p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

Original Article

The Difference of Celery Leaves And Bay Leaves Water to Decrease Blood Pressure among Pre-Elderly With Primary Hypertension in Public Health Center Cigugur Tengah

Budiman[1*] | Tifany Desty Erisandi[2]

[1,2]Program Studi Kesehatan Masyarakat (S-1)
Universitas Jenderal Achmad Yani
Jl. Terusan Jend. Sudirman, Baros, Kec. Cimahi Tengah, Kota Cimahi, Jawa Barat 40633 - Indonesia

***contact**
budiman_1974@yahoo.com

Received : 14/07/2021
Revised : 16/07/2021
Accepted : 16/07/2021
Online : 23/07/2021
Published : 31/07/2021

Abstract

Background: Hypertension is a medical condition in which the blood pressure in arteries is persistently elevated. This condition can increase risk of cardiovascular diseases such as stroke, kidney failure, heart attack, and kidney damage. One of traditional treatment for hypertension is using celery leaves (Apium graveolens L) and bay leaves (Syzygium polyantum).

Purpose: The aimed of this research is to determine the difference of blood pressure after the consumption of celery and bay leaves water in pre-elderly with hypertension at Cigugur Tengah Public Health Center.

Method: The type of this research is the numerical comparative analytic with Quasi Experiment design with Non Equivalent Control Group Design. This research used purposive sampling technique using 22 respondens with inclusion and exclusion criteria. Data collection was performed by measuring the blood pressure before and after the consumption of celery leaves and bay leaves boiled water that consume twice a day in one week.

Result: The statistical result of T-independent test obtain p valueof 0,365 > α (0,05) for the systolic blood pressure and 0,574 > α (0,05) for diastolic blood pressure. The results of this study also concluded that there was an influence on blood pressure of the two intervention groups for patients with hypertension with a p value of each intervention group, a systolic p value of 0,000 and a diastolic of 0,000 with a significance level of p <α (0.05).

Conclusion: Suggestion of this research is to consume boiled water of celery leaves and bay leaves for longer time as additional therapy for hypertension patient.

Keywords
Pre-elderly, Celery, Bay, Hypertension.

INTRODUCTION

The success of national development, especially in the health sector, has produced a positive impact, namely increasing life expectancy of the population in Indonesia. With the increasing life expectancy in Indonesia, the number of elderly people is increasing. The elderly (elderly) according to WHO are divided into 4 groups, namely middle age (middle age) between 45-59 years, elderly (elderly) between 60-74 years, old age (old) between 75-90 years, very old age. (very old) over 90 years (1). As they age, the elderly

https://doi.org/10.33755/jkk

p-ISSN : 2354 8428 | e-ISSN: 2598 8727
Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

will experience physical decline and changes, resulting in degenerative problems and non-communicable diseases such as diabetes, hypertension, and stroke. However, the most common disease that occurs in the elderly is hypertension (2).

Hypertension is an asymptomatic condition, where high blood pressure in the arteries causes an increased risk of cardiovascular-related diseases such as stroke, kidney failure, heart attack, and kidney damage. Symptoms of hypertension include headache, pain or tightness in the chest, dizziness, sleep disturbances, heart palpitations, numbness or tingling, restlessness and irritability. However, hypertension often appears without symptoms, so it is called the silent killer (3).

Data released by the World Health Organization (WHO) in 2015, shows that around 1.13 billion people in the world suffer from hypertension. This means that 1 in 3 people in the world are diagnosed with hypertension, only 36.8% of them are taking medication. This figure is likely to continue to rise sharply and it is estimated that by 2025 there will be 1.5 billion people affected by hypertension. It is also estimated that every year 9.4 million people die from hypertension and complications.

The prevalence obtained through measuring blood pressure at the age of more than 18 years in Indonesia is 34.1%, the highest is in South Kalimantan (44.13%) followed by West Java (39.60%), East Kalimantan (39.30%) , Central Java (37.57%) and West Kalimantan (36.99%) which are the fifth province with the highest incidence of hypertension. Based on the doctor's diagnosis, the proportion of history of taking medication in the hypertensive population was found to be 54.4% routinely taking medication, 32.3% not taking medication regularly and 13.3% not taking medication (4).

In 2016 in West Java found 790,382 cases of hypertension. According to the population aged 18 years, there were 2.46% cases of hypertension, spread over 26 districts/cities, the highest case finding was in Cirebon (17.18%) and the lowest was in Pangandaran District (0.05%). The incidence of hypertension tends to be higher in women than in men (West Java Provincial Health Office, 2016). The latest data from the Cimahi City Health Office in 2018, found cases of hypertension as many as 47,200 people. The sub-districts with the highest cases were South Cimahi with 4552 people and followed by Cipageran with 4948 people and North Cimahi with 4522 people, while the lowest was in Central Melong with 1406 people. According to reports of pre-elderly morbidity with an age range of 45-59 who experienced the highest hypertension in Cibereum as many as 219 people, Central Cigugur as many as 163 people and North Cimahi as many as 124 people (Cimahi City Health Office, 2018)

Hypertension requires proper treatment to prevent uncontrolled blood pressure which can cause body organs to become damaged. Handling of hypertension can be broadly divided into two, namely pharmacological and non-pharmacological treatment. Pharmacological treatment using antihypertensive drugs in the long term even lifelong and non-pharmacological treatment is treatment without drugs applied to hypertension such as diet management therapy, weight management, exercise and lifestyle changes. The complementary therapy is herbal therapy such as boiled celery leaves, garlic, bay leaves, avocado leaves and noni (5).

p-ISSN : 2354 8428 | e-ISSN: 2598 8727
Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

At this time people try to use natural ingredients as alternative treatments which are considered safer when compared to chemical drugs. One of the natural treatments for hypertension that is carried out is treatment using traditional plants because it does not cause side effects as well as drugs from pure or synthetic products. Natural ingredients that can be consumed for the treatment of hypertension are celery leaves (Apium graveolens L) and bay leaves (Syzygium polyanthum).

The results of research conducted by (6) on hypertension sufferers in the working area of Kenten Laut Health Center with the title of the effect of giving celery boiled water to lower blood pressure, the conclusions are drawn as follows: The average decrease in systolic blood pressure after being given celery boiled water is 20.32 mmHg and the average decrease in diastolic blood pressure after being given celery boiled water was 7.09 mmHg. So, it can be concluded that there is a significant effect of giving boiled water of celery leaves on reducing blood pressure in the elderly who suffer from hypertension in the working area of the Kenten Laut Palembang Health Center because celery leaves contain apiin and diuretic substances that are useful for increasing the amount of urine, sedatives (sedative compounds). pthalides). Besides this content, another substance that can lower blood pressure is apigenin which is a calcium antagonist which is very useful for preventing constriction of blood vessels.

Besides celery, bay leaf (Syzygium polyanthum) is also possible to be used for alternative medicine which is efficacious as a medicine to lower blood pressure. This plant is proven to be effective in curing disease, minimal side effects, and easy to obtain. Bay leaves contain essential oils, citrate, eugenol, tannins, flavonoids. The content of active compounds in bay leaves that are beneficial for health are antioxidant compounds in relation to blood pressure consisting of tannins and flavonoids (Herliana, 2013). This is reinforced by a study conducted by (7), entitled The Effect of Boiled Water of Salam Leaves (Syzygium polyanthum (wight) Walp.) Against Blood Pressure in adult males. blood pressure after drinking bay leaf boiled water was 105.20/71.80 mmHg, lower than before drinking bay leaf boiled water was 118.83/79.30 mmHg ($p<0.01$).

On January 30, 2019, researchers conducted a preliminary study at the Cigugur Tengah Health Center. Puskesmas Cigugur Tengah is one of the puskesmas located in Cimahi City. Based on data from the Cimahi City Health Office in December 2018 that the Central Cigugur Health Center was the second health center that had the most pre-elderly hypertension patients in Cimahi City with 163 cases. In addition, from the data of the Central Cigugur Health Center in December 2018, there were 152 people with hypertension aged > 30 years. Of the 10 most common diseases there, hypertension is the 4th most common disease.

The results of interviews with 10 patients with hypertension in RW 19 Cigugur Tengah, including 5 clients regularly taking medication and 5 clients rarely or not regularly taking medication. 3 of them were taking katopril and 7 were taking amlodipine and 8 out of 10 hypertensive patients did not know that herbal therapy boiled water with celery and bay leaves could reduce hypertension.

Based on this phenomenon, the researchers are interested in researching the difference between giving celery leaf boiled water and bay leaf cooking water for

p-ISSN : 2354 8428 | e-ISSN: 2598 8727
Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

primary hypertension as an alternative therapy or non-pharmacological therapy to lower blood pressure.

METHODS

The research design used was a quasi-experimental approach with a non-equivalent control group approach. The number of pre-elderly population with hypertension in the working area of the Central Cigugur Health Center in December 2018 was 163 people. The sampling technique used is by using purposive sampling. The number of samples in this study were 22 people, where for the intervention group giving boiled water of bay leaves as many as 11 people and the group giving boiled water of bay leaves as many as 11 people. The inclusion and exclusion criteria of this study are as follows:

Inclusion criteria

1. Pre-elderly 45-59 years old
2. Pre-elderly with a history of primary hypertension
3. Respondents consist of women and men
4. Willing to be a respondent
5. Currently undergoing pharmacological treatment of the antihypertensive drug amlodipine at a dose of 5 mg 1x1 day at night.
6. Not undergoing other complementary therapies such as yoga, progressive relaxation and others.
7. Pre-elderly who have not smoked in the past 1 year
8. Do not consume alcohol
9. Willing to not consume foods that can affect blood pressure starting from 1 day before the study and during the study.

Exclusion criteria

1. Pre-elderly who have hypertension with secondary hypertension type where hypertension is accompanied by other diseases such as DM, cholesterol, and others.
2. Pre-elderly who are undergoing other therapies such as diet, or consumption of other herbs.

The tools used in this research data collection are observation sheets and digital sphygmomanometer. The independent variables were boiled water for celery leaves and boiled water for bay leaves. Meanwhile, the dependent variable is a decrease in blood pressure.

The results of the normality test using the Shapiro Wilk test showed that all blood pressure data in this study were normally distributed. So that a parametric analysis was

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

carried out, using the Independent T-Test which was used to determine the mean difference between the two independent groups on blood pressure in pre-elderly with primary hypertension.

RESULTS

1. **Average blood pressure in the pre-elderly before and after being given boiled water of celery leaves.**

Table 1.

Blood Pressure Average on Celery Leaves Group

Celery Group	Variable	N	Mean	SD	Minimum-maksimum
Pre	Systolic	11	151,18	5,154	145-160
	Dyastolic		94,82	4,771	84-100
Post	Systolic	11	140,36	5,954	130-150
	Dyastolic		84,82	5,056	78-94

Based on table 1, it was found that in the intervention group 1 the average blood pressure before being given boiled water from celery leaves was 151.18 mmHg systolic blood pressure and 94.82 mmHg diastolic with a standard deviation of 5.154 systolic and 4.771 diastolic. The lowest systolic was 145 and the highest systolic was 160, the lowest diastolic was 84 and the highest diastolic was 100. The average blood pressure after being given boiled water of celery leaves, systolic blood pressure was 140.36 mmHg and diastolic was 84.82 with a standard deviation of 5.954 systolic and 5.056 diastolic. The lowest systolic is 130 and the highest systolic is 150, the lowest diastolic is 78 and the highest diastolic is 94. So there is a difference in blood pressure before and after the systolic of 10.82 and the diastolic of 10.

2. **Average Blood Pressure Before and After Giving Salam Leaf Boiled Water**

Table 2.

Blood Pressure Average on Bay Leaves Group.

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

Bay Leaves Group	Variable	N	Mean	SD	Minimum – Maximum.
Pre	Systolic	11	151,18	7,222	140-160
	Dyastolic		98,18	1,779	95-100
Post	Systolic	11	137,27	9,318	124-152
	Dyastolic		86,27	6,769	76-96

Based on table 2, it was found that in the intervention group 2 the average blood pressure before being given boiled water of bay leaves was 151.18 mmHg systolic and 98.18 mmHg diastolic with a systolic standard deviation of 7.222 and a diastolic of 1.779. The lowest systolic was 140 and the highest was 160, the lowest diastolic was 95 and the highest was 100. The mean blood pressure after being given boiled water of bay leaves was 137.27 mmHg and diastolic blood pressure was 86.27 mmHg with a standard deviation of 9.318 systolic and 6.769 diastolic. The lowest systolic is 124 and the highest is 152, the lowest diastolic is 76 and the highest is 96. So there is a difference in blood pressure before and after the systolic of 13.91 and the diastolic of 11.91.

3. Differences in Average Blood Pressure Before and After Giving Celery Leaf Boiled Water in Pre-Elderly With Hypertension

Table 3.

Blood Pressure Difference on Celery group

Blood Pressure	Mean	Median	SD	P *Value*
Systolic				
Pre	151,18	149,00	5,154	0.000
Post	140,36	141,00	5,954	
Dyastolic				
Pre	94,82	95,00	4,771	0.000
Post	84,53	84,00	5,056	

Table 3 above shows that the mean systolic pressure before intervention 1 was 151.18 mmHg (SD = 5.154) and the average systolic pressure after intervention 1 was 140.36 mmHg (SD = 5.594). Seen the difference in the average systolic pressure before and after consuming boiled water of celery leaves of 10.82 mmHg. While the average

p-ISSN : 2354 8428 | e-ISSN: 2598 8727
Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

diastolic pressure before being given intervention 1 was 94.82 mmHg (SD = 4.771) and the average diastolic pressure after being given intervention 1 was 84.82 mmHg (SD = 5.056). There was a decrease in diastolic before and after consuming boiled water of celery leaves by 10 mmHg.

After statistical testing the mean systolic value before and after intervention 1, the p value was 0.000 < = 0.05. This means that there is an effect of consuming boiled water from celery leaves on systolic blood pressure in pre-elderly with hypertension. Then after the statistical test of the average diastolic pressure before and after intervention 1 obtained p value 0.000 < = 0.05. This means that there is an effect of the consumption of boiled water from celery leaves on diastolic blood pressure in pre-elderly with hypertension.

4. Differences in Mean Blood Pressure Before and After Giving Boiled Water of Salam Leaves to Pre-Elderly with Hypertension in the Work Area of the Central Cigugur Health Center

Tabel 4.

Blood Pressure Difference on Bay Leaves group

Blood Pressure	Mean	Median	SD	P *Value*
Systolic				
Pre	151,18	153,00	7,222	0.000
Post	131,27	136,00	5,954	
Dyastolic				
Pre	98,18	98,00	1,779	0.000
Post	86,27	85,00	6,769	

Table 4 above shows that the average systolic pressure before being given intervention 2 was 151.18 mmHg (SD = 7,222) and the average systolic pressure after being given intervention 2 was 137.27 (SD = 9,318). The average difference between systolic pressure before and after being given boiled water of bay leaves was 13.91 mmHg. While the average diastolic pressure before being given intervention 2 was 98.18 mmHg (SD = 1.779) and the average diastolic pressure after being given intervention 2 was 86.27 mmHg (SD = 6.769). It can be seen that there is an average difference between diastolic pressure before and after being given boiled water of bay leaves of 11.91 mmHg.

After statistical test of the mean systolic pressure before and after intervention 2 obtained p value = 0.000 < < = 0.05. This means that there is an effect of consumption of

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

boiled water on bay leaves on blood pressure in pre-elderly with hypertension. Then after statistical tests were carried out the median value of diastolic pressure before and after intervention 2 obtained p value = 0.000 < = 0.05. This means that there is an effect of consuming boiled water of bay leaves on diastolic blood pressure in pre-elderly with hypertension.

5. Differences in the mean blood pressure after being given boiled water of celery leaves and boiled water of bay leaves in the pre-elderly with hypertension in the working area of the Central Cigugur Health Center

Table 5.

Blood Pressure Difference on Celery and Bay Leaves Groups

Blood Pressure	Mean	SD	P *Value*
Systolic			
Celery Group	140.36	5.954	0.365
Bay Leaves Group	137.27	9.318	
Dyastolic			
Celery Group	84.82	5.065	0.574
Bay Leaves Group	86.27	6.769	

The results of the analysis in table 5 show that the mean (mean) systolic blood pressure after being given boiled water of celery leaves is 140.36 mmHg (SD = 5.954), while the mean systolic blood pressure after being given boiled water of bay leaves is 137.27 mmHg (SD = 9.318). Then the average diastolic blood pressure after being given boiled water of celery leaves was 84.82 mmHg (SD = 5.056), while the average diastolic blood pressure after being given boiled water of bay leaves was 86.27 mmHg (SD = 6.769). Statistical test results obtained systolic blood pressure p value = 0.465 > = 0.05, it can be concluded that there is no difference in the average systolic blood pressure of respondents after being given intervention 1 or intervention 2. While the results of statistical tests on diastolic blood pressure are obtained p value = 0.574 > = 0.05, thus H0 failed to be rejected so that it can be concluded that there is no significant difference in respondents' systolic and diastolic blood pressure after being given interventions 1 (celery leaf decoction) and 2 (bay leaf decoction).

p-ISSN : 2354 8428 | e-ISSN: 2598 8727
Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

DISCUSSION

Based on the results of the study in table 4.5, it was found that the mean systolic blood pressure before giving boiled water of celery leaves and boiled water of bay leaves was 140.36 mmHg and 137.27 mmHg, respectively. The results of the independent t-test obtained p value 0, 365 > 0.05. In diastolic blood pressure, the average diastolic blood pressure before giving celery leaf boiled air and bay leaf boiled air was 84.82 mmHg and 86.27 mmHg, respectively. The results of the independent t-test obtained p-value 0.574> 0.05, from this information, it can be said that there is no significant difference in the effectiveness of boiled air of bay leaves on reducing blood pressure in pre-elderly with hypertension.

During the 7 days of the study, the intervention of giving celery leaf boiled water was given 2 times a day as much as 100 ml to 12 respondents. With the results after being given boiled water from celery leaves, 12 respondents who were given experienced a decrease in blood pressure.

The decrease in blood pressure experienced by respondents after being given boiled water of celery leaves is evidenced by the results of research conducted by (8) about the effect of giving boiled water of celery leaves. The average results of systolic and diastolic blood pressure before being given boiled water of celery leaves obtained an average (mean) of 148.67 mmHg and 95.33 mmHg. While the results of the average systolic and diastolic blood pressure after being given boiled water of celery leaves were 139.33 mmHg and 90.33 mmHg with a difference in mean systolic blood pressure of 9.34 mmHg and diastolic 5.00 mmHg. So it can be concluded that there is a decrease in blood pressure before and after being given boiled water of celery leaves seen from the general mechanism of celery in controlling blood pressure, among others, providing a dilating effect on blood vessels and inhibiting angiotensin converting enzyme (ACE).

In addition, another study from (9) found that the results of measuring systolic and diastolic blood pressure before being given boiled water of celery leaves obtained an average (mean) of 166.33 mmHg and 98.17 mmHg. While the mean systolic and diastolic blood pressure after being given boiled water of celery leaves was 146.28 mmHg and 84.50 mmHg with a difference in systolic blood pressure of 20.05 mmHg and diastolic 13.67 mmHg. It can be concluded that there is a difference in blood pressure before and after being given boiled water of celery leaves. The difference is because celery leaves contain magnesium, pthalides, apigenin, potassium, and asparagine which play a role in lowering blood pressure.

While the decrease in blood pressure experienced by respondents after consuming bay leaf boiled water is evidenced by the research of (10), the results of measuring systolic blood pressure in the intervention group before being given boiled water of bay leaves obtained an average (mean) of 161 mmHg and the group control 154 mmHg. The results of the measurement of systolic blood pressure after being given treatment for 5 days in the intervention group obtained an average of 121 mmHg and in the control group 155 mmHg. Measurement of diastolic blood pressure in the intervention group before being given boiled water of bay leaves obtained an average

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

(mean) of 96 mmHg and in the control group 95 mmHg. The results of the measurement of diastolic pressure after being given treatment in the intervention group obtained an average (mean) of 76 mmHg and in the control group 92 mmHg. The difference in mean systolic and diastolic blood pressure obtained in the intervention group was 40 mmHg and 20 mmHg, while in the control group it was -1 mmHg and 3 mmHg. The difference in blood pressure before and after being given boiled water of bay leaves is due to the fact that bay leaves contain flavonoid compounds that act as vasodilators of blood vessels.

Then the research of (11) obtained data on 28 respondents the average systolic and diastolic blood pressure before being given boiled water of bay leaves obtained an average (mean) of 161.79 mmHg and 114.29 mmHg. while the average systolic and diastolic blood pressure after being given boiled water of bay leaves obtained an average (mean) of 126.43 mmHg and 80.18 mmHg, the difference between the mean systolic and diastolic blood pressures was 35.36 mmHg and 34.11 mmHg so that the occurrence of difference in blood pressure before and after being given boiled water of bay leaves. According to the researchers, giving boiled water of bay leaves to reduce blood pressure in hypertensive patients because of the content of tannins that can relax arterial muscles and flavonoids as ACE inhibitors by inhibiting ACE activity, so the formation of angiotensin II can be limited.

Based on the results of the analysis, the researchers found that using bay leaf boiled water on a regular basis for 7 days could lower blood pressure significantly, as seen from the difference in mean systolic and diastolic blood pressure between the celery leaf boiled water group and the bay leaf boiled water group. This study is supported by previous studies that the difference in mean systolic and diastolic blood pressure of bay leaf boiled water is greater than the celery leaf boiled water group, although there is no significant difference between celery leaf and bay leaf cooking water.

Celery and bay leaves contain active compounds such as flavonoids. Flavonoids are compounds that are needed to maintain relaxation of blood vessels (vasodilation) and also as inhibitors of angiotensin converting enzyme (ACE) by inhibiting ACE activity, so the formation of angiotensin II can be limited so as to prevent hypertension (11). From this explanation, it can be concluded that boiled water therapy of celery and bay leaves can help reduce or control blood pressure in pre-elderly with hypertension in the work area of the Central Cigugur Health Center.

CONCLUSION

1. The average value of systolic blood pressure in pre-elderly with hypertension before being given intervention 1 by giving boiled water of celery leaves was 151.18 mmHg and the average diastolic blood pressure was 94.82 mmHg. Meanwhile, after being given intervention 1 the average systolic blood pressure was 140.36 mmHg and the average diastolic blood pressure was 84.82 mmHg.
2. The average value of systolic blood pressure in pre-elderly with hypertension before being given intervention 2 by giving boiled water of bay leaves was 151.18

p-ISSN : 2354 8428 | e-ISSN: 2598 8727
Jurnal Keperawatan Komprehensif
Vol. 7 No.2 July 2021

mmHg and the average diastolic blood pressure was 98.18 mmHg. Meanwhile, after being given intervention 2 the average systolic pressure was 137.27 mmHg and the average diastolic blood pressure was 86.27 mmHg.

3. There is a difference in the mean systolic and diastolic blood pressure before and after in the celery leaf boiled water group with systolic p value of 0.001 and 0.001 diastolic (p value 0.05).
4. There is a difference in the mean systolic and diastolic blood pressure before and after in the bay leaf boiled water group with a systolic p value of 0.001 and a diastolic 0.001 (p value 0.05).
5. There is no difference in the average blood pressure of pre-elderly with hypertension after being given intervention 1 by giving boiled water of celery leaves and intervention 2 by giving boiled water of bay leaves. > (0.05) and diastolic blood pressure 0.574 > (0.05).

REFERENCES

1. Azizah, L. M. (2011). Keperawatan Lanjut Usia. Yogyakarta : Graha Ilmu.
2. Mubarak,W.I., Chayatin, N., & Santoso, B.A. (2009). *Ilmu Keperawatan Komunitas Pengantar dan Teori*. Jakarta : Salemba Medika.
3. Nugroho, W. (2008). Keperawatan Gerontik & Geriatrik. Jakarta : EGC.
4. Riskesdas. (2018). Laporan Nasional Riskesdas 2018. Retrivied Februari 16, 2019 from Kementerian Kesehatan Indonesia http://www.depkes.go.id/resources/ download/info-terkini/materi-rakorpop_2018/Hasil%20 Riskesdas 202018.pdf
5. Junaedi, E., Yulianti, S & Renata, M.G. (2013). Hipertensi Kandas Berkat Herbal. Jakarta : Fmedia.
6. Muzakar & Nuryanto. (2012). Pengaruh Pemberian Air Rebusan Seledri Terhadap Penurunan Tekanan Darah. Jurnal Pembangunan Manusia, 6(1).
7. Saputra, Vania Aprilia. (2012) Pengaruh Air Rebusan Daun Salam (Syzygium polyanthum (Wight)Walp.) Terhadap Tekanan Darah Laki-Laki Dewasa.
8. Sakinah, S., & Azhari, H. K. (2018). Pengaruh Rebusan Daun Seledri Terhadap Penurunan Tekanan Darah pada Pasien Hipertensi Di Wilayah Kerja Puskesmas Pangkajene Kabupaten Sidrap. Jurnal Ilmiah Kesehatan Diagnosis, 12(3), 261-266.
9. Asmawati, N., Purwati, & Handayani, R.S. (2015). Efektivitas Rebusan Seledri dalam Menurunkan Tekanan Darah pada Lansia Penderita Hipertensi di Posyandu Lansia Kelurahan Fajar Bulan Kecamatan Way Tenong Lampung Barat. Ejournal Poltekkes tkj, 4(2), 130-136.
10. Dafriani, P. (2016). Pengaruh Rebusan Daun Salam (Syzigium Polyanthum Wight Walp) terhadap Tekanan Darah Pasien Hipertensi di Sungai Bungkal Kelinci. Jurnal Medika Santika, 7(2), 31-32.
11. Yulianti, Tunjung Sri, Rahayu Setyaningsih, and Mega Suryaningsih. "Pengaruh Air Rebusan Daun Salam Tehadap Penurunan Tekanan Darah pada Penderita Hipertensi di Dukuh Jangkung Rejo Nogosari Boyolali." KOSALA: Jurnal Ilmu Kesehatan 2.2 (2014).