The Effect of Giving Boiled Water from Celery Leaves on Blood Pressure in Elderly People Suffering from Primary Hypertension at the Karnagharja Community Health Center, Pebayuran District

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Abstract

Introduction: *Hypertension is one of the highest causes of death in Indonesia. The prevalence of hypertension increased from 25.8% in 2013 to 34.1% in 2017. Handling hypertension apart from pharmacological treatment can also be done non-pharmacologically, including herbal therapy, one of which is celery leaf herbal therapy. The aim of this study was to determine the effect of giving boiled water from celery leaves on blood pressure in elderly people with primary hypertension.* ***Methodology:*** *The type of research used is quantitative research using the pre-experimental one group pre test post test method. The sample in this study was 18 elderly people suffering from primary hypertension with degrees I and II using a purposive sampling technique. The analysis carried out was univariate and bivariate analysis.* ***Research Findings:*** *The results of the study showed differences in the average systolic and diastolic blood pressure in elderly people with hypertension before and after being given boiled water from celery leaves. The results of the analysis in this study using the repeated measure ANOVA test were for systolic and diastolic blood pressure p value = 0.000 < 0.05.* ***Conclusions:*** *and suggestions: consuming boiled water from celery leaves has an effect on lowering blood pressure in elderly people with hypertension, for people with hypertension you can apply boiled water from celery leaves as a companion medicine to reduce high blood pressure.*

Keywords: *Decoction of celery leaves, Blood pressure, Hypertension, Elderly*

1. Introduction

Aging or seniors are people whose age is 60 years or more, elderly people are the final stage of development in life. Someone who is considered elderly is someone who is no longer able to earn their own living. In general, elderly people will experience various declines in body function over time and will be more likely to experience degenerative diseases[1].

The elderly or elderly will usually experience degenerative diseases, most of them What attacks the elderly is disease Noninfectious (PTM). These include dental problems, joint diseases, oral problems, diabetes mellitus, heart disease, stroke and also hypertension[2]. Hypertension is a

cardiovascular disease in which there is an increase in pressure in the arteries which causes increased pressure on the walls of the cavity where the blood is located. Hypertension can increase the work of the heart, if this continues it can cause damage to the heart and blood vessels[3].

According to data from the World Health Organization (WHO), (2021). estimates that the prevalence of hypertension varies across regions and country income groups[4]. In Africa, the prevalence of hypertension is 27%, which is the highest prevalence of hypertension in the world. In Southeast Asia itself, it occupies the 3rd position in terms of prevalence rate.hypertension highest in in world as big as 25% of the entire population which there is[5].

The 2019 West Java Health Profile recorded data on the prevalence of hypertension in West Java in 2019 at 41.6%. Meanwhile, the results from Riskesdas in 2018 showed a hypertension prevalence rate of 39.6%, compared to data from Riskesdas in 2013 with a prevalence of 29.4%, there was an increase in hypertension prevalence data in West Java. Bekasi is still included In West Java province in Bekasi there are 546,283 people with hypertension[6].

Based on data from the Bekasi District Health Service for 2020, it shows The prevalence of hypertension sufferers in Bekasi continued to increase every year until 2019, but there was a decrease in hypertension sufferers in 2020. The number of hypertension sufferers in 2016 was 19,507 people, increasing in 2017 to 28,407 people, then increasing drastically in 2018 to 87,371 people, increasing again in 2019 it became 115,089 people. Then there was a decrease in hypertension sufferers in 2020 with a total of 72,189 people. Hypertension sufferers in Bekasi district in the age group from 45- 64 years amounted to 4150 people with a percentage of 11.86%[7].

The results of a preliminary study on March 15 2023 which was conducted by interviewing the head of the PTM (non-communicable disease) program at the Karangharja health center showed that 62 elderly people suffered from hypertension and visited the health center. The efforts made by the community health center to reduce hypertension rates are by conducting counseling at the post bindu which is carried out once a month and there is no way to reduce high blood pressure using herbal methods at this community health center. Hypertension in general

must be controlled well because if it is not controlled, blood pressure will continue to increase, which can result in complications in vital organs such as the kidneys, eyes, heart and brain. In fact, hypertension is one of the factors that trigger stroke and heart failure, so efforts can be made to prevent it so that blood pressure high does not cause complications must be treated accordingly Correct. Hypertension treatment is generally divided into two part viz pharmacological and non-pharmacological[8].

Classification of Hypertension

Classification	Systolic	Diastolic
Normal	<130	<85
Normal high	130-139	85-89
Hypertension grade 1	140-159	90-99
Hypertension grade 2	160-179	100-109
Hypertension grade 3	180-209	110-119
Hypertension grade 4	210	120

Management of hypertension is divided into two, namely pharmacological and non-pharmacological. Pharmacological management of hypertension sufferers with how to use the medicine according to the doctor's prescription such as medication, anti-hypertension, diuretic (metzalone), beta blocker (bisoprolol), calcium antagonist (amlodipine), ACE-inhibitor (captopril), angiotensin converting enzyme and vasodilator. Meanwhile, non-pharmacological management is by diet such as diet that contains sodium, salt and do regular exercise so that your weight is stable. And you can do traditional herbal therapy by using herbal plants to treat hypertension such as soursop leaves, dragon fruit, tomatoes, carrot juice, cucumber and one of them is celery[9].

Celery (*Apium graveolens* L) is a plants which grows in the lowlands, celery is often found in Indonesia. Celery has a characteristic, namely that the height of the celery plant is around 25-100 cm. Celery has many white or greenish-white flowers. Celery is often used by Indonesian people as a kitchen spice to add aroma to soup[10].

Celery leaves are able to lower blood pressure because celery leaves contain very many compounds and are very influential on blood pressure. The following compounds in celery leaves and are able to lower blood pressure are apiin, apigenin, flavonoids, mannitol and vitamin C. because of the compounds present Celery leaves can dilate blood vessels, thereby preventing blockages and allowing blood flow to run smoothly[11]. Based on the facts described above, this research aims to analyze whether or not there is an effect of giving boiled celery leaf water on blood pressure in elderly people suffering from primary hypertension,

specifically at the Karangharja Community Health Center, Pebayuran sub-district.

2. Methods

2.1 Design Research

This research is quantitative research with a pre-experimental research design. The research design used in this study was one group pre test and post test without control, that is, the researcher only intervened in one group without any comparison group. The aim of this study was to find out whether or not there was an effect of giving boiled water from celery leaves on blood pressure in elderly people suffering from primary hypertension at the Karangharja Community Health Center, Pebayuran sub-district. Population4in research This is an elderly person with hypertension is in the work area Karangharja Community Health Center with 62 people.

Deep samples study This is part of all parents who suffer from hypertension in the Karangharja Community Health Center working area. In this study, the sample was determined using nonprobability sampling with a purposive sampling technique, namely by taking samples based on certain objectives that were not deviated of inclusion and exclusion criteria which has been set by researchers.

2.1.1 Inclusion criteria

The inclusion criteria are as follows:

1) Elderly hypertensive sufferers who suffer from grade I and II hypertension,
2) hypertensive sufferers who do not have other disease complications,
3) hypertensive sufferers who take antihypertensive medication in combination with boiled celery leaves by looking at the half-life of the drink drug.

2.1.2 Exlusion criteria

The sample exclusion criteria are as follows:

1) Hypertensive sufferers who are not willing to be respondents,
2) hypertensive sufferers with comorbidities,
3) hypertensive sufferers who are overweight.

2.1.3 Procedure

After the sample is obtained, treatment will be given, namely giving 200 cc of boiled water from celery leaves, given 2 times in the morning and 70 cc in the evening, for 5 consecutive days. The ingredients used are 100 grams of fresh celery and 400 cc of water. How to make boiled water from celery leaves:

1) Take 100 grams of celery leaves,
2) wash the celery leaves then roughly chop them into a pan,
3) add 400 cc of clean water to the pan,
4) boil the water that has been put in the pan for approximately 15 minutes until the water boil,
5) after boiling, add the celery leaves,
6) wait until the water has become 200 cc/handful,
7) let it sit until the water is cold then strain,
8) after the water has cooled, drink 70 ml twice a day in the morning and evening.

2.2 Data Analysis

Data analysis was carried out using computerized SPSS univariate and bivariate analysis. The statistical test used in this research was the repeated measure ANOVA test to determine the average value of change before and after the intervention was given and to find out whether or not there was an effect of giving boiled celery leaf water on blood pressure in elderly people suffering from primary hypertension at the Karangharja District Health Center. Vegetables.

3. Result

3.1 Univariate analysis

Table.1. results of statistical analysis of the average blood pressure value before intervention was given on the first day

First day pretest	Mean	Elementary school
Systolic	159.78	8,026
Diastolic	97.50	2,407

That resultaaverage pressure2systolic blood beforesgiven boiled water from celery leavesiis 159.78 mmHg. Meanwhile, the average pressure valuendiastolic blood beforemgiven boiled water from the leavesscelery is 97.50 mmHg.

Table 2. Statistical test results for the average value of systolic and diastolic blood pressure after intervention

Measurement time	Systolic		Diastolic	
	Mean	Elementary school	Mean	Elementary school
Posttest day 1	159.78	8,026	97.50	2,407
Posttest day 2	155.94	6,403	93.67	3,662
Posttest day 3	150.78	5,621	89.39	2,973
Posttest day 4	144.94	4,518	85.61	2,873
Posttest day 5	138.50	3,569	81.28	2,052

The results in table 2 show that there was a decrease in blood pressure, both systolic and diastolic, over time for 5 days. With the average value on day 1 being 159.78 mmHg and diastolic 97.50 mmHg, systolic on day 2 was 155.94 mmHg and diastolic 93.67 mmHg, systolic on day 3 was 150.78 mmHg and diastolic 89.39 mmHg, systolic on day 4 was 144.94 mmHg and diastolic 85.61 mmHg then systolic

on day 5 was 138.50 mmHg and diastolic 81.28 mmHg.

3.2 Bivariate analysis

Table.4. normality test results of data on systolic and diastolic blood pressure.

Time	Saphiro wilk			
	Systolic		Diastolic	
	Df	Sig	Df	Sig
Pretest day 1	18	.478	18	,011
Pretest day 2	18	,119	18	,566
Pretest day 3	18	,217	18	,291
Pretest day 4	18	,125	18	,106
Pretest day 5	18	,388	18	,011

Table 4 shows that the results of the normality test data on both systolic and diastolic blood pressure are more than 0.05, which indicates that all systolic and diastolic blood pressure data on days 1 to 5 are normal.

Table 5. Results of statistical tests using the repeated measure ANOVA test on systolic blood pressure.

Variable	Type III Sum of squares	Df	Mean squares	P value
Measurement time	4440.333	3	3047.767	0,000

Table 5 shows that the results of the repeated measure ANOVA test with the test of within-subject effect of systolic blood pressure in respondents with the greenhouse greiser sig value (0.000) which shows that the greenhouse greiser sig value is <0.05 can be concluded that the provision of boiled water from celery leaves proven to have a significant effect on pressure blood in elderly sufferers primary hypertension with systolic blood pressure at the Karangharja Community Healt Center, Pebayuran sub-district.

Table.6. statistical test results using the repeated measure ANOVA test on diastolic blood pressure.

Variable	Type III Sum of squares	Df	Mean squares	P value
Measurement time	2561.111	3	1175.844	0,000

Results of the repeated measure anova test with the test of within subject effect of diastolic blood pressure on respondents. With a greenhouse grease sig value, the p value is 0.000, indicating that the greenhouse grease sig value is <0.05. It can be concluded that giving boiled water from celery leaves has proven to have a very significant effect on blood pressure blood in eldery sufferers primary hypertension with systolic blood pressure at the Karangharja Community Healt Center, Pebayuran sub-district.

Table 7 Repeated Measure Test Results with Paired Wise Pressure ComparisonsSystolic and Diastolic Bloodkbefore and after in respondents suffering from primary hypertension at the Karangharja Community Health Center, Pebayuran sub-district.

Measurement period	Variable			
	Systolic		Diastolic	
	Mean different	P value	Mean Different	P value
Before vs day 2	3,833	0,000	3,833	0,000
Before vs day 3	9,000	0,000	7,722	0,000
Before vs day 4	14,833	0,000	11,889	0,000
Before vs day 5	21,278	0,000	16,222	0,000
Day 2 vs day 3	5,167	0,000	3,889	0,000
Day 2 vs day 4	5,833	0,000	4,167	0,000
Day 2 vs day 5	6,444	0,000	4,333	0,000

From table 7 above obtained the value p = 0.000 for a comparison of all average systolic and diastolic blood pressures. So that statistical and clinical conclusions can be drawn, systolic blood pressures and diastolic before given different interventions, after days 2, 3, 4 and 5, they were given boiled water therapy with celery leaves. In the table above, researchers can conclude that there was a decrease in blood pressure before the intervention was given and after the intervention was given for 5 days.

4. Discussion

Systolic and diastolic blood pressure before intervention on the first day. Based on the research results in table 1, it shows that the average value was obtained from the 18 respondent systolic blood pressure before given boiled water celery leaves is 159.78 mmHg. Where as average pressure diastolic blood before intervention is given is 97.50 mmHg. Systolic and diastolic blood pressure after intervention for 5 days Based on table 2, the research results showed that the average was obtained from 18 respondent systolic blood pressure after given boiled water from the leaves celery after days 1,2,3,4 and 5, namely as follows: a) Day 1 = 159.78 mmHg, b) Day 2 = 155.94 mmHg, c) Day 3 = 150.78 mmHg , d) Day 4 = 144.94 mmHg, e) Day 5 = 138.50 mmHg. Meanwhile, the average diastolic blood pressure is as follows: a) day 1 = 97.50 mmHg, b) day 2 = 93.67 mmHg, c) day 3 = 89.39 mmHg, d) day 4 = 85, 61 mmHg, e) day 5 = 81.28 mmHg. This research is in line with the theory stated by Effendy (2020) that celery leaves contain very many compounds such as apiin, apigenin, flavonoids, mannitol, vitamin C, potassium and phthalides, which can contain celery compounds. Help in lowering blood pressure tall. This research is appropriate with research which is conductedsby6 that there is influence giving boiled water celery leaves against blood pressure in hypertension sufferers carried out in the Kairatu Community Health Center Working Area, West Seram Regency.

This is further strengthened by previous research conducted by Fitria and Anggraini (2020), regarding the influence giving boiled water from

celery leaves against reduction high blood pressure on sufferer grade 1 hypertension. That there is an effect of administration celery leaves boiled water against pressure drop high blood pressure in sufferers grade 1 hypertension. Average blood pressure before and after intervention given to primary hypertension at the Karangharja Community Health Center, Pebayuran sub-district. The research results show differences in the average pressure value blood systolic before and after therapy days 1, 2, 3, 4 and 5. The difference in average values before therapy was given and after therapy was given changed from time to time statistically but not clinically because the decrease in blood pressure was not yet at a normal level.

The reduction in blood pressure of respondents in this study varied. The average blood pressure of 18 respondents decreased from grade 2 hypertension to grade 1 and from grade 1 hypertension to pre-hypertension. The average blood pressure of 8 experienced a decrease from grade 1 to prehypertension and 10 respondents experienced a decrease from degree 2 to degree 1. This research is in line with the theory according to Rivanny (2021), that the apigenin and phthalides content in celery is useful for lowering blood pressure[12].

Apigenin functions as a beta blocker which can slow down the work of the heart so that the heart pumps less blood and causes blood pressure to decrease. Phthalides' mechanism for lowering blood pressure is by relaxing the arterial muscles or relaxing the blood vessels[13].

Decreased blood pressure respondents because respondents consume celery leaves boiled water 70 ml for 5 days according to the procedure. The analysis in table 4.8 shows that there was an effect and reduction in blood pressure after 3, 4 and 5 days of giving boiled water from celery leaves. Therefore, the therapy of giving boiled water from celery leaves can be a complementary therapy to reduce systolic and diastolic blood pressure.

This research is supported by previous research (Handayani and Wahyuni., 2021) entitled "The Effectiveness of Celery Leaves Against Decline Blood pressure In Hypertension Sufferers at the Berngam Community Health Center, Binjai City. Research results show that boiled water from celery leaves reduces high blood pressure in the elderly[7].

5. Conclusion

Based on data analysis and discussion research result is already done on "The Effect of Giving Boiled water Celery Leaves Against Stress Blood in Elderly People with Hypertension Primary At Karangharja Community Health Center" the following conclusions can be drawn:

1) Average pressure blood in elderly people with primary hypertension grade 1 and 2 before being given boiled water celery leaves on the first day with an average systolic of 159.78 mmHg and diastolic of 97.50 mmHg.
2) Average blood pressure on elderly people with hypertension primary degree 1 and 2 after given boiled water celery leaves after days 1, 2, 3, 4 and 5 with an average systolic day 1 = 159.78 mmHg and diastolic 97.50 mmHg, day 2 = 155.94 mmHg and diastolic 93.67 mmHg, day 3 150.78 mmHg and diastolic 89.39 mmHg, on day 4 systolic 144.94 mmHg and diastolic 85.61 mmHg, on day 5 systolic 138.50 mmHg and diastolic 81.28 mmHg.
3) There is influence giving boiled water celery leaves against pressure blood in elderly people with hypertension primary degrees 1 and 2 with *p value3 value= 0.000*.

Unknowledgment

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