

GREEN GRASS JELLY AS ADJUNCT THERAPY ON PRE ELDERLY WOMAN WITH HIPERTENSION: QUASI EXPERIMENTAL STUDY

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ABSTRACTS

Introduction. Women aged 45 years and over have a higher risk of developing hypertension. One of adjunct therapiy that can be used to lower blood pressure is green grass jelly. Objective: the purpose of this study was to determine the effect of green grass jelly on blood pressure in pre elderly women with hypertension.

Methodology. The method used was quasi experimental with a non equivalent control group design. The total of sample in this study were 30 samples obtained by purposive sampling technique.

The result finding. The results showed the t-dependent test results obtained ρ systolic and diastolic values in both groups of ρ value 0,001 and ρ value 0,004 ($\alpha \le 0,05$), and the t-independent test results obtained ρ after systolic and diastolic values in both groups of 0,001 and ρ value 0,005 ($\alpha \le 0.05$). There showed the differences in systolic and diastolic blood pressure in the intervention group and the control group.

Conclusion. green grass jelly has been shown to reduce average blood pressure both systolic and diastolic for pre elderly people with hypertension.

Keywords: green grass jelly, pre elderly women, hypertension

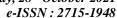
1. Introduction

World Health Organization (WHO) estimates that in 2025 approximately 1.15 billion or 29% total population in the world will be affected by hypertension and the largest sufferers of this disease are the elderly and about 80% of the increase in cases occurs in developing countries including Indonesia. (Triyanto, 2014). West Java is in fourth position in Indonesia with

the number of hypertension was around 13.612.359 people. [31].

According to Ministry of Health (2013) that pre-elderly is someone aged between 45 and 59 years. Meanwhile, the aging process is a process that occurs naturally causing changes in the structure and physiology of the body system, especially cardiovascular. It is thought to be a trigger for hypertension. Handling hypertension in pre elderly is very important to avoid serious complications







such as stroke, heart failure and kidney failure. [13]

Hypertension can also be caused by a person's poor lifestyle. The lifestyle that must be improved is to lose weight, exercise, reduce sodium consumption, and also carry out complementary Biological Base Therapies (BTT) therapies. BBT is a complementary therapy that uses natural ingredients, and is included in the BBT, namely herbs [16]. One of the herbal plants that can be consumed to bring down blood pressure is green grass jelly (Premna oblongifiola Merr.).

Mutmainah (2016) explained, green grass jelly leaves contain alkaloid and phenol. Phenolic compounds can lower blood pressure by improving endothelial function of blood vessels through regulation of endothelial expression Nitric Oxide Synthase (eNOS) and improve production Nitric Oxide (NO) which acts as vasodilator that make blood vessels dilatation and decrease blood pressure. Thus, green grass jelly which is a traditional drink can be used as a adjunct therapy for people with hypertension. [31]

Based on data from the Cimahi health office (2018), patients who get treatment to the Community Health Centre in Cimahi City were 9,955 people in total, consisting of 2,927 men (29.4%) and 7,028 women (70.6%). Meanwhile, the number of preelderly (aged 45-59 years) with hypertension was 981 people. [11]

This research was conducted in Cimahi because the area has a multi-ethnic and cultural community, not only Sundanese but many immigrant tribes such as from Java, Sumatra and Eastern Indonesia as well, so that the benefits will be wider.

2. Methods

Blood pressure measurement is done by sitting on the left arm which is placed on a table parallel to the heart using the OMRON digital sphygmomanometer. Measurements were carried out before and after 14 days of green grass jelly giving both the intervention and control groups.

Green grass jelly was given as much as 240 ml to each respondent, consumed once a day before eating regularly for 14 days. The packaging is closed tightly so that the quality of the green grass jelly drink is maintained.

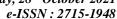
This type of research design is Quasi experimental with Non-equivalent Control group Design. In this design, pre-test and post-test were carried out in both groups.

The population in this study were 338 pre-elderly people with hypertension in Community Health Centre in the Central Cigugur area. Sampling in this study using purposive sampling method. The sample size in the study obtained 30 respondents who were divided into control intervention groups. In the intervention respondents group the took antihypertensive drugs and were given green grass jelly, while the control group took antihypertensive drugs only.

The criteria for sampling, namely: Inclusion Criteria

- a. Respondents with primary hypertension
- b. Respondents with grade 1 hypertension
- c. Respondents who consume hypertension drugs







d. Respondents who do not take oral contraceptives

Exclusion criteria

- a. Respondents who have a history of diabetes mellitus, stroke, gastritis and kidney failure
- Respondents who are undergoing other complementary therapies such as garlic, star fruit, papaya, celery leaves, cucumber.

Data Analysis

Researchers conducted a data normality test on the provision of green grass jelly by calculating the results for skewness with a standar d error.

After that, the homogeneity test was carried out using Levene's test and got a sig value> 0.05, It showedd that the data obtained in this study are homogeneous

Data collection was carried out from June1 to July 31 2019 in the work area of the Community Health Centre Cigugur, Cimahi City, West Java.

Ethical Approval

We were not force anyone to follow the study and also make sure that all the personal information of the respondents were be confidential. This research found the ethical approval from STIKEs Jenderal Achmad Yani No: 06/KEPR/VIII/2019

3. Results

Univariate Analysis

Mean blood pressure in pre-elderly women with hypertension in the intervention group.

Table 1 Distribution of mean blood pressure in pre-elderly women with hypertension in the intervention group

| Measurement | Variabel | N | Mean | SD | 95% CI |
|--------------|-----------|----|--------|------|-----------------|
| Prior to | Systolic | 15 | 154.53 | 3,92 | 152,36 - 156,71 |
| intervention | Diastolic | | 94,13 | 4,38 | 91,70 - 96,56 |
| After the | Systolic | 15 | 132,00 | 6,24 | 128,54 -135,46 |
| intervention | Diastolic | | 85,53 | 2,64 | 84,07- 87,00 |

The table show the mean systolic blood pressure before intervention was 154.53±3.92 diastolic mmHg and 94.13±4.38 mmHg, meanwhile after treatment the mean systolic pressure 132±6.24 mmHg and diastolic 85.53±2.64 mmHg with a trust level 95%.

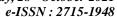
Mean blood pressure in pre-elderly women with hypertension in the control group.

Table 2 Distribution of mean blood pressure in pre-elderly women with hypertension in the

| control group | | | | | | |
|---------------|-----------|----|--------|------|---------|--|
| Measurement | Variabel | N | Mean | SD | 95% CI | |
| Prior to | Systolic | 15 | 150.87 | 6.84 | 147,08- | |
| intervention | Diastolic | // | 92,87 | 4,92 | 154,66 | |
| After the | Systolic | 15 | 142.07 | 6,12 | 90,14- | |
| intervention | Diastolic | 13 | 89,07 | 3,53 | 95,59 | |

Based on the table, the control group before intervention showed the mean systolic blood pressure 150.87±6.844 mmHg and diastolic 92.87±4.926 mmHg, while after intervention the value of systolic pressure 142.07±6.123 mmHg and diastolic 89.07±3.535 with a trust level 95%.







Bivariate Analysis

Difference in mean blood pressure the intervention group

Table 3 Distribution of difference in mean blood pressure in the intervention group.

| pressure in the intervention group. | | | | | |
|-------------------------------------|----|--------|---------|--|--|
| Variabel | N | Mean | P Value | | |
| Pre Systolic | 15 | 22,533 | 0,001 | | |
| Post Systolic | 15 | | | | |
| Pre Diastolic | 15 | 8,600 | 0,001 | | |
| Post Diastolic | 15 | | | | |

The table above show that the results of the statistical test pointed the systolic p value 0,001, p ($\alpha \le 0,05$) and Diastolic ρ value 0,001, ρ ($\alpha \le 0,05$).

Differences in mean blood pressure in the control group

Table 4 Distribution of differences in mean blood

| pressure in the control group | | | | |
|-------------------------------|----|----------|---------|--|
| Variabel | N | Mean | P Value | |
| Pre Systolic | 15 | 8.8 | 0,001 | |
| Post Systolic | 15 | 5 W/, | V117 | |
| Pre Diastolic | 15 | 3.8 | 0,004 | |
| Post Diastolic | 15 | E Chical | VIII. | |

The table showed that the value of the statistical test results obtained was systolic pressure p value 0,001, p ($\alpha \le 0,05$) and diastolic pressure ρ value 0,004, ρ ($\alpha \le 0,05$).

Analyze differences in blood pressure in the intervention and the control groups

Table 5 Distribution of analyzing the Difference in Systolic and Diastolic Pressure in the Intervention and the Control Groups

| Treatment group | Variabel | N | Mean | P Value |
|-----------------|-----------|----|---------|---------|
| Intervensi | Systolic | 15 | -10,067 | 0,001 |
| Control | Systolic | 15 | | |
| Intervensi | Diastolic | 15 | -3,533 | 0,005 |
| Control | Diastolic | 15 | | |

The table explain the results of the analysis of systolic and diastolic pressures in the intervention and control groups. The systolic variable pointed the p value of 0.001 and the diastolic ρ value of 0.005 with ρ ($\alpha \le 0.05$).

4. Discussion

Based on the results of this study, the blood pressure of respondent in the intervention group decreased systolic by a difference of 22.53 mmHg and diastolic by about 8.6 mmHg. This decrease was seen based on statistical values not based on clinical values. if seen based on clinical values, the decrease in respondent's blood pressure has reached pre hypertension but has not reached the normal limit. Green grass jelly is a traditional food ingredient that has long been known to the public and is used as a fresh drink. Green grass jelly contains alkaloid and flavonoid compounds. The highest chlorophyll levels are found in green grass jelly leaves, where the active role of green grass jelly chlorophyll can improve blood vessels and reduce blood cholesterol levels. Decreasing cholesterol in the blood prevents atherosclerosis, SO that the elasticity of blood vessels is maintained and blood pressure remains stable Flavonoid compounds are also able to increase urination and release electrolytes through the glomerular filtration rate (GFR) in Bowman's capsule.

In the pre-test and post-test control groups, systolic decreased by 8.8 mmHg and diastolic 3.8 mmHg. In this group, respondents only consumed amlodipine.





This drug can lower blood pressure by blocking calcium from entering the smooth muscle cells in the walls of the heart blood vessels. Amlodipine is a calcium ion influx inhibitor (slow channel blocker or calcium ion antagonist) and inhibits the transmembrane influx of calcium ions into the heart and vascular smooth muscle. The antihypertensive mechanism of action of amlodipine is based on its direct relaxing effect on the smooth vascular muscles. The antihypertensive mechanism of action of amlodipine is based on its direct relaxing effect on the smooth vascular muscles. With the inhibition of calcium entering, the walls of blood vessels will become more elastic and can increase blood flow to the heart. The decrease in blood pressure in this group indicates that blood pressure is still in the range of pre hypertension grade 1.

There was a decrease in systolic and diastolic blood pressure in the intervention. From the analysis, it was found that the mean difference between systolic and diastolic blood pressure in the intervention group before and after giving green grass jelly was 22.53 mmHg and 8.6 mmHg. The results of statistical tests in this group obtained p value 0.001, p ($\alpha \le 0.05$) In the control group there was also a decrease in systolic and diastolic blood pressure before and after taking the drug amlodipine for 14 days, namely 8.8 mmHg 3.8 mmHg. The results of statistical tests showed p value 0.004, p ($\alpha \le 0.05$) The results of the analysis in the table of the intervention group and the control group found that the results of the pre-test and posttest of the intervention group were included in the pre hypertension category, while the results of the pre-test and post-test of the

control group were still in the grade 1 hypertension category. This indicates that the provision of grass jelly as a complementary therapy can help lower blood pressure if taken regularly.

The results of statistical tests showed that the p value of systolic and diastolic blood pressure was ρ value of systolic 0.001 and ρ value of diastolic 0.005, ρ ($\alpha \leq$ 0.05This proves that Ho is rejected, thus it can be concluded that there are differences in systolic and diastolic blood pressure between the intervention and control groups. The results of research conducted by Sundari (2014) on 25 respondents with hypertension show that the blood pressure before consuming green grass jelly with an average systolic blood pressure of 172 mmHg and diastolic 94 mmHg [36]. However, after consuming green grass jelly, the mean systolic blood pressure was 148.8 mmHg and diastolic 79 mmHg.

Another study conducted by Zulfa (2016) on 12 respondents who suffered from hypertension in **Trihario** Sleman Yogyakarta, obtained blood pressure before consuming green grass jelly with an average systolic blood pressure of 154.58 mmHg and diastolic 94.17 mmHg, but after consuming green grass jelly. Mean systolic blood pressure was 132.50 mmHg and diastolic 81.67 mmHg [26]. From these studies it has been proven that green grass jelly therapy can be used as a traditional drink functions as a adjunct therapy in reducing blood pressure in pre-elderly women with hypertension which also.

The novelty in this study is the respondents consist of pre-elderly women aged between 45 - 59 years. At this age there



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are physiological changes in all body systems including the cardiovascular system that can trigger hypertension. In addition, there are more women with hypertension than men. Based on data from the Cimahi City Health Office (2018), there were 9,955 patients consisting of 2,927 men (29.4%) and 7,028 women (70.6%).

5. Conclusions

Hypertension management for elderly people need to be implemented with the aim improving the quality of life so they can live healthy, active productive. and Complementary therapy, namely herbs, can be used as a adjunct therapy for hypertension in addition to routine medicines that are taken daily. In green grass jelly, there are alkaloid and flavonoid compounds which are abundant in the chlorophyll of green grass jelly leaves, where the role of the active substance in chlorophyll can improve blood vessels and reduce blood cholesterol levels.

This study has proven that green grass jelly taken regularly for two consecutive weeks can reduce the blood pressure of pre elderly women who have hypertension.

The results of this study can be implemented by community nurses in order to improve the healthy lifestyle of the elderly by using green grass jelly as one of the fresh and healthy traditional drinks. For future study, the researchers can develop the results of this study as a basis for conducting a wider scope of research or this green grass jelly can be carried out in people with different diseases.

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