The significance level is 0.00, it can be concluded that there is an effect of green color breathing therapy on the blood pressure of patients at risk of hypertensive crisis.

Table 3. Analysis of the Effect of *Green Color Breathing Therapy* on Blood Pressure Wilcoxon Signed Ranks Tests

Blood pressure	Rank	Ranks		
		n	Mean	sum
TD Post	Negative	29 ^a	15.00	435.00
TD Pre	Positive	0 ^b	.00	.00
	Ties	2 ^c		
		TD_Post - TD_Pre		
Z		-5,385 ^a		
Asymp . Sig.		,000		

Elderly people with hypertension were respondents in this study. In the elderly group, the highest NCD is hypertension at 32.5% [10]. The majority of the characteristics of the 31 respondents with a family history of hypertension was 61.3%. According to [1], around 70-80% of primary hypertension patients were found to have a family history of hypertension. Menopausal women with a family history of hypertension have a 2.9 times risk of developing hypertension [15]. The results of the research can be concluded that when family members pass on traits from one generation to generation through genes.

The results of the research were 31 respondents, the majority were female (80.6%). According to [3], 75% of post-menopausal women in the United States experience hypertension. Hypertension occurs predominantly in men rather than premenopausal women, but after menopause the prevalence of hypertension is higher [12]. Researchers believe that aging in women results in the loss of estrogen production and this affects systolic and diastolic blood pressure.

latest educational history, the educational attainment of the majority of respondents is Junior High School (SM P) namely 45.2%. The results obtained are different from the research (Boas et al., 2016), that the majority of hypertension sufferers have a history of education of a bachelor's degree or above. The conclusion of the researchers is that the level of education has no effect on the high number of people suffering from hypertension, but it could be due to other factors that are more influential, such as unhealthy lifestyle behavior on the part of the individual.

Research conducted on elderly people at risk of hypertensive crisis was given a *green color breathing intervention therapy*. This intervention is a combination of respiratory therapy and green color therapy. The research results obtained showed that pre-intervention blood pressure was in the grade 2 category (80.6%), namely systolic pressure 160-179 mmHg and diastolic pressure 100-109 mmHg. After 31 respondents were given *the green color breathing intervention therapy* 2 times a week for 15 minutes, Post blood pressure is in the grade 1 category (74.2%) namely systolic pressure 140-159 mmHg and diastolic pressure 90-99 mmHg.

In accordance with previous research, green therapy can reduce blood pressure in hypertensive patients [2]. Related research also shows the effectiveness of reducing blood pressure in pregnant women, but with a

different combination therapy, namely spiritual therapy [16]. *Green color breathing therapy* is relaxation therapy. When the body is relaxed and positive perceptions provide stimulation to the hypothalamus to reduce stress hormones, endorphin hormones become active, the body's chemical system can also be improved so that blood pressure decreases [23]

4. CONCLUSION

The blood pressure of 29 respondents experienced a decrease after being given *the green color breathing intervention therapy*. The results statistically have an influence *_green color breathing therapy* affected the blood pressure of patients at risk of hypertensive crisis at the UPTD of the Grogol Health Center. Suggestions for the public and health service providers are *green color breathing therapy* as companion therapy given along with pharmacological therapy can be given to people with hypertension.

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