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EFFECT OF ORNAMENTAL CELERY LEAVES ON BLOOD PRESSURE IN HYPERTENSION PATIENTS

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ABSTRACT

This study aimed to determine the effect of celery on reducing hypertension in patients at the Kandang Community Health Center in Bengkulu City. This quantitative study employed a quasi-experimental pre-test and post-test design. The statistical analysis of celery leaf decoction showed a p-value ≤ 0.005, thus Ha was accepted and Ho was rejected. In conclusion, there was an effect on hypertension after administering celery leaf decoction to hypertensive patients at the Kandang Community Health Center in Bengkulu City.

Keywords: Hypertension, Celery, Blood Pressure

INTRODUCTION

Hypertension is a condition in which the pressure in the blood vessels increases consistently. In clinical terminology, hypertension is defined as an increase in blood pressure above a threshold set by specific guidelines (Pareek et al., 2023; Hendra et al., 2021).

Based on data from the WHO (2025), hypertension is defined as a condition in which systolic blood pressure is ≥ 140 mmHg and diastolic blood pressure is ≥ 90 mmHg. This condition causes the pressure in the blood vessels to consistently increase. Normal blood pressure is considered 120 mmHg during the systolic phase when the heart contracts and 80 mmHg during the diastolic phase when the heart is at rest. If the pressure level exceeds these figures, it can be concluded that a person has hypertension (Kovacs et al., 2024).

Hypertension is one of the non-communicable diseases (NCDs) that is increasing in Indonesia. The highest prevalence rate is in South Kalimantan, at 44.3%, while the lowest is in Papua Province, at 22.2%. In Indonesia, there are an estimated 63,309,620 cases of hypertension, and the number of deaths caused by hypertension has reached 427,218. Hypertension is most prevalent in the age groups 31-44 years (31.6%), 45-54 years (45.3%), and 55-64 years (55.2%). In Bengkulu, the prevalence of hypertension ranks 15th out of 34 provinces in Indonesia, with a prevalence of 28.14%, or approximately 11,329 people (Zhang et al., 2023; Kemenkes, 2021).

Based on data from the Dinkes Provinsi Bengkulu (2022) blood pressure measurements in residents aged 15 years and older who have hypertension were conducted in Bengkulu Regency or Province. The highest prevalence was in Rejang Lebong Regency, with 62,323 people, followed by Bengkulu City with 36,404 people, Seluma Regency with 36,007 people, Lebong Regency with 31,161

people, Kepahyang with 30,521 people, South Bengkulu with 28,335 people, and Kaur with 17,013 people.

Based on data on the prevalence of hypertension among Bengkulu City residents aged 15 years and older, there were 50,898 individuals. In terms of characteristics, the number of men diagnosed with hypertension reached 25,484, while the number of women affected was 25,414. According to information obtained, the Telaga Dewa Community Health Center recorded the highest number of hypertension sufferers in 2023, with 4,248 people. Jembatan Kecil Community Health Center (Puskesmas Jembatan Kecil) ranked second with 4,120 people, while Kandang Community Health Center (Puskesmas Kandang) ranked third with 3,177 people. (Bengkulu City Health Office, 2023).

Based on data provided by the Bengkulu City Health Office, in 2022, Kandang Community Health Center ranked fifth in terms of hypertension incidence, with 2,261 people. However, in 2023, there was a significant increase in hypertension sufferers at Kandang Community Health Center, which now ranks third with a total of 3,177 people.

Hypertension can be managed through non-pharmacological approaches, such as the use of herbs and physical activity. These methods are self-administered and relatively easy, affordable, safe, and offer various health benefits without side effects.

Another non-pharmacological technique that can be applied to individuals with hypertension is the use of celery. Celery (Apium graveolens L.) is a type of herbal plant useful for lowering blood pressure. It contains apgenin, which is highly effective in preventing blood vessel narrowing and hypertension. Furthermore, celery is rich in flavonoids, vitamin C, apiin, potassium, and magnesium, which contribute to lowering high blood pressure (Widyaningsih et al., 2023).

Observations at the Kandang Community Health Center (Puskesmas) revealed that within just one month, 291 people had developed hypertension.

RESEARCH METHODS

This study uses a quantitative pre-experimental research method. This research design is known as a one-group pre-post test design, which consists of one intervention group. Population and Sample Population The population of this study was all hypertension sufferers in the working area of the Kandang Community Health Center in Bengkulu City, totaling 3,177 people, based on 2023 data collected from the Kandang Community Health Center. Sample In this study, the sampling technique for hypertension was based on the productive age group of 36-69 years. A total of 15 individuals were selected using a purposive sampling technique, which was based on the researcher's own considerations based on previously known population characteristics or traits, also known as inclusion and exclusion criteria. Inclusion Criteria Hypertensive patients in the Kandang Community Health Center Working Area Patients aged 36-69 years Patients with systolic blood pressure of 140-159 mmHg and diastolic blood pressure of 90-99 mmHg. Exclusion Criteria Patients who are willing or ready to participate: Patients with complications such as stroke, kidney failure, and seizures. Patients who are taking antihypertensive drugs or are undergoing treatment. Patients who consume alcohol. Research Instruments: In this study, researchers used digital blood

pressure monitors, measuring cylinders, and observation sheets on respondents in the intervention group before and after administration of Moringa leaf decoction. Data Analysis Techniques: Univariate Analysis: The aim is to examine the distribution and characteristics of each variable. Bivariate Analysis: This is done by examining the effect of each dependent variable. The t-test is used to determine whether there is a significant effect before and after the intervention. A 95% confidence interval ($\alpha = 0.05$) is used. If the data is not normally distributed, we can use the Wilcoxon test. Data processing in this study uses SPSS.

RESULT

The Effect of Giving Boiled Celery Leaves

Table 1
Effect of lowering blood pressure before and after being given boiled celery leaves

Variabel	Mean	N	Sd.Deviation	Max
TD SistoIik sebeIum rebusan daun seledri	145,8015	15	5,414	0,000
TD Sistolik sesudah rebusan daun seledri	134,21		5,026	
TD Diastolik sebelum rebusan daun seledri	92,46	15	3,091	
TD Diastolik sesudah rebusan daun seledri	84,6		2,944	0,000

Based on table 1, it can be seen that there was a decrease in average blood pressure in the group measured before and after consuming celery leaf decoction. This decrease occurred in systolic blood pressure with a figure of 11.59 mmHg and in diastolic blood pressure of 7.86 mmHg. Furthermore, the results of statistical analysis showed that the p-value for systolic blood pressure was 0.000 and the p-value for diastolic blood pressure was also 0.000. The average systolic blood pressure before consuming celery leaf decoction was recorded at 145.80 mmHg and diastolic 92.46 mmHg, which is included in the category of Hypertension level 1. After consuming Moringa leaf decoction, the average systolic blood pressure became 134.21 mmHg and diastolic 84.6 mmHg, which is now included in the category of Pre-Hypertension. Thus, it can be concluded that consuming boiled celery leaves has an effect on hypertension conditions in patients.

DISCUSSION

The Effects of Celery Leaf Decoction It was found that there was a decrease in the average BP in the group before and after consuming celery leaf decoction, for both systolic and diastolic blood pressure. Statistical analysis showed a p-value of 0.000 ± 0.05 for both blood pressure levels, thus concluding that celery leaf decoction has an impact on hypertension in patients after administration.

Another non-pharmacological technique that can be utilized for hypertension sufferers is the use of celery. Celery (Apium graveolens L.) is a type of medicinal plant with beneficial properties. Celery contains apigenin, which is very beneficial in preventing blood vessel blockages and controlling high blood pressure. Furthermore, celery is also rich in flavonoids, vitamin C, apigen, potassium, and

magnesium, which can support the reduction of high blood pressure (Widyaningsih et al., 2023).

Research by Chantika et al., (2025) showed a decrease in patient blood pressure from 180/100 mmHg to 159/89 mmHg after the intervention. Furthermore, the patient's headaches also decreased from 5 to 1 on the pain scale. The apigenin, mannitol, phthalides, and flavonoids in celery leaves act as natural beta-blockers, diuretics, and vasorelaxants, helping to gradually lower blood pressure. Conclusion: Infusion of boiled celery leaves is effective as a complementary therapy in lowering blood pressure in hypertensive patients.

Based on research conducted by Handayani & Wahyuni (2021), statistical analysis (Wilcoxon test) showed a significant difference in blood pressure before and after administration of celery water decoction in the treatment groups. In conclusion, administration of celery water decoction effectively reduced blood pressure in hypertensive patients, both systolic and diastolic, with a p-value of 0.000 ($p<0.05$).

Most studies on celery leaf decoction report a reduction in blood pressure after a short intervention. In a meta-analysis of 10 RCTs with 511 participants, celery preparations significantly reduced both systolic and diastolic blood pressure, with a mean average of -1.0 and -0.93, respectively. However, heterogeneity was high, and the effect was stronger in celery seeds than in leaves or stems (Liu et al., 2025). Another systematic review including four studies of Apium graveolens also summarized a mean reduction of approximately -37.9/-15.4 mmHg, but emphasized the variation in study quality and the need for more consistent clinical studies (Lachovicz et al., 2025).

In elderly hypertensive patients, 250 mg of celery leaf decoction twice daily for 14 days reduced systolic from 147.6 to 133.4 mmHg and diastolic from 92.3 to 85.1 mmHg (Nuraini et al., 2025). In an Indonesian review of 7 experimental studies, 6 of the 7 reported a decrease in systolic blood pressure of 6.13–30 mmHg and diastolic blood pressure of 2.9–13.67 mmHg after administering celery in various forms, including decoction (Oktarina & Rahmawaty, 2022).

Several studies of leaf decoctions have shown similar effects. In 20 elderly hypertensive patients, 7 days of administration resulted in significant differences in systolic and diastolic blood pressure with a $p=0.000$, and the pattern of decline was evident from day 3 (Syikir et al., 2021). Another study at the Mambi Community Health Center replicated these findings using a time-series design and yielded nearly identical results (Amin, 2022). In 30 hypertensive patients in Pematangsiantar, 14 days of leaf decoction also showed significant changes with a $p=0.000$ (Marpaung & Siregar, 2022).

Controlled studies provide more careful context. An 8-week community intervention in hypertensive older adults reported an average reduction of 11.33 mmHg systolic and 8.67 mmHg diastolic blood pressure with no reported side effects. However, the program also included health education, so the effects of celery leaf decoction cannot be completely separated from other behavioral changes.

Darmayanti2024. In contrast, a quasi-experimental study with a control group found no significant changes in non-pharmacological therapy using celery leaves, with a $p=0.890$ (Allo et al., 2024).

The most consistent mechanisms are vasodilation, diuretic effects, and calcium channel blockade. Mechanistic reviews indicate that celery contains apigenin, 3-n-butylphthalide, potassium, magnesium, and other compounds that contribute to blood vessel relaxation and blood pressure control (Kusumawati & Pranata, 2025). Another review concluded that celery's antihypertensive effects are primarily seen through vasodilation, diuresis, and calcium channel blockade, with apigenin and NBP as the primary candidates (Alobaidi & Saleh, 2024; Khaled et al., 2023).

CONCLUSION

There is an effect of boiled celery leaves on reducing blood pressure in hypertension sufferers in the working area of the Kandang Health Center, Bengkulu City.

SUGGESTIONS

It is hoped that researchers in the future can develop non-pharmacological therapy by applying celery leaf decoction combined with other herbs, and processing it into tea powder or juice.

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