Effect of Water Decoction of the Crown of God Fruit on the Reduction of Blood Pressure

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ARTICLE INFO

Article history:
Received: 3rd October 2021
Revised: 20th October 2021
Accepted: 2nd November 2021

Keywords:
Blood pressure
Mahkota dewa fruit
Menopause

ABSTRACT

Background: Hypertension is a disease that often appears in developing countries such as Indonesia. A person is said to be hypertensive and at risk of health problems if after several measurements. The purpose of the study was to analyze the effect of boiling water on the decline of blood pressure in menopausal women with hypertension in Kediri City. **Methods:** This research is a pre design experiment, with a type of pre experimental type one group pre post test design. Sampling techniques using purposive sampling. With a population of 68 people and a sample used numbering 16 respondents. Data collection using observation sheets and research materials namely tensimeters. **Results:** In normality tests using Shapiro wilk blood pressure before and after being given boiling water of the mahkota dewa fruit obtained p value 0.03 and 0.41 while diastolic blood pressure before and after being given boiling water of the mahkota dewa fruit obtained p value 0.00 and 0.01. The results of data analysis using wilcoxon signed rank statistical test were obtained p-value result 0.00 with α level (0.05). **Conclusion:** The results showed there was an effect of boiling water of the mahkota dewa fruit on the decrease in blood pressure in menopausal women with hypertension. Researchers hope to increase the knowledge, skills of respondents as well as utilize the fruit in handling and treating hypertension.

I. Introduction

Menopause is the permanent cessation of menstruation and fertility that occurs 12 months after the last menstruation (Nelson, 2008) In your forties, the cycle begins to lengthen again. Although most people tend to believe that 28 days is a normal cycle length, studies have proven that only 12.4% of women actually have a 28-day cycle and 20% of all women experience irregular cycles (Potter, Schrager, Dalby, Torell, &Hampton, 2018).

Hypertension or high blood pressure is a very large and serious problem. In addition to its high prevalence and tends to increase in the future, hypertension is a health disorder in which this condition cannot be hidden but can be controlled with a healthy lifestyle (Nugroho, 2013). Hypertension is also one of the diseases that are not contagious and is often referred to as *the silent killer*. Hypertension is often not realized because the disease shows no symptoms. The incidence of hypertension is known by sufferers usually when coming to do an examination because of other complaints in the health service (Muchid, 2016).

World Health Organization (WHO) data on cardiovascular disease has caused 17 million deaths per year due to complications of hypertension about 9.4 million each year worldwide ("World Health Organizations," 2014) According to the American Heart Association (AHA), Americans over the age of 20 suffering from hypertension have reached 74.5 million people, but almost 90-95% of T-shirts are not known to cause (Kemenkes.RI, 2014). The latest statistics state that there were

24.7% of Southeast Asians and 23.3% of Indonesians aged 18 years and over with hypertension in 2014.

According to Basic Health Research in 2017, the prevalence of hypertension in Indonesia in 2004 was about 14% with a range of 13.4%-14.6%. Riskesdes data (2017) also mentions that the prevalence of hypertension in the population aged 18 years and over in Indonesia based on the diagnosis of health workers by 9.4% and blood pressure measurements by 25.8% (Ministry of Health, 2018). Using individual analysis units showed that nationally 25.8% of the Indonesian population suffers from hypertension. If currently, the population of Indonesia is 252,124,458 people then there are 65,048,110 people suffering from hypertension. It's a pretty shocking situation. There are 13 provinces whose percentage exceeds the national figure, with the highest in Bangka Belitung Province (30.9%) or absolutely 30.9% x 1,380,762 people = 426,655 people (Kemenkes.RI, 2014).

Hipertensi in Indonesia is the cause of death nomor 3 after stroke and tuberculosis, which reaches 6.7% of the total deaths at all ages. The results of Basic Health Research (Riskesdas) conducted by the Agency for Health Research and Development (Balitbangkes) showed the prevalence of hypertension nationally reached 26.5%. Initial analysis *of sample registration survey* (SRS) in 2014, a national-scale mortality survey of 41,590 deaths throughout 2014 conducted by the Health Research and Development Agency (Balitbangkes) of the Ministry of Health showed that hypertension with complications is one of the highest causes of death in Indonesia at 5.3%.

Data from the East Java Health Office said that the total number of patients in East Java in 2019 was 285,724 patients. Dengan the highest number in May as many as 46,626 patients, while based on the results of Basic Health Research (Riskesdes) data in 2013 said, the total number of patients with experience in East Java in 2019 as many as 319,895 patients (26.2%). Hypertension in East Java occupied *the "top score"* for the last three years compared to the highest cases of non-communicable diseases in other Timur Java (Dinkes Jatim, 2019).

In general, the causes of hypertension are divided into two, including primary hypertension (essential) meaning hypertension that is not yet known the cause clearly. Various factors are thought to play a role as a cause of primary hypertension, such as obesity, alcohol, smoking, and copemia. And secondary hypertension whose cause has been known, such as the use of estrogen, kidney disease, renal vascular hypertension, Cushing's syndrome, Feokromocytosis, hypertension related to pregnancy (Julianty, 2015)

The micro-impact of hypertension is a condition when the blood pressure in blood vessels increases chronically. This can happen because the heart works harder to pump blood to meet the body's oxygen and nutrient needs. If left unchecked, the disease can cause symptoms of headaches, eye disorders, often having difficulty sleeping at night (Hasebe, 2015). The increased risk of hypertension in menopause is often caused by a shift in the arteries resulting in a loss of elasticity and becoming stiff so that the arteries cannot expand by the time the heart pumps blood through the arteries. The hormone *estrogen* plays a role in the regulation of blood pressure directly or indirectly. On the other hand, the cessation of *estrogen* production at menopause can decrease the elasticity of blood vessels (Nugroho, 2013).

The macro impact of increased blood pressure that lasts for a long period (persistent) can cause damage to the kidneys (kidney failure), heart (coronary heart disease), and brain (causing stroke) if not detected early and received adequate treatment. Hypertension will make the heart work harder and contribute to the formation of blockages that can interfere with blood flow. Blood pressure that is too high can cause rupture of the brain's blood vessels (*stroke*). Kidney damage is one of the most dangerous long-term complications of hypertension (Nugroho, 2013).

Various ways are proven to be able to prevent and treat the occurrence of hypertension, namely pharmacological and non-pharmacological therapies. Management of hypertension pharmacologically can be done using modern drugs, namely antihypertensive drugs (Sylvestris, 2017). While non-pharmacological treatments such as reducing weight if excess nutritional status, increasing physical activity, reducing *sodium* intake, lowering caffeine and alcohol consumption, and multiplying fruit and vegetable consumption (Riyadina et al., 2017)

The city of gods became a news topic in several print and electronic media. We don't know the exact origin of this plant. But many people say that this plant comes from Papua. We can find the crown of a god growing in a garden or garden. In addition to being used as an ornamental plant,

this plant is also used as a shade plant. The parts used as medicine are the leaves, flesh, and skin of the fruit (Sudewa, Ismanto, & Rompas, 2014).

According to the background above, researchers are interested in researching "The Effect of Giving God's Crown Fruit Decoction Water On Blood Pressure Reduction In Menopausal Women With Hypertension in Kediri City in 2021". The results of this study are expected to provide information about the content in the crown fruit of gods that can affect the reduction of systolic and diastolic hypertension in menopausal women and can be used as an additional reference for future researchers..

II. Method

The type of research used is observational, with the type of pre-experimental research type *one group pre-post-test design* is to give treatment to one group but previously observed blood pressure before being given the intervention of water decoction of the crown god fruit after it was done post-test (Murti, 2013b) . The research was conducted in Bujel Village of Mojoroto District of Kediri City in October 2021. The population in the study was women who had hypertension in Kediri City numbered 68 respondents. From the total population taken as many as 16 respondents in accordance with the sampling technique used, namely *purposive sampling* based on the criteria of inclusion and exclusion set (Cresswell, 2010). Variables in the study there are two, namely independent variable (giving water decoction of the crown of god) and variable dependent (blood pressure in menopausal women before and after being given the water decoction of the crown of god fruit). The research instrument used in this study was a blood pressure observation sheet before and after being given the water decoction of the god's crown fruit. Analysis of data on populations has conducted *a test of normality Shapiro wilk*. If it meets parametric requirements with normal data distribution then use a paired t-test. If the data does not distribute normally then use the *Wilcoxon Signed Rank Test*. Test analysis using SPSS software (Murti, 2013a).

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III. Results and Discussion

The following presented a description of the frequency of analysis of univariate data specifically in the form of tables, as follows:

Table 1. General Data on Frequency Distribution of Menopausal Women in Kediri City

Variabel	Kategori	Frekuensi	Percent
Age	45 - 51 tahun	4	25,00
	52 - 58 tahun	11	68,80
	59 - 65 tahun	1	6,30
Education	SMA	8	50,00
	SMP	3	18,80
	SD	5	31,30
Work	Ibu Rumah Tangga	7	43,80
	Wiraswasta	6	37,50
	PNS	3	18,80
History of Hypertension	Ada Riwayat	12	75,00

Based on table 1 above it can be interpreted that the age of respondents who were given water decoction of the crown fruit of the gods most (68.80%) which is as many as 11 respondents aged 52-58 years. The last education of respondents who were given water decoction of the half-god crown fruit (50.00%) was 8 respondents to the last high school education. The work of respondents who were given water decoction of the crown of god fruit almost half (43.80%) which is 7 respondents

worked as IRT. The history of hypertension of respondents who were given water decoction of the crown fruit of the gods mostly (75.00%) that 12 respondents had a history of hypertension.

Table 2. Distribution of Respondents' Frequency Based on Systolic and Diastolic Blood Pressure Before Giving Water Decoction of God's Crown Fruit Against Decreased Blood Pressure In Pre Menopause With Hypertension in Kediri City

Variabel	Water Stew of The Crown Of God Fruit					
	Mean	Median	Modus	SD	Max	Min
Systolic Blood Pressure Before Treatment	150.63	150.00	150	6,801	160	140
Diastolic Blood Pressure Before Treatment	91.88	90.00	90	5.439	100	80

Based on table 2 above it can be explained that systolic blood pressure before the administration of the boiling water of the god's crown fruit *means* 150.63 mmHg and *a median* of 150.00 mmHg with the results of the test normality p-value = 0.03 Based on table 5.5 above it can be explained that systolic blood pressure before the administration of the deity crown boiling water *is* 150.63 mmHg and *the median* 150.00 mmHg with a p-value normality test result = 0.03. Diastolic blood before the administration of water decoction of the crown fruit *means* 91.88 mmHg and *a median* of 90.00 mmHg with the results of the test normality p-value = 0.00.

Table 3. Distribution of Respondents' Frequency Based on Systolic and Diastolic Blood Pressure As Well as Giving Water Decoction of God's Crown Fruit Against Blood Pressure Reduction In Pre Menopause With Hypertension in Kediri City

Variabel	Water Stew of The Crown Of God Fruit					
	Mean	Median	Modus	SD	Max	Min
Systolic Blood Pressure After Treatment	138.13	140.00	140	6.021	150	120
Diastolic Blood Pressure After Treatment	76.88	80.00	80	1.505	90	70

Based on table 3 above it can be explained that systolic blood pressure after *the administration* of water decoction of the crown fruit *means* 138.13mmHg and *a median* of 140.00 mmHg with the results of the test normality p-value = 0.41. Diastolic bloodsheds after the administration of water decoction of the crown fruit *mean* 76.88 mmHg and median80.00 mmHg with the results of the test normality p-value = 0.01.

Table 4. The difference in Systolic and Diastolic Blood Pressure Before and As Well as Giving Water Decoction of God's Crown Fruit Against Decreased Blood Pressure In Pre Menopause With Hypertension In Kediri City

Variabel		mean	SD	SE
Systolic Blood Pressure	Before	150.63	1.700	1.700
	After	138.13	2.276	2.276
	Systolic blood pressure difference before and after = 12.5			
	Value P value = 0.000 (α = 0,05)			
Diastolic Blood Pressure	Before	91.88	5.439	1.360
	After	76.88	6.021	1.505
	Systolic blood pressure difference before and after = 15			
	Nilai P value = 0.000 (α = 0,05)			

Based on table 4 interpreted the *mean systolic* blood pressure, before being given the water decoction of the god's crown fruit of 150.63 mmHg with after being given the water decoction of the god's crown fruit of 138.13 mmHg. So that it can be seen the difference in *systolic* blood pressure before and after being given water decoction of mahkota dewa fruit. In the normality test using *Shapiro wilk* systolic blood pressure before and after being given the water decoction of the crown fruit of god obtained values of 0.03 and 0.41. Then the data distribution normality test can be concluded p-*value* < α with α = 0.05 so that the data distribution is not normal and can be used non-parametric Wilcoxon test. The results of the data analysis using *the Wilcoxon Signed-Rank* statistical test obtained a p-value of 0.000 with a level of α (0.05) this shows that $_{H0}$ was rejected and $_{H1}$ was accepted, which means there is an effect of giving god's crown fruit decoction water on blood pressure in menopause women in Kediri City in 2021..

The *mean* value of *diastolic* blood pressure, before being given the water decoction of the god's crown fruit amounted to 91.88 mmHg with after being given the water decoction of the god's crown fruit of 76.88 mmHg. So that it can be seen that there is a difference in *diastolic* blood pressure before and after being given water decoction of the fruit mahkkota dewa. In the normality test using *Shapiro Wilk* systolic blood pressure before and after being given the water decoction of the crown fruit of god obtained values of 0.00 and 0.41. Then the data distribution normality test can be concluded p-*value* < α with α = 0.05 so that the data distribution is not normal and can be used non-parametric Wilcoxon test. The results of the data analysis using *the Wilcoxon Signed-Rank* statistical test obtained a p-value of 0.00 with a level of α (0.05) this shows that H0 was rejected and H1 was accepted, which means there is an effect of giving god's crown fruit decoction water on blood pressure in menopause women in Kediri City in 2021..

Hypertension is an increase *in systole* that is high depending on the age of the affected individual (Julianty, 2015). Blood pressure is within a certain limit, depending on body position, age, and level of stress experienced (Hypertension Canada, 2017). Blood pressure is the pressure that is inflicted on the artery walls. Peak pressure occurs when the ventricles contract and is called systolic pressure diastolic pressure is the lowest blood pressure that occurs at the time of heart rest (Hidayat, Hasanah, &Susantin, 2018). Blood pressure is described as the ratio of systolic pressure to diastolic blood pressure with an adult value normally around 100/60 mmHg.Normal blood pressure can be around 120/80 mmHg (Muchid, 2016).

According to research that the factors that trigger hypertension are mostly influenced by age and where age also affects a person's blood pressure, with the age of a person, blood vessels will tend to stiffen and elasticity will decrease so that it will cause blood pressure to increase (Srivaratharajah & Abramson, 2019) . But the age of getting older blood pressure can be controlled by maintaining a pattern of food intake, diligently exercising, and doing regular blood pressure (Sakina et al., 2017).

From the results of the analysis, there is a relationship between the giving of the crown of gods and the reduction of blood pressure in people with the hypertension intervention group. The results of this study are supported by a theory (Firmansyah & Wahab, 2019), about the crown of gods and their benefits. Giving 15 grams of dried god crown fruit meat boiled in 300ml of water to the remaining 15 ml once a day can lower blood pressure in people with hypertension. The crown of gods is a plant that belongs to *the Thymelaeeceae family* which contains *antihysmin alkaloids, triterpenes, saponins, and polyphenols.* The skin of the fruit also contains *alkaloids, triterpenes, saponins, and flavonoids.* Substances contained in the content of the crown fruit of gods that affect a decrease in blood pressure are *flavonoids* (Sudewa et al., 2014).

The results of the study in Kediri City in 2021 high incidence of hypertension due to age factors, most respondents (68.8%) aged > 52 years. Where the older a person ages, the metabolic regulation of lime substances (calcium) is disrupted. This causes a lot of lime that circulates along with the bloodstream. As a result, the blood becomes denser and blood pressure increases (Riyadina et al., 2017).

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2010) (Wahyuni, Purwanto, & Umbul, 2016). From the results of the analysis of the intervention group with the control group, there was a difference in systolic and diastolic blood pressure reduction between the intervention groups given the crown fruit of the god..

The results of this study are by research conducted by (Sudewa et al., 2014) on the benefits of the crown fruit of gods. Consuming the crown fruit of gods regularly with the right dose can significantly lower the pressure of high blood pressure. According to the results of the study, researchers confirmed that the fruit of the god's crown contains *Flavonoid* compounds. *Flavanoid* compounds are useful to smooth blood circulation to the body, prevent blockages in blood vessels, reduce cholesterol content and reduce fat growth in the walls of blood vessels and reduce the risk of coronary heart disease. So that there is a decrease in virgin pressure in menopausal women after being given the water decoction of the crown of god fruit (Andriadi, 2016).

In this study, there was an effect of changes in blood pressure before and after the administration of water decoction of the crown of god fruit in Kediri City in 2021. Therefore *non-pharmacological* therapy in lowering blood pressure can be applied independently. Many ways are developed to help lower blood pressure such as giving water decoction of the crown of god fruit because it includes herbal plants that contain as anti-hypertensive.

IV. Conclusion

The conclusions of the study can be spelled out as follows:

1. Blood pressure in menopausal women before giving water decoction of the crown fruit in Kediri City obtained a *mean* systolic blood pressure value of 150.63 mmHg and diastolic blood pressure of 91.88 mmHg.
2. Blood pressure in menopausal women after giving water decoction of the crown fruit in Kediri city obtained *a mean* value of systolic blood pressure 138.13 mmHg and diastolic 76.88 mmHg.
3. There is an effect of giving water decoction of the divine crown fruit to changes in blood pressure in menopausal women in Kediri City.

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