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INFLUENCE GIVING *INFUSION OF LEMON WATER* (*Citrus limon*) AND CUCUMBER (*Cucumissativus L*) ON SUFFERER HYPERTENSION IN REGION WORK PUBLIC HEALTH CENTER PUUWATU CITY KENDARI

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Abstract

Background: *The prevalence of hypertension in Province Sulawesi Southeast, based on results in 2013, was down to 25%, and in Riskesdas 2018, it was up to 31%.Data on the health profile of Puuwatu Public Health Center, Kendari City, hypertension in adults (20-44 years) in the last three years showed that in 2014, there were 284 cases; in 2015, there were 222 cases; in 2016, increased to 419 points and in 2017 to 498 casesInfused water is water mixed with fruits, then hushed up for a few hours until the juices are out.* ***Aims:*** *The objective is to know the influence of giving infusion water, fruit, and vegetables (cucumber and lemon) to hypertension sufferers in the territory work public health center Puuwatu Kendari City.* ***Methods:*** *This study is a quasi-experimental study using a two-group pre-post test design with a control and a survey approach. The study was held from 05 November 2020 to 29 January 2021. The Design of this study was to give infused water of fruit and vegetables (cucumber and lemons) to patients with Hypertension who were previously checked for blood pressure and then given an intervention from gift Infused Water of fruits and vegetables (cucumber 100 g) and 50 grams of lemon plus 250 ml of mineral water) One time a day for eight consecutive days. Blood pressure was checked four times after giving Infused Water.* ***The Results:*** *analysis independent t-test on the case and control pressure blood systolic has p-value = 0.339 (> 0.05) meanwhile, diastolic has p-value = 0.374 (> 0.05), there is no difference in pressure blood systolic and diastolic significant second group sample. After intervention as much four times during eight days and measurement pressure blood every two days once, the result was then averaged, based on analysis of independent t-test against post-test on variable systolic, obtained p value = 0.048 (<0.05), whereas on variable diastolic obtained p value = 0.17 (<0.05). Systolic blood pressure before and after the intervention average for the case group was 144.4575 mmHg. The control group was 152.155 mmHg, and diastolic blood pressure before and after the intervention means for the case group was 90.9375 mmHg, and the control group was 96.335 mmHg.* ***Conclusions:*** *There is an effect of giving cucumber and lemon-infused water on systolic and diastolic blood pressure.*

Keywords*: Infused water, hypertension, systolic and diastolic*

1. Introduction

Hypertension is a silent killer that causes the phenomenon of mountain ice. The prevalence of hypertension increases with age. If this pathological condition is not treated quickly and early, it will increase the risk. (1). Based on data from WHO (2005) in Non-communicable Disease Country Profiles, the prevalence in

this world at age >25 years reached 38.4% (2). Based on the results of the 2007 Riskesdas, the prevalence of hypertension in Southeast Sulawesi Province was (31.7%), and in the 2013 Riskesdas, it fell to (25%), and in the 2018 Riskesdas, it rose to (31%) (3). Based on health profile data from the Kendari City Puuwatu Health Center, hypertension in adults (20-44 years) in the last three years showed that in 2014, there were 284; in 2015, there were 222; and in 2016, it increased to 419, in 2017 it became 498 (4).

Infused water, often called spa water, is mixed with fruit and left for several hours until the juices come out, and then the water is mixed. With this process, the juice from the fruit soaked in water will come out and provide various benefits for people who drink the water. The main nutritional content of infused water is vitamins, minerals, and fiber (5).

Cucumbers provide many benefits for the body, including helping lower blood pressure, a source of vitamin B, which can protect the body from disease attacks, and keeping the body from dehydration because cucumbers contain 95% water, helping the body eliminate toxins (6).

The nutritional value of cucumber is quite good because this fruit vegetable is a source of minerals and vitamins. The nutritional content per 100 g of cucumber consists of 15 calories, 0.8 g protein, 0.1 starch, 3 g carbohydrates, 30 mg phosphorus, 0.5 mg iron, 0.02 thiamine, 0.01 riboflavin, 14 mg acid, 0.45 IU vitamin A, 0.3 IU vitamin B1, and 0.2 IU vitamin B2 (7).

According to the results of research by Raditya (2015), the effect of giving infused water with a combination of cucumber (Cucumis sativus Linn.) and red grapes (Vitis vinifera) on blood pressure in young adult men, the average systolic/diastolic blood pressure before treatment was 115 .20/76.13 mmHg. After the subject was given treatment, there was a decrease in the average systolic/diastolic blood pressure to 106.83/71.87 mmHg. Statistical tests show a significant difference with p = 0.000 (8).

Based on the results of Katimenta's research (2018), it was found that there was an effect on respondents after being given cucumber-infused water, namely reducing blood pressure with an average value of 20 mmHg, p = 0.000 (9).

2. Research Methods

This type of research is a Quasy Experiment using a two-group pre-post test design with control and a survey approach. The design of this study was to provide infused water with fruit and vegetables (cucumber and lemon) to hypertension patients whose blood pressure was previously checked and then given intervention in the form of serving infused water with fruit and vegetables (75 gr

cucumber and 75 gr lemon plus 250 ml mineral water) for eight days. Blood pressure was checked every two days in a row, and 4 times, blood pressure was checked after administering fruit and vegetable-infused water to determine the effect. Blood pressure treatment and measurements were carried out at the Puuwatu Health Center, Kendari City, by medical/paramedical personnel. The sample of all adults suffering from hypertension was 64 people. The sampling technique was purposive sampling with inclusion criteria (adult, suffering from hypertension (stated by a doctor), able to communicate, and willing to be sampled. Types of primary data (sample characteristics, blood pressure measurements four times). Secondary data includes the Profile of Puuwatu Health Center, Kendari City.

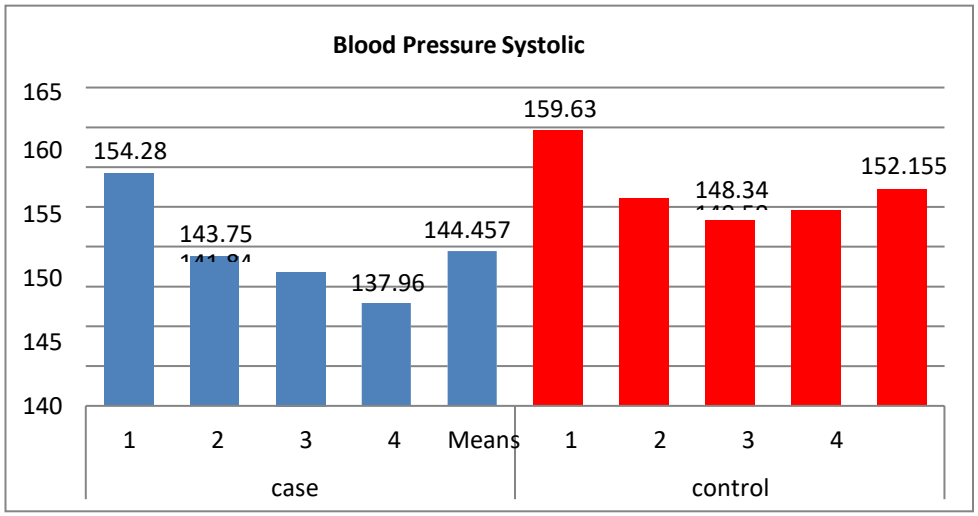
3. Result and Discussion

This research used the Independent T-test statistical test to see the differences before and after treatment.

Table 1. Characteristics sample

CHARACTERISTICS	Case		Control	
	n	%	n	%
TYPE SEX				
Woman	25	78.1	19	59.4
boy _	7	21.9	13	40.6
Total	32	100.0	32	100.0
AGE (YEAR)				
26-35	1	3.1	0	0.0
36-45	2	6.2	2	6.2
46-55	10	31.2	13	40.6
56-65	14	43.8	11	34.4
>65	5	15.6	6	18.8
Total	32	100.0	32	100.0
EDUCATION				
Elementary School	4	12.5	12	37.5
Junior High School	8	25.0	5	15.6
Senior High School	10	31.2	14	43.8
PT	10	31.2	1	3.1
Total	32	100.0	32	100.0

Based on data characteristics, the sample in Table 1 shows that from 32 group cases and 32 groups, control for type gender Good group case and control part big type sex Woman group case 78.1 % and group control 59.4. The age in the group case part ranges from 56 to 65 years, 43.8%, and the control range is 45 to 55 years, 40.6 %. Education in group case part big finished Senior High School and College Tall 31.2% and group respectively control finished Senior High School as big as 43.8 %.

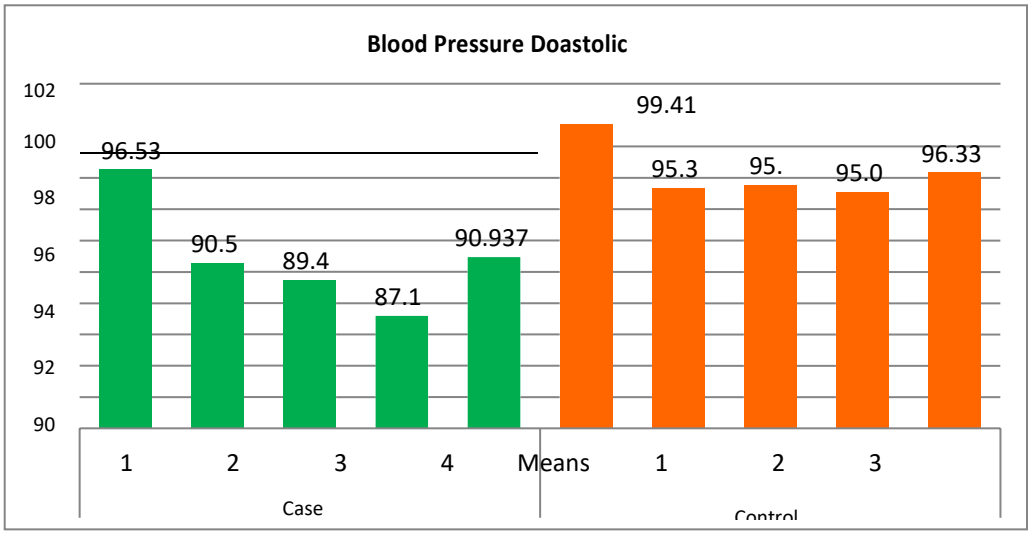


Graph 1.
Blood Pressure Systolic Before And After Intervention

Graph 1 shows that the blood pressure before and after intervention average for the group case was 144.4575 mmHg, and for the group control, it was 152,155 mmHg.

1) **Blood Pressure Diastolic Before and After Intervention**

Blood Pressure diastolic before and after intervention by giving Infused Water Cucumber and Lemons as many as eight days and measurement of Blood pressure times (every two days) can seen in Chart 2 below:



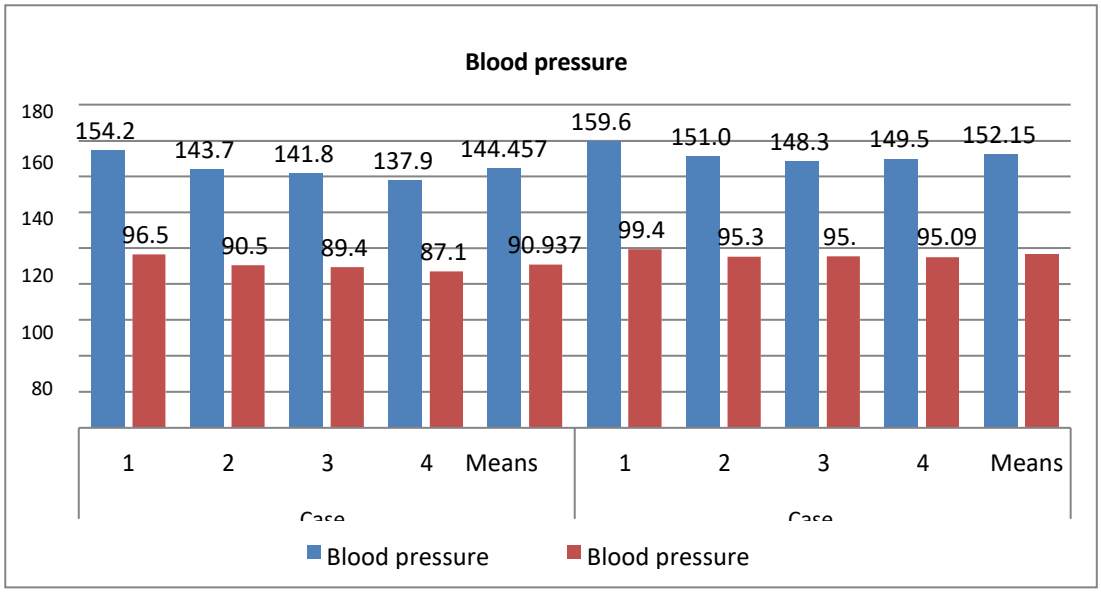
Graph 2

Blood Pressure Diastolic Before And After Intervention

Chart 2 shows that the blood pressure before and after intervention average for the group case was 90.9375 mmHg; for the group control, it was 96,335 mmHg.

2. Blood Pressure Before And After Intervention

Blood Pressure before And after intervention by giving Infused Water Cucumber And Lemons 8 days And the measurement of Blood Pressure 4 times (every two days once) can be seen in graph three under this:



Graph 3

Blood Pressure Before and After Intervention

Chart 3 shows that the Blood Pressure systolic before and after the intervention average for the group case was 144.4575 mmHg, and group control, it was 152,155 mmHg, and the Blood Pressure diastolic before and after the intervention average For the group case was 90.9375 mmHg and group control 96,335 mmHg

Analysis Bivariate

a. Test Normality

In testing normality, the researcher uses the parameter mark probability (sig) as a reference with the provision of mark probability p = > 0.05, so data is distributed in a normal way. Temporary if mark probability p = < 0.05, then the data is not distributed in a way normal

Table 2. Results Test Normality Pre and Post-test

Data	Mark sign.	Conclusion
Pre test Systole Diastole	 0.101 0.441	 Data is normally distributed. Data distributed normal
Post test *Systole (mean)Distole (mean)*	 0.281 0.963	 Data is normally distributed. Data distributed normal

Based on Table 2, we see that data pre-test and distributed post-test in a way normal. With the results, the data pre-test and post-test will processed. Furthermore, with statistics parametric (independent t-test), for calculation normality with test Kolmogorov Smirnov in full can be seen in the attachment.

b. Test Hypothesis

The testing hypothesis is made with the use of an independent t-test. Data pre and post-test is indicator enhancement or change Blood Pressure systolic and diastolic with compare pressure change before treatment and after treatment.

Ho will accept if the probability is p > 0.05, and Ho will be rejected if the probability is p < 0.05. Results analysis independent t-test to score check-up result can seen in Table 3 following this:

Table 3. Results Test Independent T-test Pre and Post-test

Treatment	Variable	Sample	n	Mean	elementary school	Sign.	95% CI	
							Lower	Upper
Pre-test	Systole	Case	32	154.28	18,579	0.339	-16,434	**5,746**
		Control	32	159.63	25,293			
	Diastole	Case	32	96.53	12,796	0.374	-9,289	**3,539**
		Control	32	99.41	12,874			
Post-test	Systole	Case	32	141.19	16,068	0.048	-17,172	**-0.76**
		Control	32	149.81	18,083			
	Diastole	Case	32	89.07	9,295	0.017	-11,346	**-1.133**
		Control	**32**	**95.31**	**11,064**			

Based on Table 3, the independent t-test results for the pre-test on the blood pressure systolic (p-value = 0.339) and diastolic (p-value = 0.374) variables of the case and control groups showed that the p-values for both were greater than 0.05. Therefore, it can be concluded that there is no significant difference in the blood pressure systolic and diastolic variables in the groups.

After the intervention, the blood pressure was measured four times at different times once a week, and the results were averaged. The independent t-test analysis for the post-test variables showed that the p-value (0.048) for systolic was less than 0.05, indicating a significant difference. For the diastolic variable, the p-value was also less than 0.05 (0.017), indicating a significant difference. Therefore, it can be concluded that the intervention affected both the systolic and diastolic blood pressure variables.

Discussion

Material food often used as *infused water* is fresh fruits, which contain vitamin C for guarding the body and have activity antioxidants that are capable of warding off radicals free in the body, one of which is the fruit orange (*Citrus limon*) (10).

Cucumbers have many benefits, including low calories, high potassium content, antioxidants, and vitamin K, which is good for the bones and brain nerves. Apart from being consumed directly as a vegetable or in juice, cucumbers can also produce various benefits that protect our bodies from diseases and malnutrition by making infused water or soaking them in plain water. Consuming cucumber water can prevent high blood pressure and heart.

Infused lemon water is believed to contain vitamin C, which benefits the body. Vitamin C is a type of water-soluble

vitamin and plays a role in warding off various diseases. The role of vitamin C in warding off various diseases is as an antioxidant to neutralize free radicals. Besides vitamin C, other components in lemons act as antioxidants, namely flavonoids and total phenolics (11).

The results of research by administering cucumber and lemon-infused water four times showed that the p-value = 0.048 (<0.05). In contrast, for the diastolic variable, the p-value was obtained = 0.17 (<0.05), so it can be said that for systolic and diastolic blood in accordance with the results of the study Raditya (2015) Influence giving an infused water combination of Cucumber (Cucumis sativus Linn.) and grapes red (Vitis Vinifera) to Blood pressure mature young in vinifera) on blood pressure in young adult men. The average systolic/diastolic blood pressure was obtained before being given treatment. Namely 115.20/76.13 mmHg. After the subjects were given treatment, there was a decrease in the average systolic/diastolic blood pressure to 106.83/71.87 mmHg. Statistical tests show a very significant difference with p = 0.000.

The results of a similar study found that there was an effect on respondents after being given cucumber-infused water, namely a decrease in blood pressure with an average value of 20 mmHg, p = 0.000. (9).

Form other research by making infused water by adding pieces of lime, then soaking them in mineral water for several hours. Previous research was also making infused water consisting of a combination of chayote, lemon, deglet nour dates, red ginger, and mint leaves, which can reduce blood pressure in prehypertension and hypertension patients. (12).

The results of the Katimenta research in 2018 showed that this research used a statistical test. The paired T-test showed a sig value (2-tailed) of 0.000. The p-value ≤ alpha (0.05%) means that Ha was received, which shows that giving cucumber-infused water effectively reduces pressure. Blood in hypertensive elderly in the UPT area of Panarung Health Center, Palangka Raya city (9).

4. Conclusion

The average systolic blood pressure before and after intervention for the case group was 144.4575 mmHg, and the control group was 152.155 mmHg, and the average diastolic blood pressure before and after intervention for the case group was 90.9375 mmHg, and the control group was 96.335 mmHg. There is an effect of giving cucumber and lemon-infused water on systolic and diastolic blood pressure.

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