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The Effect of Watermelon Juice and Cucumber Juice on Blood Pressure Reduction in Elderly People with Hypertension at the Bina Sejahtera Elderly Health Center in Palembang

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ABSTRACT

Background & Objective: Hypertension is a major degenerative disease, especially among the elderly, and is a leading risk factor for cardiovascular disease and stroke. The World Health Organization defines hypertension as systolic blood pressure ≥140 mmHg and/or diastolic ≥90 mmHg. This study aimed to analyze the effect of watermelon juice and cucumber juice on reducing blood pressure in patients with hypertension. **Method:** This study used a quantitative quasi-experimental design with a two-group pretest–posttest approach. The research was conducted on January 6, 2025, involving 57 hypertensive patients. Respondents were divided into two intervention groups: watermelon juice and cucumber juice. Blood pressure was measured before and after the intervention. Data were analyzed using univariate and bivariate statistical tests. **Results:** After watermelon juice administration, most respondents' systolic blood pressure shifted from stage 2 hypertension to pre-hypertension (60.7%), and diastolic blood pressure also predominantly reached the pre-hypertension category (82.1%). After cucumber juice administration, systolic blood pressure mostly decreased to pre-hypertension (60.7%), and all respondents' diastolic blood pressure reached the pre-hypertension category (100%). Watermelon juice significantly reduced systolic blood pressure ($p = 0.000 < 0.05$). Cucumber juice also significantly reduced systolic blood pressure ($p = 0.000 < 0.05$). There was a significant difference between watermelon and cucumber juice in reducing diastolic blood pressure ($p = 0.014 < 0.05$). **Conclusion:** Both watermelon juice and cucumber juice effectively reduce blood pressure in hypertensive patients. However, there is a significant

difference between the two interventions in reducing diastolic blood pressure.

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Introduction

Hypertension is one of the degenerative diseases that is a major problem in society, especially among the elderly (Ivana et al., 2021). Hypertension is defined as systolic blood pressure exceeding 140 mmHg, which significantly increases the risk of cardiovascular death by 45% and stroke by 51% compared to diastolic blood pressure in individuals aged 50 years and above (Indah, 2023).

According to the WHO, hypertension is defined as an increase in blood pressure with a systolic blood pressure > 140 mmHg and/or a diastolic blood pressure > 90 mmHg. Hypertension is often referred to as the silent killer. Hypertension is usually asymptomatic (asymptomatic)

because lifestyle factors can also cause hypertension in the elderly, such as consuming fatty, high-calorie, low-fiber, high-sodium, and salty foods, smoking, and alcohol consumption. Reduced physical activity is another factor contributing to hypertension in the elderly (Silfiyani, Luthfina & Khayati, 2021).

In 2021, the World Health Organization (WHO) reported that 26.4% or 1.13 billion people worldwide have hypertension. This means that 1 in 3 people in the world are diagnosed with hypertension, and this figure is estimated to increase to 29.2% by 2025. Of the 972 million people with hypertension, 333 million, or 34.25%, live in developed countries, and the remaining 639 million, or 65.74%, live in developing countries (Sodikin & Fauzi, 2023). Hypertension carries various risks of complications, especially those related to degenerative problems (Ivana et al., 2021).

In Indonesia, hypertension is the third leading cause of death in all age groups (6.8%), after stroke (15.4%) and tuberculosis (7.5%) (Indah, 2023). Indonesia is a developing country with 63,309,620 cases of hypertension and 427,218 deaths due to hypertension. People aged 31-44 years (31.6%), people aged 45-54 years (45.3%), and people aged 55-64 years (55.2%) experience hypertension (Sodikin & Fauzi, 2023).

According to the 2023 Riskesdas report, South Sumatra Province ranks 4th out of 34 provinces that measured hypertension in individuals over 18 years of age. The incidence of hypertension has increased year by year over the past three years, according to data from the Palembang City Health Office. Among 1,668,848 people living in the city of Palembang, 255,449 people have high blood pressure, and 146,220 people (or 57.2%) receive standard hypertension health care. The percentage of hypertension cases increased by 22.5% in 2018, 54.8% in 2019, and 57.8% in 2020 (Triandini, 2022).

Hypertension patients who do not maintain a healthy diet and lifestyle are also at risk of recurrent hypertension or relapse. Various factors, both internal and external,

influence the recurrence of hypertension in the elderly (Sodikin & Fauzi, 2023). Hypertension can be treated pharmacologically or non-pharmacologically. Pharmacological management consists of administering antihypertensive drugs such as diuretics, beta blockers, adrenergic blockers, and vasodilators. However, due to the high cost of therapy, hypertensive patients often reject this method and seek other therapies. One example is consuming cucumber and watermelon juice, which is a non-pharmacological method to complement herbal treatment (Sodikin & Fauzi, 2023). Additionally, adopting a healthy lifestyle, including a low-salt and low-cholesterol diet, avoiding the use of harmful chemicals, getting adequate rest, managing stress, and engaging in physical activity, are ways to manage hypertension non-pharmacologically (Melanie, 2022).

Watermelon, also known as Citrus vulgaris Shard, is a vine with round fruit the size of a human head. The red flesh of the watermelon is yellow, juicy, and dense and rich in nutrients, such as fiber, lycopene, vitamin A, and potassium. Additionally, watermelon contains antioxidants like potassium, vitamin C, carbohydrates, and lycopene, as well as amino acids, acetic acid, malic acid, folic acid, lycopene, carotene, bromine, potassium, fructose, and sucrose (Rohmaniah et al., 2023). As a sufficient source of potassium, watermelon can help reduce water levels in the blood. In the liver, citrulline and arginine contribute to the formation of urea from ammonia and CO2, which causes an increase in urine output, also known as a diuretic. Diuretics work by helping the kidneys remove salt and water, reducing body fluid volume, thereby lightening the heart's workload and lowering blood pressure (Yensasnidar et al., 2022). If too much potassium is consumed, its concentration in intracellular fluid will increase. As a result, fluid tends to be drawn from the extracellular space, which in turn lowers blood pressure (Hasanah, 2020).

A study (Handayani, 2017) of 30 people surveyed divided them into two groups: the first group received watermelon juice and the second group received cucumber juice. The study showed that each type of juice lowered blood pressure in hypertensive patients better than cucumber juice.

In a study (Apriza, 2020) conducted on 30 people with hypertension, watermelon juice caused an average blood pressure reduction of 15.03 mmHg, while star fruit juice caused an average blood pressure reduction of 11.33 mmHg, with a P-value <0.05, indicating a difference in effectiveness (Yensasnidar et al., 2022).

Consuming cucumbers is an additional herbal remedy. Cucumbers are good for health because they contain many nutrients and add flavor. According to research conducted by Agung Prakoso (2014), cucumbers contain potassium, which can inhibit the Renin-Angiotensin system and reduce aldosterone secretion, which in turn lowers blood pressure. With a p-value of 0.000 ($p<0.05$), this study was conducted at the Demak health center with a sample of 40 adults who were tested twice a week (morning and afternoon) every day (Awaluddin & Yuliana, 2022).

Based on the results of a preliminary study on October 14, 2024, the researchers collected data at the Bukit Sangkal Palembang Community Health Center and obtained data on elderly people who had suffered from hypertension in the last three months from June to August 2024. The number of elderly patients with hypertension was 128 people. Based on these data, the health center directed the researcher to conduct research at the Bina Sejahtera Elderly Health Post in the Bukit Sangkal Health Center working area. The researcher then interviewed the head of the Bina Sejahtera Elderly Health Post in Palembang and obtained data on elderly people with hypertension in the last three months, with a total of 57 patients.

Based on the background description, research was conducted on the effect of watermelon juice and cucumber juice on lowering blood pressure in elderly people with hypertension.

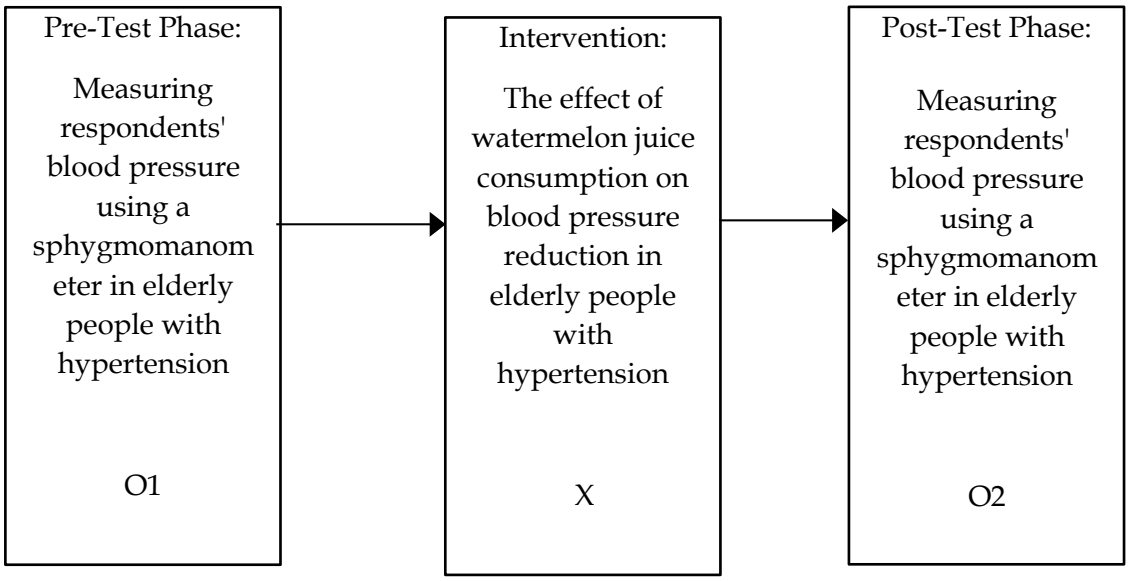
Objective

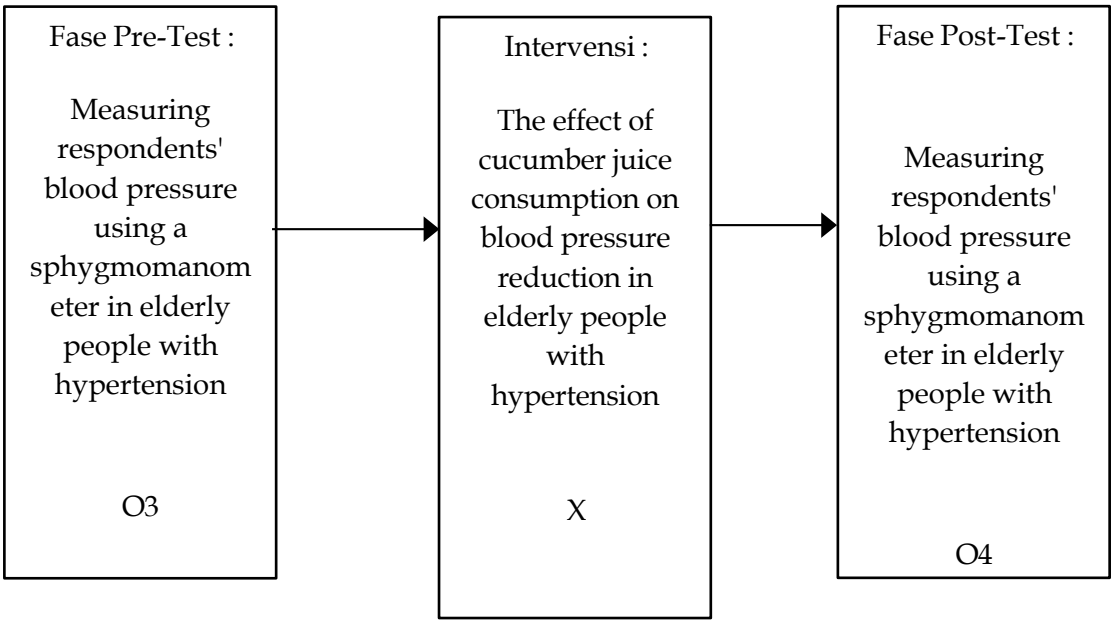
To determine the effect of watermelon juice and cucumber juice on blood pressure reduction in elderly people with hypertension at the Bina Sejahtera Elderly Health Post in the Bukit Sangkal Community Health Center working area in Palembang in 2024.

Method

This research method uses a quantitative quasi-experimental design with a two-group pre-post test design. In this study, the sample was given a pretest (initial observation) before being given the intervention, after which the intervention was given, followed by a posttest (final observation).

The research design can be described as follows:





In the initial stage of this study, field observations were conducted at the Bina Sejahtera Palembang Elderly Health Center. Then, the sample was determined using the total sampling technique, and the selected respondents were first explained about the purpose and procedures of the study. In the second stage (pre-test), the respondents' blood pressure was measured using a sphygmomanometer in elderly people with hypertension, then an intervention was given in the form of watermelon juice and cucumber juice to reduce blood pressure in elderly people with hypertension. In the third stage (post-test), the respondents' blood pressure was measured again using a sphygmomanometer in elderly people with hypertension.

This study used a quasi-experimental quantitative design with a two-group pretest-posttest approach. The study population consisted of 57 elderly people with hypertension, all of whom were sampled using total sampling. The inclusion criteria included elderly people aged ≥60 years, able to communicate well, having blood pressure ≥140/90 mmHg, no allergies to watermelon and cucumber, and taking antihypertensive drugs. The exclusion criteria included elderly people who were unwilling to be respondents, were treated in isolation rooms, and suffered from stroke or kidney failure. The study was conducted at the Bina Sejahtera Elderly Health Center, Kalidoni District, Palembang City, on January 6, 2025.

The study began with obtaining permission, conducting a preliminary study, and obtaining informed consent. Respondents' blood pressure was measured using a sphygmomanometer before the intervention (pretest), then they were given an intervention in the form of watermelon juice and cucumber juice, and then re-measured (posttest). The data were recorded in an observation sheet and analyzed using SPSS. Univariate analysis was used to describe the distribution of blood pressure, while bivariate analysis began with the Shapiro–Wilk normality test. The paired t-test or Wilcoxon test was used to see the effect before and after the intervention, and the independent t-test or Mann–Whitney test was used to compare the results of the two groups with a significance level of $p < 0.05$.

Results

This study was conducted on January 6, 2025. There were 57 patients who participated in the study. The collected data was then processed and subjected to univariate and bivariate analysis. Prior to conducting the study, the researchers obtained permission from the Stikes Mitra Adiguna ethics committee with No. 159/EC/STIKES-MAG/I/2025. During the study, the researcher first conducted a perception alignment to ensure that the research objectives could be achieved.

A. Respondent Characteristics

1. Age

Table 1. Frequency Distribution Based on the Age of Respondents at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Age	Watermelon Juice Group		Cucumber Juice Group	
		Frequency	Percentage	Frequency	Percentage
1	Middle age	5	17,9	5	17,9
2	Elderly	13	46,4	10	35,7
3	Old	10	35,7	13	46,4
	Total	**28**	**100,0**	**28**	**100,0**

From Table 1 above, it can be seen that most of the respondents in the watermelon juice group were elderly, numbering 13 people (46.4%), while only 5 people (17.9%) were middle-aged. Furthermore, most of the respondents in the cucumber juice group were elderly, numbering 13 people (46.4%), while only 5 people (17.9%) were middle-aged.

B. Univariate Analysis

Table 2. Frequency Distribution Based on Respondents' Systolic Blood Pressure at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Systolic Blood Pressure	Watermelon Juice Group				Cucumber Juice Group			
		Before		After		Before		After	
		F	%	F	%	F	%	F	%
1	Normal	0	0	0	0	0	0	0	0
2	Pre hipertensi	0	0	17	60,7	0	0	17	60,7
3	Stadium I	8	28,6	11	39,3	6	21,4	11	39,3
4	Stadium II	20	71,4	0	0	22	78,6	0	0
	Total	**28**	**100,0**	**28**	**100,0**	**28**	**100,0**	**28**	**100,0**

From Table 2 above, it is known that most of the systolic blood pressure of the watermelon juice group before intervention in stage 2 category was 20 people (71.4%) and there was no normal systolic blood pressure and prehypertension. Then, most of the systolic blood pressure of the watermelon juice group after intervention in the prehypertension category was 17 people (60.7%) and there was no normal systolic blood pressure and stage 2. Furthermore, the majority of systolic blood pressure in the cucumber juice group before intervention in the stage 2 category was 22 people (78.6%), and

there were no normal systolic blood pressure or prehypertension cases. Then, most of the systolic blood pressure in the cucumber juice group after intervention in the prehypertension category was 17 people (60.7%), and there was no normal systolic blood pressure and stage 2.

Table 3. Frequency Distribution Based on Respondents' Diastolic Blood Pressure at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Diastolic Blood Pressure	Watermelon Juice Group				Cucumber Juice Group			
		Before		After		Before		After	
		F	%	F	%	F	%	F	%
1	Normal <80	3	10,7	2	7,1	3	10,7	0	0
2	Pre Hipertensi	12	42,9	26	92,9	23	82,1	28	100,0
3	Stadium 1	11	39,3	0	0	2	7,1	0	0
4	Stadium 2	2	7,1	0	0	0	0	0	0
	Total	**28**	**100,0**	**28**	**100,0**	**28**	**100,0**	**28**	**100,0**

From Table 3 above, it can be seen that most of the diastolic blood pressure readings in the watermelon juice group before intervention were in the prehypertension category, with 12 people (42.9%) and only 2 people (7.1%) in the stage 2 category. Then, most of the diastolic blood pressure in the watermelon juice group after intervention was in the prehypertension category, with 26 people (92.9%), and there were no diastolic blood pressures in stage 1 and stage 2. Furthermore, most of the diastolic blood pressure in the cucumber juice group before intervention in the prehypertension category was 23 people (82.1%) and there was no diastolic blood pressure in stage 2. Then, all diastolic blood pressure in the cucumber juice group after intervention in the prehypertension category was 28 people (100%).

C. Bivariate Analysis

Table 4. Shapiro-Wilk Normality Test of Respondents' Systolic Blood Pressure at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Systolic Blood Pressure VariableK Watermelon Juice	*Shapiro-Wilk*		
		Statistik	*p-value*	Status
1	Before	0,950	0,202	normal
2	After	0,814	0,000	Tidak normal

From Table 4 above, it can be seen that the Shapiro-Wilk test results show that the systolic blood pressure before watermelon juice administration is p-value 0.202 > 0.05, meaning that the data is normally distributed, and the systolic blood pressure after watermelon juice administration is p-value 0.000 < 0.05, meaning that the data is not normally distributed. Next, the effect of watermelon juice administration on systolic blood pressure in hypertensive patients was tested using the Wilcoxon test.

Table 5. Shapiro-Wilk Normality Test of Diastolic Blood Pressure of Respondents at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Diastolic Blood Pressure Variable K Watermelon Juice	*Shapiro-Wilk*		
		Statistics	*p-value*	Status
1	Before	0,947	0,169	normal
2	After	0,451	0,000	Abnormal

From Table 5 above, it can be seen that the Shapiro-Wilk test results show that the diastolic blood pressure before watermelon juice administration is p-value 0.169 > 0.05, meaning that the data is normally distributed, and the diastolic blood pressure after watermelon juice administration is p-value 0.000 < 0.05, meaning that the data is not normally distributed. Next, the effect of watermelon juice administration on diastolic blood pressure in hypertensive patients was tested using the Wilcoxon test.

Table 6. Shapiro-Wilk Normality Test of Respondents' Systolic Blood Pressure at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Systolic Blood Pressure Variable Cucumber Juice	*Shapiro-Wilk*		
		Statistics	*p-value*	Status
1	Before	0,958	0,308	normal
2	After	0,856	0,001	Abnormal

From Table 6 above, it can be seen that the Shapiro-Wilk test results show that systolic blood pressure before giving cucumber juice is p -value 0.308 > 0.05, meaning that the data is normally distributed, and the systolic blood pressure after administering cucumber juice is p-value 0.001 < 0.05, meaning that the data is not normally distributed. Next, the effect of administering cucumber juice on systolic blood pressure in hypertensive patients was tested using the Wilcoxon test.

Table 7. Shapiro-Wilk Normality Test of Diastolic Blood Pressure of Respondents at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Diastolic Blood Pressure Variable Cucumber Juice	*Shapiro-Wilk*		
		Statistics	*p-value*	Status
1	Before	0,898	0,010	Abnormal
2	After	0,509	0,000	Abnormal

From Table 7 above, it can be seen that the Shapiro-Wilk test results show that the systolic blood pressure before giving cucumber juice is p-value 0.010 < 0.05, meaning that the data is not normally distributed, and the systolic blood pressure after giving cucumber juice is p-value 0.000 < 0.05, meaning that the data is not normally distributed. Next, the effect of cucumber juice administration on

systolic blood pressure in hypertensive patients was tested using the Wilcoxon test.

Table 8. Wilcoxon Test of Respondents' Systolic Blood Pressure at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Watermelon Juice Systolic Blood Pressure	N	*Mean*	SD	*p-value*
1	Before	28	170,07	16,051	0,000
2	After	**28**	**135,54**	**5,935**	

From Table 8 above, it is known that the mean (average value) systolic blood pressure before watermelon juice administration was 170.07 mmHg, and the systolic blood pressure value after watermelon juice administration was 135.54, a decrease of 34.53 mmHg. Thus, it can be concluded that watermelon juice administration can lower systolic blood pressure in elderly hypertensive patients at the Bina Sejahtera Palembang 2025 elderly health center. The results of the Wilcoxon test showed a p-value of 0.000 < 0.05, so Ha was accepted and Ho was rejected, meaning that there was an effect of watermelon juice administration on the reduction of systolic blood pressure in hypertensive patients.

Table 9. Wilcoxon Test of Diastolic Blood Pressure in Respondents at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Diastolic Blood Pressure Watermelon Juice	N	*Mean*	SD	*p-value*
1	Before	28	88,43	7,042	0,000
2	After	**28**	**79,93**	**0,663**	

From Table 9 above, it can be seen that the mean (average value) of diastolic blood pressure before watermelon juice administration is 88.43 mmHg, and the diastolic blood pressure value after watermelon juice administration is 79.93, showing a decrease of 8.5 mmHg. Thus, it can be concluded that watermelon juice administration can lower diastolic blood pressure in elderly hypertensive patients at the Bina Sejahtera Palembang 2025 elderly health center.

The results of the Wilcoxon test showed a p-value of 0.000 < 0.05, so Ha was accepted and Ho was rejected, meaning that there was an effect of watermelon juice administration on the reduction of systolic blood pressure in hypertensive patients.

Table 10. Wilcoxon test for systolic blood pressure of respondents at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Systolic Blood Pressure Cucumber Juice	N	*Mean*	SD	*p-value*
1	Before	28	170,64	13,370	0,000
2	After	**28**	**136,04**	**5,426**	

From Table 10 above, it is known that the mean (average value) systolic blood pressure before being given cucumber juice is 170.64 mmHg and the systolic blood pressure value after being given cucumber juice is 136.04, a decrease of 34.6 mmHg. Thus, it can be concluded that giving cucumber juice can lower systolic blood pressure in elderly people with hypertension at the Bina Sejahtera Palembang 2025 elderly health center. The Wilcoxon test results yielded a p-value of 0.000 < 0.05, so Ha was accepted and Ho was rejected, meaning that there was an effect of cucumber juice administration on the reduction of systolic blood pressure in hypertensive patients.

Table 11. Wilcoxon Test of Diastolic Blood Pressure in Respondents at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Diastolic Blood Pressure Cucumber Juice	N	*Mean*	SD	*p-value*
1	Before	28	83,00	3,953	0,009
2	After	**28**	**80,61**	**1,343**	

From Table 11 above, it can be seen that the mean (average) of diastolic blood pressure before being given cucumber juice was 83.00 mmHg, and the diastolic blood pressure value after being given cucumber juice was 80.61, a decrease of 2.39 mmHg. Thus, it can be concluded that giving cucumber juice can lower diastolic blood pressure in elderly people with hypertension at the Bina Sejahtera Palembang 2025 elderly health center.

The Wilcoxon test results showed a p-value of 0.009 < 0.05, so Ha was accepted and Ho was rejected, meaning that there was an effect of cucumber juice administration on the reduction of systolic blood pressure in hypertensive patients.

Table 12. Mann-Whitney test of systolic blood pressure in respondents in the watermelon juice and cucumber juice groups at the Bina Sejahtera Palembang Elderly Health Center, 2025

No	Systolic Blood Pressure	N	*Mean*	SD	*p-value*
1	Watermelon	28	**135,54**	**5,935**	0,643
2	Cucumber	**28**	**136,04**	**5,426**	

From Table 12 above, it can be seen that the mean (average value) of systolic blood pressure in the watermelon juice group is 135.54 mmHg and the mean (average value) in the cucumber juice group is 136.04, with a difference of -0.5. Thus, it can be concluded that there is no difference in systolic blood pressure in elderly patients with hypertension who are given watermelon or cucumber juice. Furthermore, from the Mann-Whitney test, a p-value of 0.643 > 0.05 was obtained, meaning that there is no difference between the administration of watermelon juice and cucumber juice in reducing systolic blood pressure in hypertensive patients at the Bina Sejahtera Palembang 2025 elderly health center.

Table 13. Mann-Whitney Test of Diastolic Blood Pressure in Respondents in the Watermelon and Cucumber Juice Groups at the Bina Sejahtera Palembang Elderly Health Center 2025

No	Systolic Blood Pressure	N	*Mean*	SD	*p-value*
1	Watermelon	28	**79,93**	**0,663**	0,014
2	Cucumber	**28**	**80,61**	**1,343**	

From Table 13 above, it can be seen that the mean (average value) of diastolic blood pressure in the watermelon juice group is 79.93 mmHg and the mean (average value) in the cucumber juice group is 80.61, with a difference of -0.68. Thus, it can be concluded that there is a difference in diastolic blood pressure in elderly people with hypertension who are given watermelon or cucumber juice. Furthermore, from the Mann-Whitney test, a p-value of 0.014 < 0.05 was obtained, meaning that there is a difference between the administration of watermelon juice and cucumber juice in lowering diastolic blood pressure in hypertensive patients at the Bina Sejahtera Palembang 2025 elderly health center.

Discussion

The univariate analysis results show that in the watermelon juice group, most systolic blood pressure readings before the intervention were in stage 2 hypertension (71.4%), and after the intervention shifted to prehypertension (60.7%). A similar pattern was seen in the cucumber juice group, where before the intervention the majority were in stage 2 (78.6%), and after the intervention they became prehypertensive (60.7%). For diastolic blood pressure, the majority of the watermelon juice group was in the prehypertension category (42.9%) before the intervention, but after the intervention, this increased to 92.9% in the same category. Meanwhile, in the cucumber juice group, all respondents (100%) were in the pre-hypertension category after the intervention. This classification is in line with JNC standards and the definition of hypertension as blood pressure ≥140/90 mmHg (Rohmaniah et al., 2023; Hastuti, 2019).

The average systolic blood pressure decreased from 170.07 mmHg to 135.54 mmHg (a decrease of 34.53 mmHg), and the Wilcoxon test results showed p = 0.000, which means that watermelon juice has a significant effect on lowering blood pressure. The average diastolic blood pressure decreased from 88.43 mmHg to 79.93 mmHg (a decrease of 8.5 mmHg), which was also significant (p = 0.000).

This effectiveness is supported by watermelon's potassium, citrulline, and arginine content, which function as natural diuretics and vasodilators (Sodikin & Fauzi, 2023; Agustin et al., 2022). The findings of this study are consistent with the results of studies by Adibah (2021), Yulviana (2022), and Syahrial et al. (2025), which all showed a significant decrease in blood pressure after consuming watermelon juice.

The average systolic blood pressure decreased from 170.64 mmHg to 136.04 mmHg (a decrease of 34.6 mmHg), with a Wilcoxon test result of p = 0.000, indicating

a significant effect. For diastolic pressure, there was a decrease from 83.00 mmHg to 80.61 mmHg (a decrease of 2.39 mmHg), which was significant with p = 0.009. Cucumbers contain magnesium, potassium, and up to 90% water, which acts as a diuretic and helps dilate blood vessels (vasodilation), thereby lowering blood pressure (Masturi et al., 2021; Panuwun, 2023). The results of this study are in line with those of Ivana et al. (2021), Putri et al. (2023), and Oktaviani & Dewi (2024), which show the effectiveness of cucumber juice in lowering blood pressure.

Mann-Whitney analysis showed no significant difference between the reduction in systolic blood pressure in the watermelon juice and cucumber juice groups (p = 0.643), indicating that both are equally effective in lowering systolic blood pressure. However, there was a significant difference in diastolic blood pressure (p = 0.014), with watermelon juice showing a slightly greater reduction than cucumber juice. Theoretically, both fruits have the same mechanism of action in lowering blood pressure through their potassium and water content and vasodilatory effects (Putri et al., 2023; Yulviana et al., 2022). Field observations showed that both groups of respondents were very cooperative and experienced a consistent decrease in blood pressure during the seven-day intervention.

Both watermelon juice and cucumber juice were proven effective in lowering blood pressure in elderly individuals with hypertension. Both work through diuretic, vasodilatory, and sodium-binding mechanisms. There was no difference in effectiveness on systolic blood pressure, but there was a difference in diastolic blood pressure, with a better reduction in the watermelon group.

Conclusion

This study demonstrates that both watermelon juice and cucumber juice have significant effects on reducing blood pressure in elderly patients with hypertension. Watermelon juice administration resulted in a significant reduction in systolic blood pressure and an improvement in diastolic blood pressure classification. Similarly, cucumber juice showed significant effectiveness in lowering both systolic and diastolic blood pressure. Statistical analysis confirmed that both interventions significantly reduced systolic blood pressure ($p < 0.05$). Furthermore, there was a significant difference between watermelon juice and cucumber juice in reducing diastolic blood pressure ($p < 0.05$), indicating that both juices have potential as complementary non-pharmacological therapies in hypertension management among the elderly.

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