JURNAL VNUS
Vocational Nursing Science
Vol : 03
No : 02
Year: 2021
DOI : doi.org/10.52221/jvnus.v2i2.400
e-issn: 2656-8799
VOCATIONAL NURSING SCIENCE
homepage: https://ojs.stikesmucis.ac.id/index.php/jvnus

Giving Boiled Celery Leaves to Reduce Blood Pressure in Elderly People with Hypertension

M. Syikir[1], Tri Wulansari Dewi[1], Adiatman[1], Irfan[1]
[1]*STIKES Bina Generasi Polewali Mandar, Indonesia*

Correspondence author: M.Syikir
Email: syikir.m@gmail.com
address : Jl.Mr.Muh Yamin No 195 Cadika Manding, West Sulawesi, Indonesia, Telp. 085343486523

Submitted: 22 Sep 2021, Revised: 17 Oct 2021, Accepted: 23 Oct 2021, Published: 05 Nov 2021

ABSTRACT

The high incidence of hypertension in the elderly and uncontrolled triggers degenerative diseases such as congestive heart failure, kidney failure, and vascular disease such as stroke and peripheral arterial disease. The high incidence of hypertension is directly proportional to the high complications that occur, so adequate nonpharmacologic treatment is needed. Celery (Apium graveolens L) is one of the types of herbal therapy used to treat hypertension. Traditional Chinese society has long used celery to lower blood pressure. The purpose of this study was to determine the effect of celery leaf decoction on elderly blood pressure in patients with hypertension in the Mambi Health Center, Mamasa District. His research method is a quasi-experimental method, using a time-series research design. This study took a sample of 20 people. The sampling techniques were consecutive sampling, and the measuring instruments used were observation sheets and spigmanometers. Analyzed by the Friedman test with a significance level of α = 0.05. The results of the study obtained statistical tests showing that there were significant differences by comparing systolic blood pressure before, 3 days of administration and 7 days of administration of celery leaves, obtaining a mean value which decreased from the first day, the third day and the days of 2.75, 2.23 and 1.03 with a value of 0.000 <0.05, as well as Diastolic blood pressure, respectively, 2.75, 1.98 and 1.30 with p value of 0.000 <0.05, which means there is an effect of giving celery leaf decoction to reduce systolic and diastolic blood pressure

Keywords: Blood Pressure, Elderly, Celery Leaves.

Introduction

Hypertension is an increase in blood pressure in the arteries. (Wikipedia, 2014). According to Brunner & Sudarth (2001), as stated by Aspiani (2014: 103), hypertension can be defined as persistent blood pressure where the systolic pressure is above 140 mmHg and the diastolic pressure is above 90 mmHg. (Purwaningsih, 2010) .

Until now, according to records from the World Health Organization WHO in 2011, there were one billion people in the world suffering from hypertension and two-thirds of them were in developing countries. If proper efforts are not made, this number will continue to increase, and it is predicted that by 2025 as many as 29% or 1.6 billion people worldwide will suffer from hypertension, while in Indonesia the incidence of hypertension is quite high. (HS, Intan Eka Oktavia. Junaid, 2017)

Indonesia has entered an era of increasing elderly population. In 2010 the number of elderly people is predicted to increase by 9.58% with a life expectancy of 67.4 years. In 2020 this figure will be 11.20% with an average life expectancy of 70.1 years. (Purwaningsih, 2010)

In Mamasa Regency in 2018, hypertension suffered from people aged ⩾18, based on the Health Service report, during 2018 there were 5925 people. Where there has been a significant increase in the number of visits to the Community Health Center. (SPMT Mamasa Health Office 2018).

The high incidence of hypertension in the elderly and uncontrolled triggers the emergence of degenerative diseases such as congestive heart failure, kidney failure and vascular diseases such as stroke and peripheral arterial disease. Several studies have shown that blood pressure higher than 140/90 mmHg indicates a first myocardial infarction (MI). Hypertension is called the " silent killer " because it is asymptomatic and after several years causes fatal strokes or heart disease (Lyrawati, 2015) .

Non-pharmacological treatment for treating hypertension uses alternative and complementary therapies, namely the use of cupping or hijamah therapy and the use of herbal plants such as celery leaves (Apium graveolens L). (Complementary, Di, Banyumas, & Soedirman, 2010) . (Nengah, Arie, & Muntamah, nd-a)

Celery (Apium graveolens L) is one type of herbal therapy. Traditional Chinese society has long used celery to lower blood pressure. Celery contains more ingredients to lower blood pressure than other plants. Celery contains apigenin which is very useful for preventing narrowing of blood vessels and high blood pressure. Apart from that, celery also contains vitamin C, apiin, calcium and magnesium which can help reduce high blood pressure Http://health.kompas.com , obtained March 20, 2013). (Nengah et al., nd-a)

In 1985, Dondokambey conducted research on giving celery extract by squeezing it and the results showed a reduction in blood pressure in cats and other research results have also proven that celery extract lowers blood pressure in experimental cats. It has also been proven that boiled celery water reduces blood cholesterol levels in experimental mice. (Nengah et al., nd-a)

100 grams of celery contains 344 mg of potassium and 125 mg of sodium. Therefore, it is very good for treatment and the benefits of celery as an antihypertensive have been proven to be successful in reducing high blood pressure because of its activity as a calcium antagonist which affects blood pressure. This means that the active compounds in celery work on blood vessel receptors which ultimately has a relaxing effect. Consuming celery can reduces blood vessel tension. (Study, Science, Nuryanti, & Kep, 2011)

Objective

The aim of this study was to determine the effect of celery leaves on reducing blood pressure in elderly people suffering from hypertension.

Method

The type of research used is quasi-experimental, with a time series research design, namely experimental research with repeated measurements based on the passage of time. (Saryono, 2011). This research is located in the Mambi Community Health Center Work Area. The research was carried out in May-June 2019. The research population was all elderly people suffering from hypertension in the working area of the Mambi Community Health Center, Mamasa Regency. The sample size in this study was 20 people who were considered to represent the entire population, with the inclusion criteria being willing to be respondents, having an age of $\geqslant$60 years and not taking blood pressure lowering medication.

Data collection was carried out using observation sheets as collection tools and using a Spigmanometer (tension meter) and stethoscope as measuring tools.

Initial measurements before giving boiled celery leaves, then provide counseling about the benefits and how to boil celery leaves. The process of boiling celery leaves is to provide 100 grams of celery leaves, 1 glass of 200 ml clean water. The first step is to wash 100 grams of celery leaves until clean, then chop them roughly. Then put it in a pan, add 1 glass of clean water with 200 ml then boil until the water remains 3/4 or 150 ml after it has cooled and drink it.

Grouping was carried out by looking at the mean value and the difference between pre, 3 day post intervention and 7 day post intervention, as well as the p value . Before carrying out bivariate analysis, a data normality test was carried out. Where the results of the normality test show that the data is not normally distributed so it is analyzed using the Friedman analysis test.

Results

Respondent Characteristics

The results of the research on the distribution of respondents' characteristics were that the age of the respondents was more in the range of 60-65 years, more male, the highest level of elementary school education, and more work among housewives. It can be seen in table 1 below.

Table 1. Distribution of Respondent Characteristics

Characteristics	F	%
Age		
60-65 years old	12	60
66-70 ahun	7	35
>70 years	1	5

Gender		
Man	15	75
Woman	5	25
Education		
elementary school	8	40
Junior high school	4	20
Senior high school	5	25
S1	3	15

Research variable

Based on the research results, the average pre-test systolic blood pressure value was 150.50, which is classified as having high blood pressure, the standard deviation value was 9,987 with the lowest systolic blood pressure being 140 mmHg and the highest blood pressure being 170 mmHg, while the average pre-test diastolic blood pressure value is 91 with a standard deviation of 7,881, minimum diastolic blood pressure 80 mmHg and maximum 110 mmHg. The average value of post-test systolic blood pressure on day 3 was 144.50, classified as having high blood pressure, the standard deviation value was 6,863 with the lowest systolic blood pressure being 140 mmHg and the highest being 160 mmHg, while the average value of post-test diastolic blood pressure the 3rd day test was 84.50, standard deviation 6.048, minimum standard 80 mmHg and maximum 100 mmHg. The average value of post-test systolic blood pressure on day 7 was 122.5, which has close to normal blood pressure, a standard deviation value of 76 with the lowest systolic blood pressure of 110 mmHg and the highest of 140 mmHg, while the average value of post-test diastolic blood pressure on day 7 was 122.5. 7th is 76, standard deviation 8.826, minimum standard 60 mmHg and maximum 90 mmHg (Table 2)

Table 2. Description of respondents' blood pressure before and after being given boiled water from celery leaves

Blood pressure	Mean	elementary school	Min.	Max.
Pre				
Systolic	150.50	9,987	140	170
Diastolic	91.00	7,881	80	110
Post Hr. 3				
Systolic	144.50	6,863	140	160
Diastolic	84.50	6,048	80	100
Post Hr. 7				
Systolic	122.50	11,180	110	140
Diastolic	76.00	8,826	60	90

The results of the comparison of the average blood pressure score before and after administration of boiled celery leaf water (Table 3) show that the total average score of systolic blood pressure after the 7 day intervention (mean = 1.03) is lower than the total average score after the 3 intervention. days (mean = 2.23), even lower than before the intervention (mean = 2.75), while the average diastolic blood pressure score after the 7 day intervention (mean = 1.30) was lower than the total average score after the 3 day intervention (mean = 1.98) was even lower than before the intervention (mean = 2.75). It can be concluded that there was a decrease in systolic and diastolic blood pressure after 3 days and after 7 days of giving boiled water from celery leaves. The results of the Friedman test with statistical significance of systolic and diastolic p-value 0.000 which shows that there are differences in systolic and diastolic blood pressure levels before, after 3 days and after 7 days of giving boiled water from celery leaves.

Table 3. Differences in blood pressure of respondents before and after being given boiled water from celery leaves

Blood pressure	Average	**P-Value**
Systolic		
Pre-test	2.75	0,000
Post test 3 days	2.23	
Post test 7 days	1.03	
Diastolic		
Pre-test	2.75	0,000
Post test 3 days	1.98	
Post test 7 days	1.30	

Discussion

Results study show that the average value pressure blood systole pre of 150.50 is classified have pressure blood high, value standard deviation amounting to 9,987 with mark pressure blood systole Lowest before given stew leaf celery owned respondents of 140 mmHg and mark pressure blood systole highest of 170 mmHg.

The average pre-test diastolic blood pressure value of 91.00 is classified as having high blood pressure, the standard deviation value is 7.881 with the lowest diastolic blood pressure value before being given boiled celery leaves to respondents of 80 mmHg and the highest diastolic blood pressure value of 110 mmHg. Hypertension occurs more often in old age than in young people. Young sufferers (under 30 years) generally suffer from secondary hypertension, the causes of which are known for certain, such as taking birth control pills, impaired kidney function, and hormonal balance disorders. Meanwhile, hypertension that appears along with increasing age, stress and hereditary factors is called primary hypertension (Anonymous, 2005). The prevalence of hypertension increases with increasing age. This is caused by arterial pressure which increases with increasing age, the occurrence of aortic regurgitation, and the presence of degenerative processes, which are more common with age. old .

Results study is known that the average value pressure blood systole after 3 days amounting to 144.50 classified have pressure blood high, value standard deviation amounting to 6,863 with mark pressure blood systole Lowest after 3 days given stew leaf celery owned respondents of 140 mmHg and mark pressure blood systole highest of 160 mmHg. Meanwhile, the average value pressure blood systole after 7 days amounting to 122.50 classified have pressure blood low, value standard deviation amounting to 11,180 with mark pressure blood systole Lowest after 7 days given stew leaf celery owned respondents of 110 mmHg and mark systole highest of 140 mmHg

As for the average value pressure blood diastle after 3 days amounting to 84.50 classified have pressure blood high, value standard deviation amounting to 6,048 with mark pressure lowest diastolic blood after 3 days given stew leaf celery owned respondents of 80 mmHg and mark pressure highest diastole blood of 100 mmHg. Meanwhile, the average value pressure diastolic blood after 7 days amounting to 76.00 classified have pressure blood low , value standard deviation amounting to 8,826 with mark pressure blood systole Lowest after 7 days given stew leaf celery owned respondents of 60 mmHg and highest diastole value of 90 mmHg.

Based on results research above so can is known that the average value pressure blood systole pre more higher (150.50) compared to the average pressure blood post 3 days (144.50) and 7- day average value (122.50) with mark highest pressure blood systole pre test (170) more tall compared to post 3 days (160) and post 7 days (140) values Lowest pressure blood systole pre-test (140) and post 3 days (140) and post 7 days (140). As for the average value pressure pre-diastole blood is more high (91.00) compared to the average pressure blood post 3 days (84.50) and 7-day average value (76.00) with mark highest pressure pre test diastolic blood (110) more tall compared to post 3 days (160) and post 7 days (140) values Lowest pressure pre test diastolic blood (80) same post 3 days (80) more tall compared to post 7 days (60).

These results are in accordance with research by Somali, (2009), that consuming 2 stalks of celery (40 grams) / day for one week can reduce blood pressure from 158 / 96 mmHg to 118 / mmHg. This can happen because celery leaves contain a lot of apiin and diuretic substances which are useful for increasing the amount of urine, sedating (sedative compounds / Pthalides), carminative and preventing narrowing of blood vessels (Widyawaruyanti, 2009). Apart from the Pthalides and magnesium content, another substance that can lower blood pressure is Apigenin which is a calcium antagonist which is very useful for preventing narrowing of blood vessels. And the ratio of potassium and sodium is close to the ideal ratio (2.75: 1) to prevent hypertension (Khomsan, 2009 and Hartati, 2009).

Friedman's analysis showed that the p value was (0.000) where $p < 0.05$, so H0 was rejected, which means there was a difference between blood pressure before and after administering boiled celery leaves to hypertension sufferers in the Mambi Community Health Center working area, Mamasa Regency.

The results of this study show that there is a significant effect of giving boiled celery leaves on reducing both systolic and diastolic blood pressure. It should be noted that apart

from being rich in vitamins and minerals, celery leaves also provide fiber which is very important for digestion.

Apart from that, the results of this study are also strengthened by research conducted by (Muzakar and Nuryanto 2012) quoted in (Hastuti Budi Heny, 2015) showing that both systolic and diastolic blood pressure decreased significantly after being given boiled celery water + anti-hypertension medication for 3 days in a row. The average decrease in systolic pressure was 20.32 mmHg and diastolic 7.09 mmHg. The statistical test results obtained p value < 0.05, it was concluded that there was an effect of giving boiled celery water on reducing pressure blood.

The results of this study were also strengthened by research conducted by (Tinggi, Health, Tuah, & Riau, 2015) showing that both systolic and diastolic blood pressure decreased significantly after being given boiled celery water for 7 days. The average decrease in systolic pressure was 140.33 mmHg and diastolic 86.83 mmHg. Paired comparison test results t test obtained a P value (0.000) < alpha value (0.05), it was concluded that there was an effect of giving boiled celery water on reducing pressure blood.

The results of this research were also strengthened by research conducted by (Nengah, Arie, & Muntamah, nd-b). Based on the Wilcoxon test, the calculated Z value for systolic blood pressure was -2.911 with a p-value of 0.004. Therefore, the p-value is 0.004 < (0.05), and the Z count for diastolic blood pressure is -2.000 with a p-value of 0.046. Because both p-values are < a (0.05), Ho is rejected. It can be concluded that there is a significant effect of giving boiled celery water on reducing blood pressure, both systole and diastole, in elderly people with hypertension.

Conclusion

This study showed a decrease in blood pressure before and after giving boiled water from celery leaves, namely from an average systolic blood pressure from 2.75 before the intervention to 2.23 after 3 days of intervention and 1.03 after 7 days of intervention. Likewise, diastolic blood pressure decreased after giving boiled water from celery leaves, namely from an average blood pressure of 2.75 before the intervention to 1.98 after 3 days of intervention and 1.30 after 7 days of intervention. The results of statistical tests show that there is an effect of boiled water from celery leaves on reducing blood pressure in the elderly in the work environment of the Mambi Health Center, Mamasa Regency. with a significant level of p=0.000.

It is hoped that education about the importance of boiled celery leaf water in reducing blood pressure in the elderly who experience increased blood pressure in the elderly will continue to be promoted and it is hoped that future researchers can conduct research on other herbal medicines besides celery leaves and can compare the effectiveness of the herbal ingredients studied. associated with a decrease in blood pressure.

Reference

1. Ali-akbari, S., Asadi-samani, M., Ghadery, H., Committee, A., Research, M., University, K., … Student, P. (2014). Apium graveolens, *1* (1), 48–59.
2. Arisandi, R., Sukohar, A., Medicine, F., Lampung, U., Pharmacology, B., Medicine, F., & Lampung, U. (2016). Celery (Apium graveolens L) as Chemopreventive Agent for Cancer Celery (Apium graveolens L) as Chemopreventive Agent for Cancer, *5* (April), 95–100.
3. Department of health. (2007). Pharmaceutical care. *Pharmaceutical Care for Hypertension* , 1–50.
4. Dharma, K.K. (2017). *Nursing Research Methodology (Guidelines for carrying out and applying research results)* . Jakarta: TEAM.
5. HS, Intan Eka Oktavia. Junaid, and A. (2017). The Effect of Giving Boiled Celery Water (Apium Graveolens) on Reducing Systolic and Diastolic Blood Pressure in Hypertension Sufferers in the Puuwatu Health Center Working Area, Kendari City, 2016. *Public Health Student Scientific Journal* , *2* (6), 1–12.
6. Ilmiah, J., Batanghari, U., & Vol, J. (2017). The Influence of Health Education Using Leaflet Media on Mothers' Knowledge About Management of ISPA in Toddlers at Posyandu Tina Yuli Fatmawati 1, *17* (3), 227–234.
7. Julianti, ED, Nurjanah, N., & Seotrisno, USS (2007). *Free from Hypertension with Juice Therapy* . Jakarta.
8. Ministry of Health RI. (2014). Hypertension Data Center. *Infodatin* , (Hypertension), 1–7. https://doi.org/10.1177/109019817400200403
9. Komplementer, A., Di, B., Banyumas, K., & Soedirman, UJ (2010). Soedirman Nursing Journal (The Soedirman Journal of Nursing), Volume 5, No.2, July 2010, *5* (2), 95–104. https://doi.org/10.1111/hsc.12196
10. Kusuma Hardi, & Nurarif Huda Armin. (2015). *Nursing Care Application Based on Medical Diagnosis and Nanda Nic-Noc* . (Yudha, Ed.) (Ed, 2). Jogjakarta: Mediaction Publishers.
11. Lyrawati, D. and AA (2015). Tanjungpura University Faculty of Medicine Pharmacy Study Program 2015.
12. Machfoedz, I. (2017). *Research Methodology* . Yogyakarta: Fitramaya.
13. Muhith Abdul. (2016). *Gerontic Nursing Education* . (Andi, Ed.) (Ed. 1). Yogyakarta.
14. Purwaningsih, W. et al. (2010). Maternity Nursing Care, 35. https://doi.org/10.1016/j.scico.2014.05.006
15. Robert E. Kowalski. (2010). *Hypertension therapy* . (Astuti Rahmani, Ed.) (Ed.1). Bandung: Qanita.
16. Saputra, O., & Fitria, T. (2016). Efficacy of Celery Leaves (Apium graveolens) Against High Blood Pressure in Hypercholesterolemia Patients Efficacy of Celery Leaves (Apium graveolens) Against Hypertension in Hypercholesterolemia Patients, *5* (April), 1–6.
17. Saryono. (2011). *Health Research Methodology* . (A. Setiawan, Ed.). Yogyakarta: Scholar Partners.
18. Sharif La Ode. (2012). *Gerontic Nursing Care* . (N. ArTeam, Ed.) (1st Ed.). Yogyakarta.

19. Soenarta, AA, Erwinanto, Mumpuni, ASS, Barack, R., Lukito, AA, Hersunarti, N., … Pratikto, RS (2015). Guidelines for the management of hypertension in cardiovascular disease. *Guidelines for the Management of Hypertension in Cardiovascular Disease* , *1* , 1–2.
20. Sofia Rhosma Dewi. (2014). *Gerontic Nursing Textbook* . (H. Rahmadhani, Ed.) (Ed.1). Yogyakarta: Deepublish.
21. Sopiyudin, MD (2011). *Statistics for Medicine and Health: Descriptive, Bivariate and Multivariate with applications using SPSS* . (A. Suslia, Ed.) (Ed.5). Jakarta: Salemba Medika.
22. Studi, P., Ilmu, S., Nuryanti, NL, (2011). The Effect of Providing Boiled Celery Water on Reducing Blood Pressure in Elderly People Suffering from Hypertension at Pstw Budhi Dharma Bekasi in 2011, Indonesian Medical College of Nursing.
23. Widyaningrum, S. (2012). The Relationship Between Food Consumption and the Incident of Hypertension in the Elderly. *The Relationship Between Food Consumption and the Incident of Hypertension in the Elderly* , *53* (9), 1–146. https://doi.org/10.1017/CBO9781107415324.004