THE EFFECTIVENESS OF CELERY BOILED WATER ON LOWERING BLOOD PRESSURE IN THE ELDERLY WITH HYPERTENSION IN THE WORKING AREA OF THE SIMALINGKAR PUBLIC HEALTH CENTER IN 2020

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ABSTRACT

Hypertension or high blood pressure is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg on two measurements with an interval of five minutes in a rest/quiet state. The management of hypertension can basically be done pharmacologically and non-pharmacologically. One non-pharmacological treatment is to use celery. Celery contains the flavonoid apigenin, vitamin C, apiin, calcium, and magnesium which can reduce hypertension. This study aims to analyze the effectiveness of celery boiled water in lowering blood pressure in patients with hypertension. This study used a pre post experimental design. The number of respondents at the Simalingkar Health Center workplace as many as 20 respondents who were given celery boiled water with a significance level of <0.05. The results showed that the P value of 0.00 (<0.05) means that celery boiled water is effective in reducing systolic and diastolic blood pressure in hypertensive patients. The average difference between systolic and diastolic after drinking celery boiled water found an average difference between systolic and diastolic 15 mmHg and 10 mmHg, so it can be concluded that celery boiled water is effective for reducing hypertension

Keywords *: Celery Boiled Water, Hypertension, Community Health Center*

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INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of death globally. One that is included in the PTM group is hypertension, which is a condition where a person experiences an increase in blood pressure above normal. Hypertension or high blood pressure occurs where the increase in systolic blood pressure is more than 140 mmHg and diastolic blood pressure is more than 90 mmHg on two measurements with an interval of five minutes in a state of sufficient rest/quiet. Increased blood pressure that lasts for a long time (persistent) can cause damage to the kidneys (kidney failure), heart (coronary

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heart disease) and brain (causing stroke) if not detected early and receive adequate treatment. This can happen because the heart works harder to pump blood to meet the body's needs for oxygen and nutrients.[1-2]

Based on the 2018 Riskesdas data, the prevalence of hypertension at the age of 18 years in Indonesia increased to 34.1%, from the 2013 Riskesdas of 25.8%. From provincial data, North Sumatra also has a fairly high prevalence of hypertension which is 24.7%.[1] Simalingkar Health Center is one of the health centers under the auspices of the Medan City Health Office which also participates in implementing the national program by conducting PTM Posbindu. In 2016, hypertension ranked third out of the ten highest diseases in the working area of the Simalingkar Health Center, this number has increased every year, and in 2018 it reached 1,479 people.[1]

Hypertension is a degenerative disease. With age, the maximum heart rate and other functions of the heart also gradually decline. In the elderly, blood pressure will rise gradually, the elasticity of the heart muscle in people aged 70 years decreases by about 50% compared to young people in their 20s. The classification of the elderly according to WHO includes: middle age (45-59 years), elderly (60-74 years), old (75-90 years), very old (over 90 years).[1]

Implementing a healthy lifestyle for everyone is very important to prevent high blood pressure and is an important part of treating hypertension. All patients with prehypertension and hypertension should make lifestyle changes. In addition to lowering blood pressure in patients with hypertension, lifestyle modifications can also reduce the progression of blood pressure to hypertension in patients with prehypertensive blood pressure. Important lifestyle modifications that appear to lower blood pressure are weight loss for obese or obese individuals, adopting a DASH (Dietary Approach to Stop Hypertension) diet rich in potassium and calcium, a low sodium diet, physical activity and consuming less alcohol.[1-3]

Evidence-based medicine is treatment that is based on the best available evidence in making informed, clear and wise decisions when choosing drugs for each patient and/or disease. Scientific evidence shows that simply lowering blood pressure, tolerability and cost alone cannot be used in the selection of hypertension drugs. Taking these factors into account, the most useful drugs are diuretics, angiotensin converting

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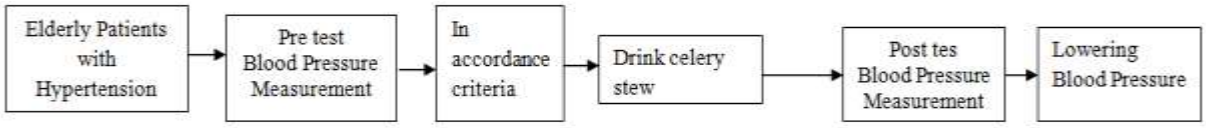
enzyme (ACEI) inhibitors, angiotensin receptor blockers (ARBs), beta blockers, and calcium antagonists (CCBs).[3]

Celery (Apium graveolens L) is one of the types of herbal therapy to treat hypertension. Traditional Chinese society has long used celery to lower blood pressure. Celery has more content to lower blood pressure than other plants that can also be used to reduce high blood pressure such as bay leaves which only contain essential oils and flavonoids to lower blood pressure and mahogany which only contains flavonoids to lower blood pressure while Celery contains apigenin which is very useful for preventing constriction of blood vessels and high blood pressure. In addition, celery also contains flavonoids, vitamin C, apiin, calcium, and magnesium which can help lower high blood pressure.[5-6] The procedure for presenting or using this herbal therapy also varies, for example by consuming it directly, or changing it into other forms such as celery stew which can be processed easily.

Based on the description above, the researchers conducted a study entitled "The effectiveness of celery boiled water on reducing blood pressure in the working area of the Simalingkar Health Center in 2020".

MATERIAL AND METHOD

The design used in this study was a Pre-Post Experiment with a design used to determine the effect of celery juice and boiled water on blood pressure in patients with hypertension with a dependent t test (paired t test).[7-8]



The sampling technique used in this research is purposive sampling. The criteria in this study were: people with hypertension, aged 60 years to 74 years, willing to be respondents. The sample size in this study was 20 samples. The location of the research was carried out in the working area of the Simalingkar Public Health Center, Medan city. This research was conducted from June to September 2020.

Prior to being sampled, patients were first given an explanation of the research activities and signed an informed

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consent or willingness to be a respondent. After the informed consent was signed, the researchers conducted interviews for data on the characteristics of the respondents including: gender, age, obesity, sports activities, salt consumption, fruit and vegetable consumption, smoking, alcohol consumption, then the researchers measured blood pressure (BP). For respondents who drank celery stew, the researchers first taught how to make celery stew, namely Prepare 100 grams of celery or 5 to 10 pieces of celery, wash the prepared celery, Boiled the celery with 400 ml of water until it becomes 300 ml, Pour into each glass -each 150 ml, Drink every morning and evening, carried out for 7 days regularly.

RESULT

Table 1. Frequency distribution of respondents based on the characteristics (n=10) of hypertension sufferers in the working area of the Simalingkar Public Health Center in 2020

Characteristic of respondent	Celery Boiled Water	
	Total (n)	Proportion (%)
Gender		
Man	4	20
woman	16	80
Total	20	100
Age		
60-64 Years	9	45
65-69 Years	7	35
70-74 Years	4	20
Total	**20**	**100**
Obesity		
Obesity	2	10
Not Obesity	18	90
Total	**20**	**100**
Activity		
Sport		
Regular	5	25
Irregular	15	75
Total	**20**	**100**
Fruit Consumption		
Vegetable		
Rotine	15	75
Not Routine	5	25
Total	**20**	**100**
Smoke		
Yes	1	5
No	19	95
Total	**20**	**100**
Alkohol Drink		
Yes	0	0
No	20	100
Total	**20**	**100**

Source: Primary Data

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Table 1 shows that the majority of respondents are female as many as 16 respondents, for age characteristics it can be seen that the majority are aged 60-64 years as many as 9 respondents, for obesity the majority of respondents are not obese as many as 18 respondents, for irregular sports activities 15 respondents, for consumption fruit and vegetables the majority of respondents regularly consume vegetables as many as 15 respondents, for cigarettes the majority of respondents do not smoke as many as 19 respondents. Likewise for alcohol, the majority of respondents do not consume alcohol as many as 20 respondents.

Tabel 2. Deviation difference of Blood Pressure Before and after Given by Celery Boiled Water on pada Hypertension Patient at Work Place The Simalingkar Community health Center in 2020

No	TD Given by Celery Boiled Water					
	Pre test		Post test		Deviation	
	Systole	Dyastole	Systole	Dyastole	Systole	Dyastole
1.	150	98	140	80	10	18
2.	154	95	149	82	5	13
3.	150	112	141	98	9	14
4.	161	108	145	99	16	9
5.	182	102	160	89	22	13
6.	175	98	158	90	17	8
7.	168	94	157	79	11	15
8.	175	105	143	96	32	9
9.	154	102	140	98	14	4
10.	167	95	152	88	15	7
11.	175	104	151	98	24	6
12.	156	99	146	87	10	12
13.	157	96	148	89	9	7
14.	165	105	154	96	11	9
15.	154	95	145	82	9	13
16.	168	95	150	76	18	19
17.	165	101	152	98	13	3
18.	149	94	134	89	15	5
19.	155	93	143	85	12	8
20.	173	92	148	79	25	13
Average	**163**	**99**	**148**	**89**	**15**	**10**

Table 2 shows that Average Deviation between systole and diastole after giving boiled water difference deviation are 15 mmHg and 10 mmHg.

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Tabel 3. The Effect of Celery Boiled Water on Blood Pressurein Hypertension Patient at Work Place The simalingkar Community Health center in 2020

Celery Boiled Water	T	SD	P *value*
Systole before drink Boiled water - Systole after drink Boiled water	10,009	19	,000
Dystole before drink boiled water - Dystole after drink boiled water	10,253	19	,000

Source: Primary Data

Table 3 shows that the P value is 0.00 (<0.05), which means that there is an effect of giving celery boiled water on reducing systole and dystole blood pressure in hypertensive patients.

DISCUSSION

Based on the results of research in the group giving celery stew as many as 20 respondents who experienced hypertension, it was found that before giving celery stew the average value of systole was 163 mmHg and dystole 99 mmHg, but after being given intervention, giving celery stew for 1 week, the average value was obtained. systole 148 mmHg and dystole 89 mmHg. where after being given celery stew, there was an average decrease in systolic BP by 15 mmHg and dystolic by 10 mmHg.

The chemical composition of celery is flavonoids, saponins, 1% tannins, 0.033% essential oils, flavor-glucosides (apiin), apigenin, choline, lipase, asparagines, bitter substances, vitamins (A, B, and C). Every 100 g of celery contains 93 ml of water, 0.9 g protein, 0.1 g fat, 4 g carbohydrates, 0.9 g fiber, 50 mg calcium, 1 mg iron, 40 mg phosphorus, 150 mg iodine, potassium 400 mg, 85 mg magnesium, 130 IU vitamin A, 15 mg vitamin C, 0.05 mg riboflavin, 0.03 mg thiamine, and 0.4 mg nicotinamide. The root contains asparagine, manite, starch, lenders, essential oils, pentosan, glutamine, and tyrosine. Seeds contain apiin, evaporated oil, apigenin, and alkaloids. Apigenin has hypotensive properties.[6]

The results of this study were supported by Arie Ni, MN (2013) who examined the effect of celery boiled water on the elderly with hypertension in West Gogodalem Hamlet where the results showed a p-value of 0.046 <0.05, meaning that there was a significant effect of celery boiled water on decrease in blood pressure both systole and dystole in elderly people with hypertension in Dusun Gogodalem Barat.[9-11]

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The results of statistical tests using paired t test, it was found that the p value of the systolic blood pressure was 0.00 and the diastolic was 0.00. This shows that the p value <0.05, which means there is a difference in Blood Pressure before and after being given celery stew. The difference in blood pressure before and after being given celery stew is due to the content of celery which plays an important role in lowering blood pressure, including magnesium, pthalides, potassium apigenin and asparagine. Magnesium and pthalides play a role in flexing blood vessels. Apegenin functions to prevent narrowing of blood vessels and high blood pressure. Potassium and asparagine are diuretic, which is to increase urine so that blood volume decreases. Besides that, the previous experience of lowering blood pressure is very influential in this study because it can be used as a benchmark for proper blood pressure reduction.[10-11] Thus it can be stated that there is an effect of celery stew on reducing blood pressure in hypertensive patients in the work area at the Simalingkar Community Health Center.

CONCLUSION

The results of statistical tests using paired t-test, the p-value of systolic blood pressure was 0.00 and diastolic blood pressure was 0.00. This shows that the p value <0.05, which means that celery boiled water is effective in lowering blood pressure in patients with hypertension.

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