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The Effect of Cucumber Juice Administration on Hypertension Reduction in Menopausal Women in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency 2024

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ABSTRACT

Hypertension is a condition where a person's blood pressure is above the normal rate. It can be treated using herbal treatments such as cucumber juice. According to World Health Organization data reports at least 839 million cases of hypertension, estimated to be 1.15 billion in 2025 or about 29% of the total world population, where sufferers are more in women (30%) than men (29%). Data in Indonesia shows that 25.8% of populations over the age of 18 are hypertension sufferers and from the provincial classification it is known that 26.4% are in Java. Objectives: This research aims to determine the effect of drinking cucumber juice on reducing hypertension. This research was quantitative study using a pre-experimental design with one group pre-post test approach. This study used analytical survey research with cross sectional approach. Data collected using observation sheets. The populations were all menopausal mother amount 13 people and all were sampled (total population). Data analysis used Wilcoxon test. The results showed differences in the average value of hypertension reduction before and after cucumber juice was given, from 30.8 to 92.3. Wilcoxon test results obtained A-Asymp Sig (2-tailed) value was p=.005 (<.050). The conclusion shows that there is an effect of drinking cucumber juice on reducing hypertension. Suggestion for respondents to increase their knowledge in managing hypertension using non-pharmacology, for institutions to add information on the benefits of cucumber juice in reducing hypertension, and for further researchers to develop it further.

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1. INTRODUCTION

Women experience several life cycles, starting from the fetal stage, infancy, childhood, puberty, adolescence, reproductive period, climacteric, and menopause. A woman is considered menopausal when she has not had a menstrual period for approximately one year. Menopause usually occurs between the ages of 45 and 50. During menopause, various physical and psychological changes occur due to decreased production of estrogen and progesterone by the ovaries. The decline in estrogen production can lead to an increase in HDL cholesterol (good cholesterol) levels. High levels of LDL

can cause narrowing and blockage of the arteries, leading to circulatory disorders or hypertension. (Aisyah, 2022)

Hypertension, or high blood pressure, is a disease that has gained attention across all societal groups due to its short-term and long-term effects, requiring comprehensive and integrated management. A person is diagnosed with hypertension if their systolic blood pressure is above 140 mmHg and their diastolic blood pressure is above 90 mmHg. The tendency for urban communities to have a higher prevalence of hypertension than rural communities is associated with lifestyle factors that increase the risk of hypertension, such as stress, obesity, lack of exercise, smoking, and a high-fat diet. Emotional disturbances, obesity, excessive alcohol consumption, excessive coffee stimulation, tobacco, and certain medications significantly contribute to hypertension risk. (Dzulchilda, 2020)

According to the National Health and Nutrition Examination Survey (NHNES), the incidence of hypertension in adults in the United States between 2010 and 2012 was approximately 39–51%, indicating that 58–65 million people suffered from hypertension, an increase of 15 million from NHNES III data. The World Health Organization (WHO) recorded at least 839 million cases of hypertension worldwide in 2012, with an estimated increase to 1.15 billion by 2025, accounting for approximately 29% of the global population. The prevalence is higher in women (30%) than in men (29%). Around 80% of hypertension cases occur in developing countries. (Febby, 2021)

Many factors contribute to hypertension. The Indonesian Ministry of Health (2009) reported that the incidence of hypertension and cardiovascular disease tends to increase due to unhealthy lifestyles, the high cost of hypertension treatment, and inadequate healthcare facilities for hypertension management. The high prevalence of hypertension is also influenced by smoking habits, lack of physical activity, unhealthy diets, obesity, and stress. (Fitriana, 2019)

Data from Indonesia indicate that 25.8% of the population over 18 years old suffers from hypertension. In provincial classifications, Central Java has a prevalence of 26.4%. The incidence of hypertension in Semarang has exceeded 40% over the past five years. (Hernayati, 2019)

According to the Tanah Datar District Health Office in 2012, among the 14 sub-districts in Tanah Datar, which has 23 health centers, hypertension ranked fourth among the most common diseases, with 23,519 cases. Sungai Tarab District had the third-highest hypertension prevalence, while Pagaruyung District had the lowest, ranking 13th. (Data from the Tanah Datar District Health Office, 2012). (Iwan, 2022)

Hypertension can be managed through pharmacological (medication) and non-pharmacological (non-medication) methods. Several fruits and vegetables have been found to help lower blood pressure, including celery, cucumber, chayote, watercress, radish, tomato, bilimbi, starfruit, watermelon, carrot, banana, apple, and kiwi. Given the high potassium, magnesium, and phosphorus content of cucumbers, along with their affordability, cucumber consumption is recommended as an alternative for lowering blood pressure. Cucumbers help reduce blood pressure in hypertension patients by promoting fluid excretion (through urine).

A study conducted by Aisyah, titled "The Effect of Cucumber Juice (Cucumis sativus L.) Administration on Blood Pressure Reduction in Women Aged 40–60 with Hypertension," used a pre- and post-test control group design with a quota sampling method. The study population consisted of 30 hypertensive women aged 40–60 years living in Jomblang, Semarang. The results showed a significant decrease in systolic blood pressure ($p = 0.000$) and diastolic blood pressure ($p = 0.002$) in the treatment group. After consuming cucumber juice, the systolic blood pressure in the treatment group decreased by 16.00 ± 8.062 SD mmHg, and diastolic pressure decreased by 6.67 ± 6.726 SD mmHg. These findings indicate that cucumber juice consumption effectively lowers systolic and diastolic blood pressure in hypertensive patients. (Kharisna, 2019)

A preliminary survey conducted by the researcher through interviews and blood pressure measurements on five menopausal women in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency, found that three menopausal women had hypertension. Among them, two women aged 55 and 52 were taking medications such as captopril, while one woman aged 65 was

consuming cucumber juice. The remaining two menopausal women, aged 56 and 58, did not have hypertension.

This study aims to determine the effect of cucumber juice administration on hypertension reduction in menopausal women in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency, in 2024.

2. RESEARCH METHOD

The research design used in this study is a Pre-Experimental Design with a one-group pre-test post-test approach. This study aims to compare the reduction in hypertension before and after the administration of cucumber juice (Ningsih, 2020). This research was conducted in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency. The research period was from May to July 2024.

The population in this study consisted of menopausal women experiencing hypertension in Kwala Begumit Village, Randu Gapit Hamlet, totaling 13 individuals. The sampling technique used in this study was the Total Population technique, where all menopausal women with hypertension in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency in 2024, totaling 13 individuals, were selected as the sample (Nugraheni, 2019).

The data collection method in this study involved primary data, which was obtained directly through interviews with respondents using a questionnaire containing pre-prepared questions and answers. Secondary data was obtained through data collection from the head of Kwala Begumit Village regarding menopausal women. Tertiary data was collected by searching for officially published research in the form of journals, research reports available on the internet, such as WHO data and data from various other sources worldwide. The analysis used includes univariate analysis, which is used to describe data for each variable based on the research findings. The data is presented in a frequency distribution table. Once the characteristics of each variable in this study are identified, the analysis proceeds to the bivariate level. This is done to determine the relationship (correlation) between the independent variable and the dependent variable (Simbolon, 2022).

3. RESULTS AND DISCUSSIONS

3.1 Univariate Analysis

Based on Table 1, which presents the frequency distribution of respondents by age in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency, it can be seen that 1 respondent (7.7%) was in middle age, 10 respondents (76.9%) were elderly, and 2 respondents (15.4%) were very elderly.

The frequency distribution of respondents based on hypertension levels shows that all respondents (13 individuals, 100%) experienced a decrease in blood pressure.

Table 1. Frequency Distribution of Respondents Based on Age and Hypertension Levels in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency

Variable	Frequency	Percentage (%)
Age		
Middle age	1	7.7
Elderly	10	76.9
Very elderly	2	15.4
Hypertension Level		
Blood pressure decreased	13	100
Blood pressure remained the same	0	0
Blood pressure increased	0	0
Total	13	100

Based on Table 2, the frequency distribution of blood pressure before consuming cucumber juice shows that 4 respondents (30.8%) had mild hypertension, 9 respondents (69.2%) had moderate hypertension, and no respondents had severe hypertension.

The frequency distribution of blood pressure after consuming cucumber juice indicates that 12 respondents (92.3%) experienced a decrease in blood pressure to mild hypertension, 1 respondent (7.7%) remained with moderate hypertension, and no respondents had severe hypertension.

Table 2. Frequency Distribution of Blood Pressure Before and After Consuming Cucumber Juice in Kwala Begumit Village, Randu Gapit Hamlet, Stabat District, Langkat Regency

Blood Pressure	Frequency	Percentage (%)
Pre-Test		
Mild Hypertension	4	30.8
Moderate Hypertension	9	69.2
Severe Hypertension	0	0
Post-Test		
Mild Hypertension	12	92.3
Moderate Hypertension	1	7.7
Severe Hypertension	0	0
Total	13	100

Based on Table 2, the frequency distribution of blood pressure before and after consuming cucumber juice shows significant changes. Before consuming cucumber juice, 4 respondents (30.8%) had mild hypertension, 9 respondents (69.2%) had moderate hypertension, and none experienced severe hypertension. After consuming cucumber juice, 12 respondents (92.3%) experienced a decrease in blood pressure to the mild hypertension category, while only 1 respondent (7.7%) remained in the moderate hypertension category, and no respondents had severe hypertension. These findings indicate that all respondents experienced a reduction in blood pressure after consuming cucumber juice, demonstrating its potential effectiveness in managing hypertension.

3.2 Bivariate Analysis

Based on Table 3, the normality test results for both the Shapiro-Wilk Pre-Test and Post-Test values show a significance value (Sig) of $p < 0.05$, indicating that the data is not normally distributed. Since the data is not normally distributed, the next step is to use the Wilcoxon test, which is a non-parametric statistical test. The Wilcoxon Non-Parametric Test results show that the Asymp. Sig (2-tailed) for the pre-test and post-test is $p = 0.005$. Since the p-value is less than 0.05 ($p < 0.050$), there is a significant difference. Therefore, it can be concluded that cucumber juice has an effect on reducing hypertension in menopausal women in Dusun Randu Gapit, Desa Kwala Begumit.

Table 3. Normality Test and Non-Parametric Wilcoxon Test Results

Tests of Normality	Intervention	Kolmogorov-Smirnov	Shapiro-Wilk
		Statistic	df
Results	Pre-Test	0.431	13
	Post-Test	0.532	13
a. Lilliefors Significance Correction			
Test Statistics		Post-Test - Pre-Test	
Z		-2.828a	
Asymp. Sig. (2-tailed)		0.005	

a. Based on positive ranks.
b. Wilcoxon Signed Ranks Test.

The results of the normality test, as shown in Table 3, indicate that both the Shapiro-Wilk Pre-Test and Post-Test values have a significance value (Sig) of $p < 0.05$. This suggests that the data is not normally distributed. Because of this, a non-parametric statistical test, the Wilcoxon test, was used as the next step in the analysis. The Wilcoxon Signed-Rank Test results show that the Asymp. Sig (2-

tailed) value for the pre-test and post-test is p = 0.005. Since this p-value is less than 0.05 (p < 0.050), it indicates a statistically significant difference. This means that the intervention of cucumber juice consumption has a significant effect on lowering hypertension in menopausal women in Dusun Randu Gapit, Desa Kwala Begumit.

3.3 Discussion

3.3.1 Frequency Distribution of Hypertension Reduction Before and After Consuming Cucumber Juice in Dusun Randu Gapit, Desa Kwala Begumit

Based on the research results regarding the frequency distribution of menopausal women experiencing hypertension, out of 13 respondents, 1 respondent (7.7%) was in middle age, 10 respondents (76.9%) were elderly, and 2 respondents (15.4%) were very elderly. The frequency distribution of respondents before consuming cucumber juice showed that 4 respondents (30.8%) had mild hypertension, while 9 respondents (69.2%) had moderate hypertension. Furthermore, after consuming cucumber juice, out of 13 respondents, 12 respondents (92.3%) had mild hypertension, and 1 respondent (7.7%) had moderate hypertension.

Hypertension is a condition in which a person experiences an increase in blood pressure above normal levels, leading to increased morbidity and mortality rates. A blood pressure reading of 140/90 mmHg is based on two phases in each heartbeat: the systolic phase (140), which indicates the phase when blood is being pumped by the heart, and the diastolic phase (90), which shows the phase when blood returns to the heart.

In general, blood pressure gradually increases with age. The risk of developing hypertension in individuals over 55 years old who previously had normal blood pressure is 90%. Most patients experience prehypertension before being diagnosed with hypertension, and the majority of hypertension diagnoses occur between the third and fifth decades of life. A similar study conducted by Cinta Rulita Tiominar Panggabean and Iwan Budiman on the effects of cucumber consumption on blood pressure reduction showed that the average blood pressure after consuming cucumber was 102.03/73.77 mmHg, which was lower than the average blood pressure before consuming cucumber at 116.67/82.67 mmHg (p < 0.01).

Another study by Alina Dzul Childa Ilma and Yekti Wirawanni, titled "The Effect of Cucumber and Tomato Juice Consumption on Blood Pressure in Overweight and Obese Women", found that the treatment group experienced a reduction in systolic and diastolic blood pressure by 17.84 ± 9.09 mmHg (p = 0.000) and 11.34 ± 4.02 mmHg (p = 0.000), respectively, compared to the control group, which did not show a significant decrease in systolic or diastolic blood pressure.

According to the researcher's assumption, the causes of hypertension or increased blood pressure in menopausal women are influenced by environmental factors. Many menopausal women tend to consume excessive amounts of salt as they prefer salty foods and do not monitor their cooking. Some women frequently consume fast food due to a lack of motivation to cook at home, opting for convenient options instead. Other factors contributing to hypertension include stress and anxiety. Many menopausal women stay at home without engaging in outdoor activities, leading to boredom and frustration. Additionally, family issues or financial problems can cause excessive worrying, resulting in stress or anxiety, which increases the burden on their minds. Another contributing factor is a lack of physical activity or exercise. Due to aging, many elderly women become less active and reluctant to engage in even mild exercise. Furthermore, aging itself significantly influences hypertension risk, as natural changes in the body affect the heart, blood vessels, and hormones. Lastly, genetic factors or a family history of hypertension also play a role, as menopausal women with parents, siblings, or other family members who have hypertension are more likely to develop high blood pressure.

3.3.2 The Effect of Drinking Cucumber Juice on Reducing Hypertension in Menopausal Women in Dusun Randu Gapit, Kwala Begumit Village

The results obtained in this study, tested using the Wilcoxon signed-rank test, showed a significant difference before and after consuming cucumber juice in reducing hypertension, with an average of 30.8 before and 92.3 after drinking cucumber juice. The difference between the values before

and after clearly indicates an improvement in reducing hypertension. The statistical test results showed a p-value of 0.005 ($p < 0.050$), which concludes that there is a significant effect before and after consuming cucumber juice. Therefore, this study supports the hypothesis that drinking cucumber juice significantly reduces hypertension in menopausal women in Kwala Begumit Village, Dusun Randu Gapit, Stabat District, Langkat Regency, in 2024.

Hypertension can affect anyone, both men and women of all ages. The risk of developing hypertension increases after the age of 50. Alarmingly, nearly 90% of hypertension cases have no known specific cause. Hypertension treatment can be carried out in various ways, including traditional remedies such as noni fruit, bay leaves, seaweed, cucumber, black turmeric, garlic, and banana flowers. People can choose the most accessible and suitable option for their condition.

One non-pharmacological (drug-free) method to manage hypertension is consuming cucumber, as it is affordable and easily available in the community. The mineral content of cucumber, including potassium, magnesium, and phosphorus, is abundant, making it a recommended alternative for reducing blood pressure. Cucumber has hypotensive properties (blood pressure-lowering effects) because its high water and potassium content help draw sodium into intracellular fluid and promote vasodilation (widening of blood vessels), which lowers blood pressure. The key compound in cucumber that regulates blood pressure is potassium, which increases its concentration in intracellular fluid, drawing fluid from the extracellular space and reducing blood pressure through vasodilation. Potassium is the primary ion inside the cells and counteracts sodium (salt), which is known to raise blood pressure.

This study is supported by research conducted by Febby Hardianti and Djoko Priyono on the effectiveness of cucumber juice in reducing blood pressure in hypertension patients at Perumnas II Public Health Center, Pontianak Barat. The univariate analysis showed that the age range of respondents was 34–59 years, with early elderly individuals being the most common group (17 respondents). The majority of respondents were female (87.7%), and the most common occupation was housewives (84.4%). A bivariate analysis using the Wilcoxon test found a p-value < 0.05, indicating a significant reduction in blood pressure after the intervention in both groups. Another study by Wibowo, Muchamad Andi, and Candra Diyah, titled "The Effect of Cucumber Juice on Reducing Systolic and Diastolic Blood Pressure in Essential Hypertension Patients in Elderly Patients at PSTW Budi Luhur Yogyakarta (2010)," used Wilcoxon signed-rank test analysis. The results showed an asymp. sig. (2-tailed) value of 0.013 for systolic blood pressure and 0.000 for diastolic blood pressure, with $\alpha = 0.025$, confirming the significant effect of cucumber juice on reducing blood pressure in elderly patients with essential hypertension. According to the researcher's assumption, hypertension is prevalent among the elderly population. Some respondents consume antihypertensive medications, while others opt for cucumber juice as an alternative due to its easy accessibility and affordability. Many individuals prefer natural remedies like cucumber juice over medications, as it is widely accepted in the community as an affordable and effective alternative for reducing high blood pressure.

4. CONCLUSION

The conclusion of this study is that drinking cucumber juice has an effect on reducing hypertension in Kwala Begumit Village, Dusun Randu Gapit, Stabat District, Langkat Regency, in 2024. It is recommended that: Respondents increase their knowledge of managing hypertension using non-pharmacological methods. Institutions provide more information about the benefits of cucumber juice in reducing hypertension. Future researchers further develop this study for deeper exploration.

REFERENCES

Aisyah. (2022). The effect of cucumber juice (Cucumis sativus L.) consumption on blood pressure reduction in hypertensive women aged 40–60 years. J Nutr College, 3.

Dzulchilda, A. (2020). The effect of cucumber and tomato juice consumption on blood pressure in overweight and obese women. Medicine, 4.

Febby, H. (2021). Effectiveness of cucumber juice versus celery decoction on blood pressure reduction in hypertensive patients at Perumnas II Health Center, West Pontianak District. Nursing, 38.

Fitriana, Y. (2019). The effect of cucumber juice consumption on blood pressure reduction in hypertensive patients in Jorong Balerong Bunta, Sungai Tarab 1 Health Center working area, Sungai Tarab District, Tanah Datar Regency. Nursing, 43.

Hernayati, L. (2019). Harmful foods for blood type O. (Editor: Budi). Jakarta: Niaga Swadaya.

Iwan, B. (2022). The effect of cucumber on reducing blood pressure. Faculty of Medicine.

Kharisna, D. (2019). Effectiveness of cucumber juice consumption on reducing blood pressure in hypertensive patients. Nursing, 2, 124.

Muhammad, I. (2020). Guidelines for writing scientific papers in the health field using the scientific method. (Editor: Suroyo RB). Bandung: Cipta Pustaka Media Printis.

Ningsih, W. W. (2020). The effect of cucumber juice consumption on reducing blood pressure in hypertension patients in Sawahan Porong Village, Sidoarjo. Nursing.

Nisa, I. (2022). The benefits of medicinal plants for high blood pressure. (Editor: Rini Asriani). Jakarta: Niaga Swadaya.

Nugraheni. (2019). The king of natural medicine: Benefits of cucumber from A to Z. (Editor: Aldo Sahala). Yogyakarta: Rapha Publishing.

Ponggohong, C. E. (2021). The effect of cucumber juice consumption on blood pressure in hypertension patients in Tolombukan Village, Pasan District, Southeast Minahasa Regency. Nursing, 3(2).

Probosari, E. (2022). The effect of cucumber juice (Cucumis sativus L.) consumption on blood pressure reduction in hypertensive women aged 40–60 years. Medicine, 4.

Yusup, M. (2023, December). The Importance of Using Logo Design as a Brand Image in Marketing MSME Products Using Digital Technology in Kelambir V Village. In International Conference on Sciences Development and Technology (Vol. 3, No. 1, pp. 79-84).

Yusup, M., & Kurniawan, R. (2024). Understanding the Impact of Chatbot Technology in Learning: Analysis of Utilization at SMA Negeri 5 Binjai. Journal of Information Technology, computer science and Electrical Engineering, 1(1), 49-55.

Yusup, M., & Ahmad, A. (2024). Building a Strong Image Logo Design: Human Centered Design Approach in Logo Design for SMEs in Pematang Serai Village. Formosa Journal of Computer and Information Science, 3(1), 69-82.

Yusup, M., & Ahmad, A. (2024). Implementation of a Smart School Learning system with Internet of Things Technology at SMA Negeri II Binjai. Instal: Jurnal Komputer, 16(01), 1-9.

Ramdya. (2021). Effectiveness of cucumber juice in lowering blood pressure in hypertensive patients. Nursing, 1.

Simbolon, O. H. (2022). Blood pressure health series. (Editor: Ayodya L. Ryadi). Jakarta: Dian Rakyat.

Suparni, I. (2021). Kalimantan herbal: Traditional recipes from Kalimantan. (Editor: Th. Arie Prabawati). Yogyakarta: Rapha Publishing.

Susilo, Y. (2020). Effective ways to overcome high blood pressure (hypertension). (Editor: Westriningsih). Yogyakarta: Andi Yogyakarta.

Tryanto, E. (2019). Integrated nursing care services for hypertensive patients. (Editor: Hak Cipta). Yogyakarta: Graha Ilmu.

Warsana. (2021). Cucumber farming in dry and rainy seasons. (Editor: Diddy S.). Jakarta: Papar Sinar Sinanti.

Wibowo. (2019). The effect of cucumber juice consumption on systolic and diastolic blood pressure reduction in elderly patients with essential hypertension at PSTW Budi Luhur, Yogyakarta. Nursing.