

# The Effect of Cucumber Juice on the Elderly Hypertension in Citalahab Village, Pandeglang District in 2020

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**Background:** Hypertension is a risk factor of the occurrence of cardiovascular and kidney disease. Male and female have the same risk of hypertension. Intake with food material modification containing potassium and magnesium becomes one of complementary therapy to decrease blood pressure, one of them is cucumber. Cucumber is vegetable grows in all seasons and easily obtained in Indonesia. It also has potassium and magnesium content. **Method:** This research used quasi-experimental research through two group pretest and posttest design approach. The research population was 100 elderly with hypertension in which there were 34 respondents who became the research samples. The sampling technique in this research was purposive sampling technique. **Results** Research result on the distribution of frequency on control group was that most of them were at the age of  $\leq 65$  years old (82.4%) and were mostly female (76.5%). Meanwhile, in the intervention groups, most of them were at the age of  $\leq 65$  years old (88.2%) and were mostly females as well (88.2%). **Conclusion:** It obtained result that there was different blood pressure on the hypertension sufferer in before and after the consumption of cucumber juice on intervention group. Wilcoxon Signed-Rank test showed  $p$  value  $< 0.05$  which means that there was effect of cucumber juice on Elderly hypertension between the control and intervention groups.

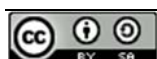
## I. Introduction

The improvement of welfare especially in the field of health becomes important concern for the government and community. The emergence of various diseases in the community affects greatly on their life welfare. One of the diseases which continuously develop is hypertension or commonly called as high blood pressure disease (Adriansyah, 2017).

World Health Organization (WHO) in 2017 issued data that around 1.13 billion people in the world suffered from hypertension. The number of hypertension sufferer continuously increases annually. It is estimated that in 2025, there will be 1.5 billion hypertension sufferer and 9.4 million people died from the hypertension and its complication.

Hypertension killed 8 million people annually. Almost 1.5 million of them were Southeast Asian people. It was estimated that there was 1 of 3 adults in Southeast Asia who suffered from hypertension (WHO, 2017). According to the data issued by Health Office, hypertension and other heart disease become the second cause of death after stroke (Basic Health Research, 2017).

Based on the prevalence of elderly hypertension in Indonesia, 45.9% of them were at the age of 55-64 years old, 57.6% were at the age of 65-75 years old, and 63.8% were at the age of more than 75 years old. The prevalence of the hypertension in Indonesia based on the measurement of blood pressure at the age of  $\geq 18$  years old was 25.8%. The highest prevalence was in Banten (30.9%), followed by South Kalimantan (30.8%), and East Kalimantan (29.6%) (Ministry of Health RI, 2018).



Health Office of Banten Province data in 2019 showed hypertension cases of 58.84% or about 629,153 from 1,069,263 non-infectious disease. Meanwhile, Banten Province recorded that hypertension case in 2019 was as many as 22,940 (45.63%) from non-infectious disease in Banten Province. Most of the cases were found on elderly (Profile of Health Office of Banten Province, 2019).

Pandeglang District Health Office reported (2019) that morbidity in Pandeglang District obtained from the report of hospital as a referral health facility and independent midwives practice as primary health facility have hypertension prevalence in the second rank of the 10 biggest diseases in Pandeglang District which was by 12.10% (Pandeglang District Health Office, 2020).

Hypertension is commonly known as high blood pressure which is an abnormal increase in blood pressure, both systolic and diastolic blood pressure. Someone who has hypertension usually has the potential to experience other diseases such as stroke and heart disease (Hartono, 2018).

Risk factors for hypertension include genetic, age, gender, ethnicity, stress, obesity, salt intake, and smoking habits factors. Hypertension is inherited or genetic. Individuals with a family history of hypertension have twice the risk of suffering from hypertension than people who do not have a family with a hypertension history. Hypertension incidence increases as the age increases, and males have a higher risk of suffering from hypertension earlier. Obesity can increase the hypertension incidence. The reason is because fat can cause blockages in blood vessels so that it can increase the blood pressure. High salt intake will cause excessive expenditure from natriouretic hormone which will indirectly increase the blood pressure. Smoking habit causes the increase of hypertension risk although the hypertension mechanism is not known certainly (Muhammadu, 2017).

The medication for hypertension consists of Pharmacological and Non-Pharmacological therapy. Non-Pharmacological therapy aims to decrease the blood pressure and control the risk factors and other diseases (Junaidi, 2010).

The decrease of blood pressure can be done through medication, exercise and food intake regulation. Cucumber juice can treat hypertension due to its mineral content including potassium, magnesium, and phosphorus. In addition, cucumber juice is diuretic because of its high water content which helps reduce blood pressure (Myrank, 2019). The mineral content of potassium, magnesium, and fiber in cucumber juice is beneficial for lowering blood pressure. Magnesium mineral also has a role in blood flow and calm the nerves. Even though cucumber juice is easy to get and the price is affordable, many people do not know that cucumber juice can decrease the blood pressure.

Research conducted by Lailatul et al (2017) on decreasing systolic and diastolic blood pressure in hypertension sufferers with cucumber juice therapy with a dose of 2x200 grams per day (morning and evening) for 2 weeks obtained that 80% of hypertensive patients experienced decreased blood pressure. The results of statistical test showed that there were differences in diastolic blood pressure decrease between the treatment and control groups.

Research conducted by Zauhani & Zainal (2018) was aimed to identify the decrease in blood pressure by giving cucumber juice 2 times a day in a dose of 2x200 grams per day (morning and evening) for 2 weeks. The results of their research showed that it was empirically proven that cucumber juice caused blood pressure to decrease.

Based on the results of a preliminary study at Banjar Health Center in Pandeglang District, there were 100 elderly suffered from hypertension. The results of interviews results that 15 elderly have hypertension and the remaining did not know that they had high blood pressure and rarely did blood pressure measurements. From the background above, the researchers conducted a study entitled the effect of cucumber juice on the elderly hypertension in Citalahab Village, Pandeglang District in 2020.

## II. METHODS

This study employed quasi-experimental method through two group pretest and posttest design approach. The research population was 100 elderly with hypertension. The sampling technique used was purposive sampling technique, obtaining 34 elderly. In this study, normality test was performed obtaining that the data were not normally distributed, so researchers conducted a statistical test analysis using Wilcoxon test and Maan Whitney U.

## III. RESULTS

**Table 1 Difference of Blood Pressure on Elderly Suffered from Hypertension Before and After Provided by Hypertension Medicine on Control Group**

Group		N	Mean Rank	Sum of Ranks	Z	P value
Post_Control - Pre_Control	Negative Ranks	10	6.00	66.00	-3.125	0.002
	Positive Ranks	7	4.00	6.60		
	Total	17				

Based on Table 1, by using Wilcoxon test (non-parametric test), from 17 respondents in the control group, there were 10 of them obtained negative ranks while the remaining 7 had positive ranks and no data with zero data differences or data pairs with the same value. This means that from 17 respondents compared, there were 7 respondents who showed that elderly experienced decrease in blood pressure after consuming anti-hypertensive drugs, but there were still 10 respondents who had no significant decrease in blood pressure after given anti-hypertension drugs. Based on the results of the statistical test table for the control group above, p values = 0.002 < 0.05, then there was difference in blood pressure in the elderly suffered from hypertension before and after being given anti-hypertensive drugs in the control group.

**Table 2 Differences in Blood Pressure in Elderly Hypertension Before and After Given Cucumber Juice in the Intervention Group**

Group		N	Mean Rank	Sum of Ranks	Z	P value
Post_Control - Pre_Control	Negative Ranks	6	8.50	136.00	-3.125	0.000
	Positive Ranks	11	6.30	16.00		
	Total	17				

Based on the results of table 2 using the Wilcoxon test (non-parametric test), among 17 respondents in the intervention group, there were 6 respondents who had negative ranks and 11 respondents who had positive ranks and no zero data differences or data pairs with equal value. This means that among the 17 respondents compared, there were 11 respondents who showed decreased blood pressure after consuming cucumber juice, but there were still 6 respondents who had no significant decrease in blood pressure even after given cucumber juice. Based on the results in the statistical test table for the intervention group above, p values = 0.000 < 0.05, there was a difference in blood pressure in elderly suffering from hypertension before and after cucumber juice was given to the intervention group.

**Table 3 The Effect of Giving Cucumber Juice on Elderly Suffering from Hypertension between Control and Intervention Groups**

Kelompok	N	Mean Rank	Sum Of Rank	Z	P value
Control Group	17	24.59	418.00	-4.306	0.000
Intervention Group	17	10.41	177.00		

Table 3 shows that 17 respondents from the control group and 17 respondents from intervention group indicated that the mean rank for blood pressure data at the time of the post for the control group was 24.59, while the mean rank for the intervention group was 10.41. With each sum of rank, the control group obtained 418.00 while the intervention group obtained 177.00. Based on the results of data analysis using Whitney U test technique after being given a posttest in the intervention group and the control group  $p = 0.000 < 0.05$ , then  $H_0$  is rejected and  $H_a$  is accepted, meaning that the hypothesis states that there were differences in the posttest between control and intervention groups so that there is an effect in giving cucumber juice to decrease the blood pressure in patients suffering from hypertension.

#### IV. DISCUSSION

Based on the results of the research, it showed that from the control and intervention groups consisting of 17 respondents respectively, data analysis using whitney maan test technique after being given a treatment (posttest) in the intervention group and the control group obtained  $p = 0.000 < 0.05$ , thus there was an effect in giving cucumber juice to decrease blood pressure in people suffering from hypertension.

This is in line with the theory proposed by Nasir (2013) that Non-pharmacological treatment using cucumber juice or even with cucumber alone is the right choice, because cucumbers contain a number of nutrients such as fiber, vitamin A, and potassium. Cucumbers also have a refreshing effect. Florida State University studies show that cucumbers also contain high levels of potassium and water content which has the effect of reducing hypertension.

A similar study has also been carried out by Zauhani & Zainal (2019), aiming to identify the decrease in blood pressure by giving cucumber juice. In this study, there were intervention group of 20 elderly people suffering from hypertension without complications (such as diabetes mellitus, etc.) for 7 days in a row. In this study, the determination of pre-treated blood pressure was only taken once, namely on the first day before the treatment, the measurement was in the morning, afternoon and evening to determine the average blood pressure of the pre-treatment. For 7 days, each elderly person obtained 200 ml of cucumber juice. The results of the study showed that it was empirically proven that there was an effect of giving cucumber juice to decrease the blood pressure. Most significant decrease occurred on day 4 and day 5, 2 hours after treatment.

It is also supported by Mardiaty's research (2019) that based on the results on 23 respondents, the systolic blood pressure data before the intervention was 149.13 mmHg with a standard deviation of 9.002. Meanwhile, the mean systolic blood pressure after the intervention was 136.09 mmHg with a standard deviation of 11.962. Statistical test results indicated that the value was  $p < \alpha$  ( $0.001 < 0.05$ ) which means that there were significant differences in the mean value of systolic blood pressure before and after the intervention. This means that the cucumber content consumed can reduce the risk of hypertension by helping to decrease the muscle and emotional strain of the respondent. Based on the results of this study, it indicated that consuming cucumber juice has positive effect on blood pressure.

According to the researchers' assumptions, the effect of non-pharmacological therapy of cucumber juice on elderly hypertension is because one of the contents of cucumber juice serves to ease the work of the heart and blood vessels to relax so as to reduce blood pressure after consuming 200 cc cucumber juice 2 times for 7 consecutive days - according to the hours of 08.00 and 20.00 Western Indonesia Time. Previously, many respondents complained that their blood pressure were always high. Some of them felt severe headaches due to hypertension. After drinking cucumber juice, respondents felt better than before because the potassium content in cucumber juice can flex the blood vessels so that blood flow is smoother and also relieve the heart work so that it decreases to normalizes the blood pressure.

## V. CONCLUSION

Based on the results of research and discussion on the effect of cucumber juice on elderly hypertension in Citalahab Village Pandeglang District in 2020, the following conclusion is taken. Based on the statistical test table results for the control group, the p value obtained 0.002 which means that there was a difference in blood pressure in elderly suffering from hypertension before and after being given anti-hypertensive drugs while in the intervention group the p value obtained 0.000 which means that there was difference in blood pressure in elderly suffering from hypertension before and after drinking cucumber juice. Based on the statistical test, p value obtained was  $0.000 < 0.05$ , it means that there is an effect of giving cucumber juice to decrease blood pressure in patients suffering from hypertension. It is recommended that the results of this research can add the researchers' insight on knowledge about providing therapy to patients suffering from hypertension and can apply the knowledge gained for further research.

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