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

Musri[1], Suharjiman[2], Oop Ropei[3], Anjaswati Suparno Putri[4],
[1]Nursing Science Study Program, Jenderal Achmad Yani Cimahi University
[2]Nursing Profession Study Program, Jenderal Achmad Yani Cimahi University
[3]Nursing Diploma Study Program, Jenderal Achmad Yani Cimahi University
Corresponding Author: Musri.
Email: musrikamdah@gmail.com

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 (α ≤ 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 (α≤ 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 pre-elderly (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 and intervention groups. In the intervention group the respondents took anti-hypertensive 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
b. 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 intervention	Systolic Diastolic	15	154.53 94,13	3,92 4,38	152,36 - 156,71 91,70 - 96,56
After the intervention	Systolic Diastolic	15	132,00 85,53	6,24 2,64	128,54 -135,46 84,07- 87,00

The table show the mean systolic blood pressure before intervention was 154.53±3.92 mmHg and diastolic 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 intervention	Systolic Diastolic	15	150.87 92,87	6.84 4,92	147,08- 154,66
After the intervention	Systolic Diastolic	15	142,07 89,07	6,12 3,53	90,14- 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.

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 ($\alpha \leq 0,05$) and Diastolic ρ value 0,001, ρ ($\alpha \leq 0,05$).

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		
Pre Diastolic	15	3.8	0,004
Post Diastolic	15		

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

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 ($\alpha \leq 0.05$).

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 [32]. 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 ($\alpha \leq 0.05$) 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 ($\alpha \leq 0.05$) 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 post-test 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 ρ 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 Triharjo 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

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 and productive. 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.

Reference

[1] Aspiani, R. Y. (2014). Buku Ajar Asuhan Keperawatan Klien Gangguan Kardiovaskular Aplikasi NIC & NOC. Jakarta: EGC..

[2] Atmawati, T. S. (2014). Keragaman Cincau Hijau Rambat (Cyclea barbata) Berdasarkan karakter Morfologi di Kabupaten Porworejo (Vol. 2(2)). EL-VIVO.

[3] Azizah, L. M. (2011). Keperawatan Lanjut Usia. Yogyakarta: Graha Ilmu.

[4] Bell K, T. J. (2015). Hypertension : The Silent Killer : Updated JNC-8 Guideline Recommendations. Alabama: Alabama Pharmacy Association.

[5] Bendra, A. (2012). Uji Aktivitas Anti Oksidan Ekstrak Daun (Premna oblongata Miq.) dengan Metode DPPH dan Identifikasi Golongan Senyawa Kimia dari Praksi Teraktif, Skripsi. Depok: University Indonesia.

[6] Brunner & Suddarth. (2013). Keperawatan Medikal-Bedah Edisi 12. Jakarta: EGC.

[7] Chalid, S. (2003). Pengaruh ekstrak daun cincau hijau (Cyclea barbatai Miers) dan Premna oblongifolia Miers terhadap aktivitas enzim antioksidan. Program Pasca Sarjana, Institut Pertanian Bogor.

[8] Dahlan, M. S. (2013). Besar Sampel dan Cara Pengambilan Sampel dalam Penelitian Kedokteran dan Kesehatan . Jakarta: Salemba Medika.

[9] Dharma, K. K. (2011). Metodologi Penelitian Keperawatan. Jakarta : Trans Info Media.

[10] Depkes, R. (2013). Riset Kesehatan Dasar. Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementrian Kesehatan RI.

[11] Dinkes. (2014). Profil Kesehatan Provinsi Jawa Barat. Retrieved Januari 11, 2019, from Kementrian Kesehatan: http://www.depkes.go.id/resources/download/profil/PROFIL_KES_PROVINSI_2014/12_Jabar_2014.

[12] Djam'an. (2008). Pengaruh Air Perasan Daun Cyclea Barbata Miers (Cincau Hijau) Terhadap Konsentrasi HCl Lambung dan Gambaran Hispatologik Lambung Tikus Galur. Thesis. Universitas Diponegoro Semarang.

[13] Infodatin. (2016). Kementrian Kesehatan Republik Indonesia. Retrieved Januari 16, 2019, from Kategori data: http://www.depkes.go.id/folder/view/01/structure-publikasi-pusdatin-info-datin.

[14] Kemenkes. (2015). Situasi Lanjut Usia di Indonesia. Diambil kembali dari http://www.depkes.go.id/download.php?file=download/pusdatin/infodatin/infodatin%20lansia%202016.

[15] Maryam, S. (2012). Mengenal Usia Lanjut Perawatannya. Jakarta: Salemba Medika.

[16] Masriadi. (2016). Epidemologi Penyakit Tidak Menular . Jakarta: Trans Info Media.

[17] Muttaqin, A. (2012). Asuhan keperawatan klien dengan gangguan sistem kardiovaskular. Jakarta : Salemba Medika.

[18] Nooryana, S. (2015). Pengaruh Senam Bugar Lanjut Usia Terhadap Tekanan Darah Dan Kualitas Hidup Pada Lanjut Usia Hipertensi, Universitas Muhammadiah Surakarta,

[19] Notoatmodjo, S. (2018). Metodologi Penelitian Kesehatan. Jakarta: RINEKA CIPTA.

[20] Pitojo, S. (2008). Khasiat Cincau Perdu. Yogyakarta: Kanisius.

[21] Pitojo, S & Zumiati. (2005). CINCAU Cara Pembuatan dan Variasi Olahannya. Tangerang: PT Agromedia Pustaka

[22] Kemenkes, R. (2014). Profil Kesehatan Indonesia. Retrieved Januari 11, 2019, from Kementrian Kesehatan Republik Indonesia: http://www.depkes.go.id/download.php?file=download/pusdatin/infodatin/infodati n-hipertensi.

[23] Sugiyono. (2014). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: ALFABETA.

[24] Triyanto, E. (2014). Pelayanan Keperawatan bagi Penderita Hipertensi Secara Terpadu. Yogyakarta: Graha Ilmu.

[25] Untari, I. (2019). Buku Ajar Keperawatan Gerontik : Terapi Tertawa & Senam Cegah Pikun. Jakarta: EGC.

[26] Zulfa, S. Z. (2016). Pengaruh Pemberian Cincau Hijau Terhadap Tekanan Darah Menopause Pederita Hipertensi di Dusun Sleman 3 Triharjo Sleman Yogyakarta. Skripsi.

[27] Bobby A. S., W. (2014). Peranan Senyawa Bioaktif Cincau Terhadap Penurunan Tekanan Darah Tinggi. Jurnal Pangan dan Agroindustri, 2 (3). 198-202.

[28] Curtis PJ, P. J. (2013). Vascular function and atherosclerosis progression after 1 year of flavonoid

intake in statintreated postmenopausal women with type 2 diabetes. Am J Clin Nutr, 97:936-42.

[29] Indofarma. https://indofarma.id/amlodipine-besylate/. Retrieved January 20, 2019.

[30] Katrin, E. B. (2012). Aktivitas antioksidan ekstrak dan fraksi daun cincau hijau serta identifikasi golongan senyawa dari fraksi paling aktif. Jurnal Bahan Alam Indonesia, (8): 118-124.

[31] Mutmainah & Estiasih. (2016). Senyawa Bioaktif pada Umbi-umbian Lokal untuk Penurunan Tekanan Darah : Kajian Pustaka. Jurnal Pangan dan Agroindustri Vol 4 No 1, 377-382.

[32] Nurdin, K. C. (2009). Kandungan Klorofil Berbagai Jenis Daun Tanaman dan Cu-Turunan Klorofil Serta Karakeristik Fisiko-Kimianya. J Gizi Pangan, (1): 13-19.

[33] Nurdin, S. (2007). Evaluasi efek laksatif dan fermentabilitas komponen pembentuk gel daun cincau hijau (Premna oblongifolia Merr.). Jurnal Teknologi dan Industri Pangan, 18 (1): 10 – 16.

[34] Pramaswida, Mahastry Adhita, dan Ratih Pramuningtyas. (2010). Perbedaan Angka Kejadian Hipertensi antara Pria dan Wanita Penderita Diabetes Mellitus Berusia ≥ 45 Tahun. Biomedika, Vol. 2 No.2, Agustus 2010. Fakultas Kedoteran Universitas Muhammadiyah Surakarta

[35] Putra, Y. B., Yuli Isnaeni., Tiwi Sudyasih. (2017). Pengaruh Pemberian Cincau Hijau Terhadap Perubahan Tekanan Darah Penderita Hipertensi Usia 40-60 Tahun Di Dusun Depok Ambarketawang Gamping Sleman Yogyakarta. DSpace UNISA Yogjakarta. URI: http://digilib2.unisayogya.ac.id/xmlui/handle/123456789/1804 Date: 2017-07-15

[36] Sundari, F. L. (2014). Minuman cincau hijau (Premna oblongifolia Merr.) dapat menurunkan tekanan darah pada wanita dewasa penderita hipertensi ringan atau sedang. Jurnal Gizi dan Pangan, 9 (3), 203-210.

[37] Tantriyani, H. (2011). Pengaruh Pemberian Cincau Terhadap Tekanan Darah pada Lanjut Usia yang Menderita Hipertensi Di Posyandu Lansia Desa Trimulyo Jetis Bantul. STIKES 'Aisyiyah Yogyakarta