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THE EFFECT OF CUCUMBER JUICE THERAPY ON BLOOD PRESSURE REDUCTION IN PATIENTS IN INTERNAL DISEASE POLICY

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ABSTRACT

Hypertension is a health problem in all parts of the world and is one of the main risk factors for cardiovascular disease. The factors that influence hypertension are genetics, age, gender, ethnicity, obesity, lifestyle, and food intake. The therapy that is often used by the community is cucumber which is very good for consumption for people with hypertension. The purpose of this study was to identify the effect of cucumber juice therapy on reducing blood pressure in patients at the Internal Medicine Polyclinic of the Meranti Islands District Hospital. This research was conducted at the Internal Medicine Poly Hospital of Meranti Islands Regency, the sampling technique using accidental sampling technique, with the number of respondents 30 people. The research design used is a quasi-experimental design (one group pretest-posttest). Data collection tools are GEA brand sphygmomanometer, stethoscope, observation sheet and SOP on how to make cucumber juice which were analyzed by univariate and bivariate dependent t-test (paired t test). The results of this study found that there was an effect of cucumber juice therapy on reducing blood pressure in patients at the Internal Medicine Clinic at the Meranti Islands District Hospital both systole and diastole (p=0.000). It is hoped that this will become the basis for the Meranti Islands District Hospital to be a reference so that cucumber juice therapy can be a complementary intervention and a room SOP is made for this intervention.

Keywords : Cucumber juice, Decrease, Blood pressure

INTRODUCTION

Hypertension is a condition in which a person's blood pressure exceeds normal levels. Normal blood pressure is defined as a systolic pressure of 120 mmHg and a diastolic pressure of 80 mmHg (WHO, 2013). Hypertension has become a global health issue and is one of the primary risk factors for cardiovascular diseases (Riskesdas, 2018). It is often referred to as the *Silent Killer* because it can quietly lead to sudden death in its sufferers. Deaths occur as a result of hypertension itself or other diseases triggered by hypertension (Septianingsih, 2018).

Factors influencing hypertension include genetics, age, gender, ethnicity, obesity, lifestyle, and dietary intake. Urban populations tend to have a higher prevalence of hypertension compared to rural populations due to urban lifestyles, which often include the consumption of high-fat foods and alcohol (Putri & Apoina, 2014).

Synthetic medications can effectively control blood pressure. However, long-term pharmacological treatments are typically expensive and can have side effects (Jain, 2011). Common side effects include increased blood sugar and cholesterol levels, fatigue, and energy loss. Many patients are required to take additional medications to address these side effects (Kharisna, 2012).

This situation creates problems from both health and financial perspectives, leading many individuals to turn to alternative or non-pharmacological treatments (Jain, 2011). The only way to avoid such side effects is by reducing dependence on pharmacological therapies (Kharisna, 2012).

According to the World Health Organization (WHO) in 2019, there were an estimated 1.13 billion people with hypertension worldwide, with two-thirds of the cases occurring in low- and middle-income countries. This figure is expected to rise annually, reaching 1.5 billion cases by 2025. The annual death toll from hypertension and its complications is projected to reach 9.4 million people.

In Indonesia, based on Riskesdas (2018), the prevalence of hypertension among individuals aged >18 years diagnosed by healthcare professionals was 9.4%, while 9.5% of the population consumed hypertension medications. This indicates that 0.1% of the population took hypertension medications without ever being diagnosed by a healthcare professional. The prevalence of hypertension measured among individuals aged >18 years was 34.11%. The highest prevalence rates were recorded in South Kalimantan (44.13%), West Java (39.60%), East Kalimantan (39.30%), and West Kalimantan (29.4%). In Bali, the measured prevalence of hypertension was 29.97%.

METHODS

Design used in this study is a quasi-experimental design (one group pretest– posttest), which is a design derived from a combination of semi-experimental designs. This study employs a cross-sectional approach. The research location will be the Internal Medicine Clinic of Meuraxa Hospital, Kepulauan Meranti. The population of this study includes all patients with hypertension at the Internal Medicine Clinic of the Regional General Hospital (RSUD) of Kepulauan Meranti, with an average of 30 patients per month from January to April 2022. The sample size used in this study is 30 individuals.

The sampling technique used in this research is non-probability sampling. The research instruments include a GEA brand sphygmomanometer, a stethoscope for measuring blood pressure, observation sheets, and a Standard Operating Procedure (SOP) for preparing cucumber juice. The analysis applied in this study is statistical t-test (paired t-test).

RESULTS AND DISCUSSION

Result of the research

This study was conducted starting in June 2024. Primary data collection at the research location was carried out using a GEA brand sphygmomanometer, a stethoscope for measuring blood pressure, observation sheets, and a Standard Operating Procedure (SOP) for preparing cucumber juice. The sample consisted of 30 patients from the Internal Medicine Clinic of Meuraxa Hospital.

A. Univariate Analysis

1. Characteristics of Respondents

The frequency distribution and percentage based on respondent characteristics at Meuraxa Hospital

No	Respondent Characteristics	f	%
1	Age		
	Early Adulthood	6	20
	Late Adulthood	6	20
	Early Elderly	9	30
	Late Elderly	7	23,2
	Very Elderly	2	6,7
2	Gender		
	Male	11	36,7
	Famale	19	63,3
3	Education		
	Low	4	13,3
	Medium	15	50
	High	11	36,7
4	Occupation		
	Civil Servant	5	16,7
	Entrepreneur	6	20

Title of Paper (Name Author One and Name Author Two)

Fisherman	3	10
Trader	6	20
Housewife	10	33,3

Based on Table 1 above, it can be seen that 9 respondents (30%) are in the early elderly age group, 19 respondents (63.3%) are female, 15 respondents (50%) have a medium level of education, and 10 respondents (33.3%) work as housewives.

2. Blood Pressure Before and After the Administration of Cucumber Juice to Patients

Frequency Distribution and Percentage Based on Blood Pressure Before and After Administration of Cucumber Juice

No	Blood Pressure	Before		After	
		f	%	f	%
1	Normal	2	6,6	8	26,7
2	Pre Hipertensi	6	20	9	30
3	Hipertensi I	11	36,7	5	16,7
4	Hipertensi II	11	36,7	8	26,7
	Total	30	100	30	100

From Table 2 above, it can be seen that before the administration of cucumber juice to patients in the Internal Medicine Clinic, 11 respondents (36.7%) experienced Stage I and II hypertension. After the administration of cucumber juice, 9 respondents (30%) experienced prehypertension.

3. Average blood pressure

Average Blood Pressure Before and After Giving Cucumber Juice to Patients

Intervensi	Mean	SD
Systole Before Giving Cucumber Juice	136,8	13,026
Systole After Cucumber Juice Administration	130,07	11,246

Diastole Administr	Before ration	Cucumber	Juice	84,83	5,038
Diastole Administ	After ration	Cucumber	Juice	81,6	3,944

Table 3 above shows the average systolic blood pressure before giving cucumber juice, which is 136.8 mmHg (SD = 13.026) and after giving cucumber juice, which is 130.07 mmHg (SD = 11.246). Meanwhile, the average diastolic blood pressure before giving cucumber juice is 84.83 mmHg (SD = 5.038) and after giving cucumber juice is 81.6 mmHg (SD = 3.944).

B. Bivariate Analysis

The Effect of Cucumber Juice Therapy on Lowering Blood Pressure in Patients

	Average Value Difference	SD	t	р
Systolic Blood Pressure Before-After Cucumber Juice Administration	6,733	4,638	7,951	0,000
Diastolic Blood Pressure Before-After Giving Cucumber Juice	3,233	2,555	6,930	0,000

Based on table 4 shows the results of the paired t-test statistical test shows that the effect of cucumber juice therapy on reducing blood pressure in patients at the Internal Medicine Polyclinic of the Meranti Islands Regency Hospital, both systolic and diastolic with a p value = 0.000 < 0.05. Based on the t value, where the t table value with a df value = 29 is 2.04523 ($\alpha = 0.05$) and the systolic t count value is 7.951 and diastolic 6.930, which means that the t count value> t table can be interpreted that there is an effect of cucumber juice therapy on reducing blood pressure in patients at the Internal Medicine Polyclinic of Meuraxa Hospital.

Discussion

A. The Effect of Cucumber Juice Therapy on Reducing Blood

Pressure in Patients at the Internal Medicine Polyclinic of the Meranti Islands District Hospital

Based on the results of the study, it was found that cucumber juice therapy had a significant effect on reducing blood pressure in patients at the Internal Medicine Clinic of RSUD Kepulauan Meranti, both systolic and diastolic, with values of (p = 0.000 < 0.05; t-value systolic = 7.951 and diastolic = 6.930 > t-table = 2.04523).

This finding aligns with the study conducted by Turnip (2018), which showed a significant difference in the average blood pressure before and after the administration of cucumber juice (p = 0.001). Similarly, the research by Setiawan and Sunarno (2020) demonstrated that cucumber juice has an effect on reducing blood pressure in hypertensive patients, with a p-value of 0.000.

Cucumber is effective in lowering blood pressure due to its content, which includes potassium, magnesium, and phosphorus. These components are effective in treating hypertension. Potassium, as the main intracellular electrolyte (98% of the body's potassium is inside cells, while 2% is extracellular), is crucial for neuromuscular function and influences the activity of skeletal and cardiac muscles (Smeltzer & Bare, 2013). Additionally, cucumber has diuretic properties, being composed of 90% water, which helps expel excess salt from the body. The minerals in cucumber bind to salt and facilitate its removal through urine (Kholish, 2001 in Wicaksana, 2019).

Empirically, there is a significant effect of cucumber juice on blood pressure reduction. This is due to the potassium, magnesium, and phosphorus content in cucumber, which effectively treat hypertension. Potassium reduces blood pressure through vasodilation, decreasing total peripheral resistance and increasing cardiac output. Since cucumber is approximately 95% water, it also acts as a diuretic, supporting kidney health and modulating the renin-angiotensin system. Potassium helps regulate peripheral and central nerves that influence blood pressure, functioning inversely to sodium. High potassium intake increases its intracellular concentration, drawing fluid from the extracellular space and reducing blood pressure (Etri, 2017).

Kusnul (2014) stated that potassium reduces blood pressure through vasodilation, which decreases total peripheral resistance and increases cardiac output. Potassium consumption increases its intracellular concentration, which draws fluid from the extracellular space and lowers blood pressure (Kusnul, 2012). Clinical studies show that potassium supplementation can reduce blood pressure, with dietary supplementation of 60–120 mmol/day lowering systolic and diastolic blood pressure by 4.4 mmHg and 2.5 mmHg in hypertensive patients, and by 1.8 mmHg and 1.0 mmHg in normotensive individuals (Kusnul, 2014).

CONCLUSION

The results of the study conducted at RSUD Kepulauan Meranti with 30 respondents titled "The Effect of Cucumber Juice Therapy on Blood Pressure Reduction in Patients at the Internal Medicine Clinic of Meuraxa Hospital" lead to the following conclusions:

- 1. The average systolic blood pressure before the administration of cucumber juice was 136.8 mmHg (SD = 13.026), and after the administration of cucumber juice, it was 130.07 mmHg (SD = 11.246).
- 2. The average diastolic blood pressure before the administration of cucumber juice was 84.83 mmHg (SD = 5.038), and after the administration of cucumber juice, it was 81.6 mmHg (SD = 3.944).
- 3. There is an effect of cucumber juice therapy on blood pressure reduction in patients at the Internal Medicine Clinic of RSUD Kepulauan Meranti, both systolic and diastolic, with a value of (p = 0.000 < 0.05; t-value systolic = 7.951 and diastolic = 6.930 > t-table = 2.04523).

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