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ORIGINAL RESEARCH

BLOOD PRESSURE DIFFERENCES AFTER GIVEN TOUCH THERAPY BY CONTROLLING BMI (Body Mass Index)

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ABSTRACT

Hypertension frequently caused dangerous conditions that were not realized and not appeared symptoms. Hypertension was also often referred to as the silent killer because it is a deadly disease. Even hypertension can influence other deadly diseases and increase the risk of heart attack, stroke, and kidney failure.
The research design was a Quasi Experiment with Non-Equivalent Control Group design with pre-posttest control one group design. The research was conducted in the working area of the Dlanggu Health Center on September 22-26, 2020. The population in this study were all hypertension patients. The sampling technique used simple random sampling of 60 people. The instrument used a sphygmomanometer, measuring height and weight, and an observation sheet. Data analysis used the Ancova test with the assumption of normal and homogeneous data distribution.
Ancona analysis results showed that BMIdid not affect systolic blood pressure (F = 0.014, p-value 0.907> α). Still, there was a difference in systolic blood pressure between the control group and the treatment group (F = 105.06, p-value 0.000 <α). The results of the ANCOVA analysis showed that BMI did not affect diastolic blood pressure (F = 0.003, p-value 0.953> α). Still, there was a difference in diastolic blood pressure between the control group and the treatment group (F = 80.899, p-value 0.000 <α). It can be concluded that the difference in systolic and diastolic blood pressure after being given Touch Therapy is not controlled by the BMI variable, other variables that directly affect blood pressure, including stress and regular physical activity, are further investigated.

Keywords

Blood Pressure, Touch Therapy, Controlling BMI (Body Mass Index)

INTRODUCTION

Heart and blood vessel (cardiovascular) disease is theprimary health problem in both developed and developing countries. Moreover, It is the number one cause of death in the world every year (Pudiastuti, 2013). Hypertension will be a severe problem because if it is not treated as early as possible, it will develop and cause dangerous complications such as heart disease, congestive heart failure, stroke, vision problems, and kidney disease (Aisyah Muhrini Sofyan et al., 2013). Someone with

overweight and hypercholesterolemia has a greater risk of developing hypertension (Yulistina et al., 2017).

Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people worldwide have hypertension, meaning that 1 in 3 people in the world is diagnosed with hypertension. The number of people with hypertension continues to increase every year. It is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 10.44 million people die from hypertension and its complications (Kemenkes RI, 2019). From the data obtained at the Puskesmas Dlanggu, Mojokerto Regency, the average number of hypertensive patients who visit each month is 570 patients. Most of the hypertension diseases with no known cause are called primary or essential hypertension. Obesity factor is also a trigger for hypertension. Excess fat in the body will interfere with circulation and blood vessels' pressure (Triyanto. E, 2014).

Modern life behaviours such as diets high in calories, fat, cholesterol, smoking, and drinking alcohol can cause various diseases, such as hypertension and diabetes mellitus. One of the factors driving hypertension is the food factor. Hypertension can also be caused by weight factors (Arini & I, Ketut Wijana, 2020). Overweight (obesity) is a characteristic of the hypertensive population, and it is proven that this factor is closely related to the occurrence of hypertension later in life. Desi Amanda's (2018) research results show that people with hypertension with central obesity have a higher risk of developing hypertension than familiar sufferers (Amanda & Martini, 2018). The results of Nieky's (2014) study showed that body mass index and systolic blood pressure at the BLU Polyclinic of Hypertension and Nephrology, Prof. Dr R. D. Kandou Manado with a value ($p = 0.033$; $r = 0.268$), a statistical test of body mass index with diastolic blood pressure at the Hypertension and Nephrology Polyclinic of BLU, Prof. Dr. R. D. Kandou Manado with a value ($p = 0.006$; $r = 0.344$), ($p < \alpha = 0.05$). This shows that there is a relationship between body mass index and blood pressure (Nieky Greyti Dien & Mulyadi Rina M. Kundre, 2014).

Pharmacological treatment for hypertension has side effects that can worsen the disease state or other fatal effects. This is because the response to a type of drug in each person is different. Possible side effects include headache, dizziness, weakness and nausea (Hartutik & Suratih, 2017). Non-pharmacological methods can also be an option for the treatment of hypertension, in addition to minimizing the chemical side effects of drugs, it also saves more medical costs(Kurniawan & Sulaiman, 2019). One of the non-pharmacological treatments that can be used is touch therapy. Based on the results of research by Rindang (2015), it shows that by doing foot massage there was a decrease in systolic blood pressure 6.29 mmHg and a decrease in diastolic blood pressure 3.44 mmHg (Rindang et al., 2015). Touch therapy is touching and pressing the feet to influence the muscle nerves to relax. It affect the vasodilation of peripheral vessels. The effect is to facilitate the flow of blood back from the lower limb to the heart, where the feet have many nerves that connect to all organs. Both outside and inside the human body, one of its functions is to help lower blood pressure in people with hypertension (Manalu, 2012). This study is in line with Murdhanto's (2005) study, that there is no significant relationship between Body Mass Index and the incidence of hypertension, namely $p = 0.054$. However, the results of this study are different from Megi's (2009) study where there is a significant relationship between Body Mass Index and the incidence of hypertension, namely p =

0.007. From the results of research that has been done and the results of previous studies, it shows that there is a relationship between body mass index and blood pressure. Daily living habits such as a diet high in calories, fatty foods, smoking and drinking alcohol are among the behaviors that can cause several diseases, such as hypertension. Other influencing factors include stress and physical activity which can worsen blood pressure (Niecky, 2019).

METHOD

The research design used Quasi Experiment with Non Equivalent Control Group design. The research design used was pre-posttest control one group design. The research was carried out in the Dlanggu Health Center Work Area on September 22-26 2020 for 5 consecutive days of Touch Therapy massage on the feet with a massage duration of 15-20 minutes. The population in this study were all hypertension patients in the Dlanggu Health Center with the sampling technique using simple random sampling with a total sample of 60 people. The independent variable in this study is Touch Therapy and the dependent variable is blood pressure. The instruments used in this study were a sphygmomanometer (digital tensimete), weight scales, height gauges and observation sheets. Blood pressure was measured before and after Touch Therapy was carried out, then data analysis was carried out using the Ancova test with the assumption of normal and homogeneous data distribution to analyze whether there was a difference in blood pressure after Touch Therapy by controlling BMI.

RESULTS

1. The results of the analysis of hypothesis testing

Table 1 Systolic and dastolic normality test results in the control group and the treatment group

One-Sample Kolmogorov-Smirnov Test

Variabel	*Mean*		*Std. Deviation*		*p value*	
	Sebelum	Sesudah	Sebelum	Sesudah	Sebelum	Sesudah
Control group						
Systolic	151 mm Hg	159 mm Hg	5,7	9,08	0,745	0,836
Diastolic	92,3 mm Hg	99,8 mm Hg	5,4	7,8	0,170	0,872
Kelompok perlakuan						
Sistolik	151.3mmHg	137.7mmHg	5,7	6,5	0,745	0,836
Diastolik	90.5 mm Hg	81mmHg	6,3	7,8	0,077	0,290

The results of the analysis of the normality test in the control group on the pre and post systolic variables using the Kolmogorov-Smirnov test, p value> 0.05, it can be concluded that the data above is normally distributed. The results of the data normality test analysis of the pre and post diastolic

variables using the Kolmogorov-Smirnov test, p value> 0.05, can be concluded that the above data is normally distributed.

The results of the analysis of the normality test in the treatment group on the pre and post systolic variables using the Kolmogorov-Smirnov test, p value> 0.05, it can be concluded that the data above is normally distributed. The results of the data normality test analysis of the pre and post diastolic variables using the Kolmogorov-Smirnov test, p value> 0.05, can be concluded that the above data is normally distributed.

Table 2 The results of the systolic pressure difference test after controlling for BMI

Tests of Between-Subjects Effects

Dependent Variable: sistolik_post

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7020.884[a]	2	3510.442	55.427	.000	.660
Intercept	17626.811	1	17626.811	278.310	.000	.830
Kelompok	6654.087	1	6654.087	105.062	.000	.648
IMT	.867	1	.867	.014	.907	.000
Error	3610.100	57	63.335			
Total	1334063.000	60				
Corrected Total	10630.983	59				

a. R Squared = .660 (Adjusted R Squared = .649)

Ancova analysis results showed that BMI did not affect systolic blood pressure (F = 0.014, p value 0.907> α), but there was a difference in systolic blood pressure between the control group and the treatment group (F = 105.06, p-value 0.000 <α).). It can be concluded that the difference in systolic blood pressure after being given Touch Therapy is not controlled by the BMI variable. The therapy model is quite good, namely 66%.

Table 3 The results of the diastolic pressure difference test after controlling for BMI

Tests of Between-Subjects Effects

Dependent Variable: diastolik_post

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5283.032[a]	2	2641.516	42.344	.000	.598
Intercept	6373.327	1	6373.327	102.165	.000	.642
Kelompok	5046.710	1	5046.710	80.899	.000	.587
IMT	.215	1	.215	.003	.953	.000
Error	3555.818	57	62.383			
Total	499711.000	60				
Corrected Total	8838.850	59				

a. R Squared = .598 (Adjusted R Squared = .584)

The results of the ancova analysis showed that BMI did not affect diastolic blood pressure (F = 0.003, p value 0.953> α), but there was a difference in diastolic blood pressure between the control group and the treatment group (F = 80.899, p-value 0.000

<α). It can be concluded that the difference in diastolic blood pressure after being given Touch Therapy is not controlled by the BMI variable. The therapy model was quite good, namely 59.8%.

DISCUSSION

ANCOVA analysis results showed that BMI did not affect systolic blood pressure (F = 0.014, p-value 0.907> α). However, there was a difference in systolic blood pressure between the control group and the treatment group (F = 105.06, p-value 0,000 <α).). It can be concluded that the BMI variable does not control the difference in systolic blood pressure after being given Touch Therapy. The therapy model is quite good, namely 66%. While the results of the ancova analysis showed that BMI did not affect diastolic blood pressure (F = 0.003, p value 0.953> α), but there was a difference in diastolic blood pressure between the control group and the treatment group (F = 80.899, p-value 0.000 <α) . It can be concluded that the BMI variable does not control the difference in diastolic blood pressure after being given Touch Therapy. The therapy model was quite good, namely 59.8%.

The results showed that there was no difference in blood pressure in both systolic and diastolic blood pressure after being given Touch Therapy by controlling BMI. This study is in line with research(Murdhanto S, 2005)in (Fitriana et al., 2013), that there is no significant relationship between obesity and the incidence of adolescent hypertension, namely p = 0.054. This is because factors for hypertension can be divided into irreversible risk factors (such as heredity or genetics, gender, and age) and risk factors that can be changed (such as obesity or obesity, lack of exercise or physical activity, smoking, stress, etc. consumption of alcohol and consumption of salt). One of the unhealthy lifestyles is the occurrence of excess body weight or obesity so that obese people can be one of the factors causing hypertension but can be prevented if they adopt a healthy lifestyle (Ulfa Intan, 2020).

Hypertension is when a person has systolic blood pressure ≥140 mmHg and or diastolic blood pressure ≥90 mmHg, on repeated examinations. Diastolic blood pressure is the primary measurement on which to determine the diagnosis of hypertension (American Heart Association, 2014). Symptoms experienced in hypertension are in the presence of an increase in blood pressure or depending on the level of blood pressure. Symptoms of hypertension that arise can be different, sometimes even people with hypertension have no complaints. However, because hypertension sufferers often do not notice symptoms, it can cause complaints when specific complications occur in organs such as the brain, eyes, kidneys, heart, blood vessels, or other vital organ(Wahyuni, 2014) Based on the results of the study, it was concluded that there was a decrease in systolic blood pressure by 13.6 mmHg and a diastolic decrease in diastolic blood pressure by 8.5 mmHg. The result of p-value 0.000 <α, it can be concluded that H0 is rejected, meaning that Touch Therapy of the Feet Against Blood Pressure for Patients with Hypertension is effective in reducing systolic blood pressure. Good therapy model, namely 72.8%. The results of the analysis of the equivalence test in the diastolic variable group using the Levene's test, obtained p value> α, it can be concluded that the data is homogeneous. ANCOVA analysis results obtained F count 82.53 and p-value 0.000 <α, it can be concluded that H0 is rejected, meaning that Touch Therapy of the Feet Against Blood Pressure in Patients with Hypertension is effective in reducing diastolic blood pressure. The therapy model is quite good, namely 62%.

Massage Touch Therapy on the feet for hypertension can improve blood circulation throughout the body, maintain good health, help reduce pain and fatigue, accelerate the production of endorphins which function to relax the body so that blood pressure decreases(Kurniawan & Sulaiman, 2019). This is also explained by (Dalimartha et al., 2008) in (Hartutik & Suratih, 2017)that massage techniques have an impact on the smooth circulation of blood flow, balancing energy flow in the body and relaxing muscle tension. Although massage techniques will not have much impact on patients with severe hypertension, several studies have shown that massages can reduce blood pressure in patients with mild and moderate hypertension. Whereas research by (Zunaidi et al., 2014)there is a difference between reflexology and foot massage therapy to reduce blood pressure.And in this study recommendations, reflexology therapy as a complementary therapy can be applied by nurses in reducing blood pressure in sufferers. Hypertension.

Patients with hypertension after being given touch therapy had a significant decrease in blood pressure, but after controlling with BMI, there was no change in blood pressure. Many factors influence hypertension. The most dominant risk factors for hypertension are stress and physical activity (Karim et al., 2018). Stress is an unpleasant physical and psychological pressure. It has recently been hypothesized that oxidative stress is a key player in the pathogenesis of hypertension(Baradaran et al., 2014). Stress can stimulate the child's kidney glands to release adrenaline and stimulate the heart to beat faster and stronger, so that blood pressure will increase. Also, physical activity also affects the incidence of hypertension, that the lower the physical activity, the higher the risk of developing hypertension. Conversely, respondents who have heavy physical activity tend to be less at risk of developing hypertension. So the physical activity of the respondents affects the occurrence of hypertension(Megi Astria Salam, 2010).

CONCLUSIONS

There was no difference in blood pressure both in systolic and diastolic after given Touch Therapy by controlling BMI. This is because blood pressure is not only controlled by BMI, but other variables that play a direct role are stress and physical activity.

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