

Effectiveness of consuming celery leaf juice in reducing high blood pressure in elderly

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Abstract

Celery is an annual plant in the form of a bush or grass. In everyday life celery is usually used as a complement to food. Hypertension is also a cause of death with a figure of 23.7% of the total 1.7 million deaths in Indonesia in 2016. One of the non-pharmacological measures that can be taken to lower blood pressure in people with high blood pressure is celery leaf juice. This study aims to determine the effectiveness of consuming celery leaf juice in reducing high blood pressure in the elderly at the Rejosari Health Center, Pekanbaru City. This type of research is quasi-experimental with a one group pretest posttest design. The population of 3,546 people affected by high blood pressure at the Rejosari Health Center in Pekanbaru City in 2021 with a sampling technique using purposive sampling with a total of 12 samples. The instrument used is the observation sheet. Univariate and bivariate data analysis, data processing using the dependent t test. The results showed that there was an effectiveness of consuming celery leaf juice in reducing high blood pressure in the elderly, the dependent t test value was p value 0.039 so that the p value was 0.05 then H₀ was rejected, which means there was effectiveness in consuming Celery leaf juice as a non-pharmacological therapy in reducing high blood pressure in the elderly. Based on the results of this study it is expected to be able to consume celery leaf juice regularly and maintain a diet to help reduce or control blood pressure.

Keywords: Effectiveness; Celery Leaves; Elderly; High Blood Pressure

1. Introduction

An elderly person is someone who has reached the age of 60. Elderly people experience various changes both physically, mentally and socially. Physical changes include a decrease in physical strength, stamina and appearance. This can cause some people to become depressed or feel unhappy when they enter old age. they become ineffective in work and social roles, if they rely on physical energy that they no longer have (Princess 2021).

The aging process in humans is characterized by stages of decline in the function of various organs in the body, which is characterized by the body's vulnerability to various disease attacks. One of the diseases that elderly people often experience is hypertension (Akbar, Nur, and Humaerah 2020).

Hypertension can generally be defined as a systolic pressure of more than 140 mmHg and a diastolic pressure of more than 90 mmHg. High blood pressure becomes a problem only if it is persistent. This blood pressure makes the circulatory system and organs that receive blood supply (including the heart and brain) become tense (Profit 2019).

World Health Organization (WHO) the number of elderly people aged (60 years and over) throughout the world in 2025 is estimated to reach 1.2 billion with the WHO definition consisting of middle age which includes (middle age) 45-59

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years, elderly (elderly) age 60 - 74 years, old age (Old) 75-90 years and very old age (very old) above 90 years (Indonesian Ministry of Health 2013).

Hypertension is a condition where a person's blood pressure increases above normal which can result in increased morbidity and mortality. (Sumartini, Zulkifli, & Adhitya, 2019). Until now, hypertension is still a health problem that is big enough to be overcome. WHO (World Health Organization) states that hypertension attacks 22% of the world's population, and reaches 36% of the incidence in Southeast Asia. Hypertension is also a cause of death with a figure of 23.7% of the total 1.7 million deaths in Indonesia in 2016 (Anitasari 2019).

In developing countries, based on 2018 Riskesdas data, Indonesia has a prevalence of hypertension at age >18 based on national measurements of 34.1%, with the highest figure in South Kalimantan (44.1%), followed by West Java (39.6%), East Kalimantan (39.3%), Central Java (37.5%), West Kalimantan (36.9%), East Java (36.3%), West Sulawesi 34.7%, while in Riau (29.1 %) (Riskesdas 2019).

According to data taken from Riau Province in 2019, the highest prevalence rates for hypertension cases were Bengkalis (85%), and Siak (70%), Rokan Hilir and Meranti (34%), Pekanbaru (32%), Kuantan Singingi (21%), Indragiri Hulu amounted to (13%). And Indragiri Hulu has the 6th highest number of hypertension cases in Riau (2019 Riau Province Health Profile).

One non-pharmacological action that can be taken to lower blood pressure in people with high blood pressure is celery leaf juice. This is in accordance with research (Pratiwi, 2019) where based on research results, parts of celery leaves contain the active compound, namely "apigenin". This substance is able to lower blood pressure and its mechanism of action is similar to angiotensin and mannitol which function as anti-diuretic substances. The stems and leaves of celery also contain nitrates which are anti-hypertensive compounds.

On research (Pratiwi, 2019), researchers chose celery (*Apium graveolens* L) to be used as an alternative medicinal plant for preventing hypertension. Celery is used because this plant is quite popular, easy to find, and cheap. In Indonesia, people usually use celery as a natural flavoring in Indonesian dishes. Several developed countries, including Japan, China and Korea, have used the leaf stalks as a food ingredient.

Based on research (Pratiwi 2019), parts of celery leaves contain the active compound, namely "apigenin" where this substance is able to lower blood pressure whose mechanism of action is similar to calcium antagonists and "mannitol" which functions as a diuretic. The stems and leaves of celery also contain nitrates which are antihypertensive compounds. According to research, it has been proven that nitrates that enter the human body will turn into Nitric Oxide (NO), which can function to lower blood pressure in hypertension sufferers. On the blood vessel endothelium, Nitric Oxide Synthase (NOS) will have a vasodilation effect (widening of blood vessels) which can function as a blood pressure lowerer.

2. Materials and methods

This type of research uses pre-experimental research with a quasi-experimental "one group pretest posttest" design with an intervention group approach to relate celery leaf juice to reducing high blood pressure in the elderly before and after consuming celery leaf juice. The total sample was 12 people, using an observation sheet.

3. Result

Based on the data in Table 1, it can be seen that the results of 12 elderly people who experienced high blood pressure, most of the respondents were in the 45-59 year age range, 8 respondents (66.7%), some of the respondents were female, 7 respondents (58.3%).

Based on the data in Table 2, it can be seen that the majority of elderly people who experienced hypertension before the celery juice treatment had grade 2 hypertension, 6 respondents (50.0%), after the intervention, the majority of elderly people experienced grade 2 hypertension, 9 respondents (75.0%).

Based on the data in Table 3, it can be seen that the average before the treatment of consuming celery leaf juice in reducing high blood pressure in the elderly in the first measurement was 2.00 with a standard deviation of 0.739 and after the second treatment the average was 1.67 with a standard deviation of 0.142. It can be seen that the mean difference between the first and second measurements is 0.33 with a standard deviation of 0.497. The statistical test

results showed that the p value = 0.039, so it can be concluded that there is a significant difference between the reduction in high blood pressure before and after consuming celery leaf juice.

Table 1 Frequency Distribution of Respondents Based on Elderly Characteristics in Pretest and Posttest at Rejosari Health Center, Pekanbaru City in 2022.

No	Respondent Characteristics	Amount	
		F	%
1.	Age		
	45-59	8	66.7
	>60	4	33.3
	Total	12	100.0
2.	Gender		
	Man	5	41.7
	Woman	7	58.3
	Total	12	100.0

Source: Primary data (2022)

Table 2 Distribution of Respondents Based on the Intensity of Consuming Celery Leaf Juice among the Elderly Before and After the Intervention at the Rejosari Community Health Center, Pekanbaru City in 2022.

Blood Pressure Classification	Treatment			
	Pretest		Posttest	
	F	%	F	%
Grade 1 hypertension (140-159 mmHg)	3	25.0	3	25.0
Grade 2 hypertension (160-179 mmHg)	6	50.0	9	75.0
Grade 3 hypertension (>180 mmHg)	3	25.0	0	0
Total	12	100	12	100

Table 3 Differences in Pretest and Posttest Management of Celery Leaf Juice in Elderly People with High Blood Pressure at the Rejosari Community Health Center, Pekanbaru City, 2022

Variable	Mean	elementary school	S.E	N	P Value
Pre-test	2.00	0.739	0.213	12	0.039
Post-test	1.67	0.492	0.142	12	

Source: Primary data (2022)

4. Discussion

Based on the results of the univariate analysis of respondents, it can be seen that the results of 12 elderly people who experienced high blood pressure, most of the respondents were in the 45-59 year age range, 8 respondents (66.7%), some of the respondents were female, 7 respondents (58.3%) Results Bivariate analysis carried out in the study showed that on average, before treatment, consuming celery leaf juice reduced blood pressure. Height in the elderly in the first measurement was 2.00 with a standard deviation of 0.739 and after the second treatment the average was 1.67 with a standard deviation of 0.142. It can be seen that the mean difference between the first and second measurements is 0.33 with a standard deviation of 0.497. The results of research using the T test show the effectiveness of consuming celery

leaf juice in reducing high blood pressure in the elderly at the Rejosari Community Health Center, Pekanbaru City with a p value = $0.039 < 0.05$.

According to researchers' assumptions, celery leaves contain a lot of magnesium, pthalides, apingenin, potassium and asparagine which will control blood vessels to contract and relax so that there is no narrowing of the blood vessels and help the diuretic process and contain calming compounds in the form of pslides which will control blood vessel activity. . Management of consuming celery juice can affect high blood pressure. This can be seen after consuming celery leaf juice for 5 days.

before to after intervention. The management of consuming celery leaf juice is effective in reducing high blood pressure because it helps relax the body. If the management of consuming celery leaf juice is carried out correctly, it can provide benefits in reducing high blood pressure in the elderly non-pharmacologically.

5. Conclusion

There isThere was a significant reduction in high blood pressure before and after consuming celery juice with p value = $0.039 < 0.05$. Based on the results of this study, it is hoped that you can consume celery leaf juice regularly and maintain your diet to help reduce or control blood pressure.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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