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The Effect Of Finger Hold Relaxation Techniques On Mean Arterial Pressure (Map) In Hypertension Patients

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ABSTRACT

Hypertension is a silent killer with a high prevalence with varying symptoms in each individual. The finger hold relaxation technique is a simple technique using a touch of the hand accompanied by deep breathing. This study aims to determine the effect of the finger hold relaxation technique on the mean arterial pressure (MAP) in patients with hypertension. This type of research is True Experimental with a Randomized Controlled Trial (RCT) approach. The population of all patients with hypertension in the working area of the East Purwokerto Health Center. The random sampling technique for patients treated at the puskesmas with a total of 84 respondents was divided into 42 treatment groups and 42 control groups. The instrument used to measure the mean arterial pressure is a digital sphygmomanometer. The data analysis used isTest Repeated Measures Anova. There is a significant effect of finger hold relaxation technique on the mean arterial pressure (MAP) in patients with hypertension (p value = 0.000 is < = 0.05). The finger hold relaxation technique can reduce the mean arterial pressure (MAP) in patients with hypertension.

Keywords: *Hypertension, Mean Arterial Pressure, Finger Hold Relaxation Technique*

Introduction

Hypertension is a silent killer where symptoms can vary from individual to individual(Suroto et al., 2019). Hypertension is called the number one killer in the world (Taghizadieh & Mohammadinasab, 2021) The incidence is expected to increase by more than 50% in the next 30 years (Touyz & Schiffrin, 2021). Hypertension is a chronic problem as the cause of many cardiovascular diseases such as stroke, coronary heart disease and impaired kidney function. The risk of these complications has also increased even in mild hypertension. Even hypertension in Asia is estimated at 8-18%. The prevalence rate of hypertension in the United States shows a range between 15-22% while in Indonesia it ranges from 0.65-28.6% (Sujarwoto & Maharani, 2020).

Many things can be done to control blood pressure either through lifestyle modification or administration of hypertension medication. However, long-term treatment will allow the occurrence of drug side effects that cause organ damage. Therefore, a complementary therapy is needed to reduce dependence on drugs, namely through relaxation techniques. The finger hold relaxation technique creates a sense of comfort and relaxation that can activate the parasympathetic nervous system so that it can reduce heart rate, respiratory rate, and blood pressure (Windartik et al, 2017).

Finger hold therapy is part of the Jin Shin Jyutsu (Japanese acupressure) technique which is very simple and easy for anyone to do because it is related to fingers and breathing. This technique uses a touch of the hand by involving breathing to increase calm and relax the body (Krishna et al.,2019). This relaxed feeling can reduce muscle tension so that it can reduce stress. The decrease in stress will stimulate the work of the parasympathetic nerves by reducing catecholamines and cortisol which will increase dehydroepiandrosterone (DHEA) and dopamine,

resulting in a decrease in heart rate (HR) and respiratory rate (RR). The decrease in HR and RR will reduce the workload of the heart which will ultimately lower blood pressure (Baker et al.,2020).

Research by Haryuni (2017), regarding the mean arterial pressure (MAP) associated with the incidence of mortality in patients with intracerebral hemorrhage stroke against 73 respondents using the Spearman rank (Rho) analysis test showed that there was a relationship between mean arterial pressure and the incidence of mortality in patients with intracerebral hemorrhage stroke in Indonesia. Mardi Waluyo Hospital Blitar with a significance of p = 0.000 and a correlation coefficient value of r = 0.895, meaning that there is a positive correlation with the strength of the relationship is very strong, the higher the patient's MAP, the higher the mortality incidence of intracerebral hemorrhage stroke patients. So it is recommended that health workers regularly monitor the blood pressure of stroke patients with intracerebral hemorrhage to reduce the occurrence of patient deaths.

Research on finger hold relaxation techniques on mean arterial pressure has not been widely carried out, but several finger hold studies have been carried out to overcome pain intensity and blood pressure, such as Research by Risdiana et al (2021), which shows that there is no significant difference between finger grip relaxation techniques and deep breathing relaxation techniques on blood pressure in the elderly with hypertension with a systolic p-value = 0.371 and a diastolic p-value = 0.605. This means that finger grip relaxation techniques and deep breathing relaxation techniques are effective in reducing blood pressure in the elderly with hypertension. Research by Surahmawati & Novitayanti (2021) showed that finger grip relaxation techniques can reduce systolic and diastolic blood pressure. Research by Ashton et al, (2021), regarding the provision of hand massage relaxation techniques for pain in breast cancer patients shows that the average respondent's pain level before being given a hand massage relaxation technique is 5.09, while the average respondent's pain level after being given a hand massage relaxation technique is 3.09. So that there is a difference in the level of pain between before and after being given a hand massage relaxation technique. Thus, based on empirical finding the objective of this research is to determine the effect of the finger hold relaxation technique on the mean arterial pressure (MAP) in patients with hypertension.

MATERIALS AND METHODS

This research is a true experimental study using a Randomized Controlled Trial (RCT) approach. The purpose of this study was to determine the effect of finger hold relaxation techniques on the mean arterial pressure (MAP) in patients with hypertension in the Work Area of the Purwokerto Timur Health Center 1, Banyumas Regency. The sampling technique was randomly allocated using the 2-block randomization method, namely the treatment group was given code A and the control group was given code B according to the inclusion criteria of 84 respondents. Furthermore, both groups were measured for MAP. The treatment given to the treatment group was a finger hold relaxation technique regularly 3 times a week for 15 minutes and evaluated within 12 weeks. The instrument used to measure MAP is using a digital sphygmomanometer with a normal score if the MAP value is 70-100 mmHg, and abnormal if the MAP value is < or > 70-100 mmHg. Test data analysis using *Repeated Measures Anova Test.*

RESULTS AND DISCUSSION

The sample in this study was randomly allocated for the treatment group as many as 42 respondents and the control group 42 respondents and the results of the study were as follows:

Characteristics of respondents based on age and gender is depicted on Table 1.

Table 1. Characteristics of respondents by age and sex in the treatment group and the control group

Characteristics of respondents	Treatment		Control	
	f	%	f	%
Age (years):				
45-54 (early)	8	19.1	9	21.4
55-64 (middle age)	14	33.3	15	35.7
65-74 (elderly)	20	47.6	18	42.9
Gender:				
Man	13	30.9	15	35.7
Woman	29	69.1	27	64.3
n (sample)	42	100	42	100

Based on the table above, it shows that most of the respondents' ages in the treatment group were in the elderly or elderly (65-74 years) category, namely 20 people (47.6%), and in the control group as many as 18 people (42.9%). And most of the respondents' gender in both groups were women. Based on the patient's age group, the prevalence of hypertension at age > 75 years was 63.8%; age 65-74 years is 57.6%; age 55-64 years is 45.9%; age 45-54 years is 35.6%; age 35-44 years is 24.8%; age 25-34 years is 14.7%; and age 15-24 years is 8.7%.

Based on research by Defianna et al., (2021) that there is a significant relationship between gender and the incidence of hypertension. Pre-menopausal women have a lower risk of cardiovascular disease than men of the same age, but this is in contrast to postmenopausal women who are more at risk for cardiovascular disease. Because in postmenopausal women, low estrogen levels occur so that the blood is thicker which is at risk of causing blood clots.

The mean arterial pressure (MAP) score before and after being given the finger hold technique in the treatment group and the control group is shown in Table 2.

Table 2. The mean mean arterial pressure (MAP) scores before and after the Finger Hold technique in the treatment group and control group

Measurement variable	Treatment		Control	
	mean	p value	mean	p value
Beginning of MAP MAP 1 MAP 2	126,928 122,429 120.523	0.000	125,000 126.095 124.952	0.113
n (sample)	42		42	

The difference in mean arterial pressure (MAP) before and after being given the Finger Hold technique in the treatment group and the control group is presented on Table 3..

Table 3. Post Hoc Test in the Treatment Group

Measurement variable	Treatment Group		
	Mean difference	*95% confidence intervals*	p- value
Initial MAP vs MAP 1 Initial MAP vs MAP 2 MAP 1 vs MAP 2	4.786 6.405 1,619	4.626-4.946 6.213-6.596 1,430-1,808	0.000 0.000 0.000
n (sample)	42		

Based on the table above, it shows that the mean value of MAP scores in the treatment group changed at the beginning of the measurement of MAP, MAP 1, and MAP 2 with p value 0.000 < = 0.05, meaning a significant mean arterial pressure (MAP) score before and after given the Finger Hold technique in the treatment group. In the control group, the p value of 0.113 was > = 0.05, meaning that there was no significant mean arterial pressure (MAP) score in the control group.

This is in accordance with the results of Yano's et al., (2020), which shows that there is a relationship between mean arterial pressure and the incidence of mortality in patients with intracerebral bleeding stroke. The results of this study are also in accordance with Becker et al.,(2021) stating that relaxation techniques can improve mood and reduce heart rate and salivary cortisollevels. And deep breathing techniques can activate baroreceptors that can stimulate nerve parasympathetic can reduce heart rate and lower mean arterial pressure (MAP) in patients with hypertension.

Based on the table above, it shows that the mean difference in MAP in the treatment group occurred in each measurement and the highest score was obtained at the initial measurement of MAP vs. MAP 2, which was 6.405 with a p value of 0.000 < = 0.05, meaning

that there was a significant difference in the mean from the initial measurement. MAP, MAP 1 to MAP 2 in the treatment group.

Furthermore, the results of the post hoc Pairwise Comparison (Bonferroni) test in the control group can be seen in Table 4 below:

Table 4 Post Hoc Test in the Control Group

Measurement variable	Control Group		
	Mean difference	*95% confidence intervals*	p value
Initial MAP vs MAP 1 Initial MAP vs MAP 2 MAP 1 vs MAP 2	1.095 0.048 1.143	0.003-2.194 1.777-1.872 0.264-2.550	0.051 0.147 0.147
n (sample)	42		

Based on the table above, it shows that the mean difference in MAP in the control group in each measurement with the initial p value of MAP vs MAP 1 (p = 0.051), initial MAP vs MAP 2 (p = 0.147) and MAP 1 vs MAP 2 (0 = 0.147 is >α = 0.05 meaning that there is no significant difference in the mean of each MAP measurement in the control group.

This is in accordance with the results of research by Upoyo (2018), showing a significant difference in MAP before and after finger grip relaxation (p = 0.000). There was a significant difference in MAP before and after deep breathing relaxation (p=0.002). The average decrease in MAP after finger grip relaxation was 4.72 mmHg and after deep breathing relaxation was 3.28 mmHg. It was concluded that finger grip relaxation techniques and deep breathing were equally effective in reducing MAP in primary hypertension patients.

According to Risdiana et al.,(2021), holding fingers while taking a deep breath can reduce and heal physical and emotional tension, because finger grip will warm the points of entry and exit of energy in the meridians located on our fingers. The reflex points on the hand will provide stimulation spontaneously at the time of grip. The stimulation will send shock waves or electricity to the brain. These waves are received by the brain and processed quickly to the nerves in the affected organs, so that the blockage of energy pathways becomes smooth.

The effect of the Finger Hold technique on the mean arterial pressure (MAP) in patients with hypertension is displayed in Table 5.

Table 5. Test the difference in results in each measurement in the treatment group and control group

Measurement variable	Treatment (mean and SD)	Control (mean and SD)	Difference (CI 95%)	p value
Beginning of MAP	126,928 (8,282)	125,000 (7,635)	1,929 (1,529-5,386)	0.270
MAP 1	122,142 (8,385)	126,095 (6,778)	3,952 (7,262-0,643)	0.020
MAP 2	120,523 (8,202)	124,952 (7.077)	4,429 (7,754-1.103	0.010
n (sample)	42			

Based on the table above, it shows that the p value of each measurement in the treatment group and the control group is when the initial MAP (p = 0.270) is > = 0.05, meaning that there is no significant difference for the initial MAP. For the measurement of MAP 1 (p=0.020) and MAP 2 (p=0.010) it was < = 0.05, meaning that there was a significant difference in mean arterial pressure (MAP) to 1 and 2 in the treatment group and the control group.

Table 6. The difference in results in the three measurements

Measurement variable	Treatment (mean and SD)	Control (mean and SD)	Difference (CI 95%)	p value
Beginning of MAP	126,928 (8,282)	125,000 (7,635)	1,929 (1,529-5,386)	0.000
MAP 1	122,142 (8,385)	126,095 (6,778)	3,952 (7,262-0.643)	
MAP 2	120,523 (8,202)	124,952 (7.077)	4,429 (7,754-1.103	
n (sample)	42			

Based on the table above shows that the p value in the treatment group and control group together in the three measurements is p = 0.000 < = 0.05 so hypothesis accepted means that there is a significant effect of finger hold relaxation technique on the mean arterial pressure (MAP) in the treatment group and the control group.

This is in accordance with the results of research (Risdiana et al.,(2021), showed that systolic and diastolic blood pressure showed a significant decrease before and after finger grip relaxation therapy and deep breaths. So it can be concluded that there is an effect of finger grip relaxation therapy and deep breathing on reducing blood pressure in hypertensive patients.

According to Windartik et al.,(2017) relaxation is the same as medicine antihypertensivein lowering blood pressure. The process begins by relaxing the smooth muscles of the arteries and veins along with other muscles in the body. The effect of relaxing these muscles causes levels ofnorepinephrinein the blood decreases. Relaxed muscles will spread the stimulus to the hypothalamus so that the soul and human internal

organs feel calm and comfortable. This situation will suppress the sympathetic nervous system so that the production of the hormones epinephrine and norepinephrine in the blood decreases. Decreased levels of epinephrine andnorepinephrine In the blood will cause the heart's work to pump blood will decrease so that blood pressure also decreases.

CONCLUSION

There is a significant effect of the Finger Hold technique on the mean *arterial pressure* (MAP) with p value = 0.000 is < = 0.05. that can be used as an alternative for hypertension treatment.

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