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The Effect Provision of Moringa Oliefera Leaf Extract on the Event of Hypertension in the work Area Mata Health Center of Kendari City

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ABSTRACT

Introduction: The spread of hypertension in the world is a challenge in efforts to improve public health status. Preliminary studies were conducted on 10 patients with hypertension in the working area of the Mata Health Center, the results showed that the majority of hypertension sufferers were caused by genetics and lifestyle. Excessive sodium consumption and lack of activity due to the pandemic make them more often at home and often consume junk food and fast food. This attracted researchers to research the Effect of Giving Moringa Leaf Extract (Moringa oliefera) on the Incidence of Hypertension in the Working Area of the Mata Health Center of Kendari City.

Method: Quantitative research with a quasi-experimental research design, namely the one-group pre-test-post-test-control design approach. The population is 580 people and the sample is 137 people with hypertension, some of whom are outpatients. Data analysis using the Wilcoxon test with a significance level of α = 0,05.

Result: Before being given treatment (Pretest) namely Moringa leaf extract (Moringa oleifera I) the average blood pressure was 142,05 while after treatment (Posttest) it was 171,45.

Conclusion: There is an effect of giving Moringa leaf extract (Moringa oleifera) on the incidence of hypertension in the working area of the Mata Health Center in Kendari City.

Introduction

The spread of hypertension in the world is a challenge in efforts to improve public health status. Non-communicable diseases are the leading cause of death in the world, accounting for 68% of the 56 million deaths that occurred in 2012.[1] One

of the non-communicable diseases that have a high incidence is Hypertension, which is commonly known as high blood pressure disorder of blood vessels that results in the supply of oxygen and nutrients carried by the blood being blocked to the body tissues that need them, namely: a condition in which there is an increase in blood pressure above the normal threshold of 120 per 80 mmHg. This disease is called the silent killer because this deadly disease often does not show symptoms or is hidden, namely the limit for adults over 25 (twenty-five) years.[2]

Hypertension is one of the causes of premature death in people in the world and the longer the problem is increasing. The World Health Organization explained that increased blood pressure is one of the main risk factors for global mortality and is estimated to have caused 9.4 million deaths and 7% of the disease burden measured in the Disability Adjusted Life Year (DALY) in 2015. WHO has estimated that in 2025, 1.5 billion people in the world will suffer from hypertension each year, in Indonesia, it reaches 17-21% of the population and most of them are undetected.[3]

The data for 2021 shows that the prevalence of hypertension in January to August 2021 at the Kendari City Health Office is 3,6% of the 4.161 hypertension patients spread across 15 Public Health Centers in Kendari City. for the Eye Health Center the prevalence of hypertension was 8,3%, Kandai Health Center 1,7%, Benu-Benua Health Center 4,3%, Kemaraya Health Center 4,0%, Labibia Health Center 0,2%, Puuwatu Health Center 3,2%, Mekar Health Center 3,8%, Jati Raya Health Center 4,5%, Wua-Wua Health Center 2,9%, Perumnas Health Center 3,6%, Lepo-Lepo Health Center 5,9%, Mokoau Health Center 1,9%, Poasia Health Center 3,4 %, Abeli Health Center 3,1% and Nambo Health Center 2,4%.[4]

Hypertension data for the Eye Health Center working area in January to October for the Kaslampe Village of hypertension cases amounted to 288 cases, Mangga Dua Village amounted to 66 cases, Mata Village totaled 57 cases Purirano Village totaled 47 cases and Kendari Caddi Village amounted to 47 cases.[4]

Some of the factors that cause hypertension, including eating habits that are high in salt can trigger an increase in blood pressure. The effect of salt intake on high blood pressure occurs through an increase in plasma volume, cardiac output, and blood pressure. The salt pulls the fluid outside the cells from escaping. This causes a buildup of fluid in the body. This fluid buildup will increase blood volume and pressure.[5] This is also following what was stated by [6] that hypertension can be caused by an unhealthy lifestyle, such as foods that contain lots of salt, lack of rest, stress, and lack of physical activity.

Hypertension can lead to heart failure, kidney failure, and stroke which in turn can lead to disability or death.[7] The government has tried to suppress the incidence of hypertension by establishing various programs such as routine blood pressure checks and recommendations for physical activity for at least 30 (thirty) minutes a day, but the prevalence of hypertension tends to increase.[8] This is closely related to the benefits of Moringa leaves which are very broad for preventing and treating various chronic diseases. Although of course it only acts as medical support, the leaves can help the body to survive quickly. The condition is that the rules for drinking Moringa leave for treatment must be met. Magnesium as an herbal high-blood pressure drug is known to be able to lower blood pressure, although it only has a small impact. Magnesium is especially beneficial for people with high blood pressure who are magnesium deficient.

Moringa leaf extract product (*Moringa oleifera*) which is used as research material is a product of collaboration between CV. Raya Production Gemilang with Hasanuddin University Makassar. The product content of Moringa leaf extract (*Moringa oleifera*) which is packaged in capsule form with a composition of 18 proteins, 8 essential amino acids, Vitamins A, B, Complex C, D, E, K, folic acid, biotin, minerals calcium, iron, chromium, copper, fluorine, manganese, magnesium, phosphorus, potassium, sodium, potassium, selenium, and other antioxidants and phytochemicals.

Based on this phenomenon, it can be seen that Moringa leaf extract can be used to reduce the blood pressure of people with hypertension, but research on the use of Moringa leaves, especially at the Mata Health Center of Kendari City has never been done to treat hypertension. Likewise, the implementation of health education about hypertension and the benefits of Moringa leaf

extract is still rarely applied in the working area of the Kendari City Mata Health Center.

Method

Quantitative research with a quasi-experimental research design, namely the one-group pre-test-post-test-control design approach.[9] The study was conducted in January 2022. The population was 580 people and the sample was 137 people with hypertension, most of whom were outpatients. The sample was divided into samples that were given an intervention and did not receive an intervention. Data analysis using the Wilcoxon test with a significance level of $\alpha = 0,05$.

Result

Table 1 states that before the intervention (Pretest) namely the administration of Moringa leaf extract (*Moringa oleifera* I) the average blood pressure of 171,45 While for counseling the average blood pressure was 163,01.

Table 2 states that before being given treatment (Pretest) namely Moringa leaf extract (*Moringa oleifera* I) the average blood pressure was 142,05 while after treatment (Posttest) it was 171,45.

Table 3 states that from 137 respondents, the difference in Moringa leaf extract (*Moringa oleifera* L) Pre-test is 142 times, while on the Posttest it is 171 times. The average difference between Moringa leaf extract (*Moringa oleifera* L) PreTest and PostTest is 29 times. The results of the statistical test using the paired t-test obtained the value of Sig. 0,018 < 0,05, H0 is rejected and Ha is accepted which means there is a difference in blood pressure when consuming Moringa leaf extract (*Moringa oleifera* L).

Table 1
Hypertension before intervention
in the Working Area of Kendari City Mata Health Center

Natural Ingredients	Mean Blood Pressure
Pre Extract Moringa leaf (*Moringa oleifera*)	171,45
Pre-Learning	163,01

Table 2
Decrease in blood pressure before and after being given Moringa leaf extract (*Moringa oleifera*) in the Mata Health Center Working Area Kendari City

Variable	Mean Blood Pressure
Moringa leaf extract (*Moringa oleifera*) pretest	142,05
Moringa leaf extract (*Moringa oleifera*) postest	171,45

Table 3
Differences in blood pressure before and after consuming Moringa (*Moringa oleifera*) leaf extract in the Mata Health Center Working Area Kendari City

Variable	mean	SD	*Sig.*	n
Moringa leaf extract (*Moringa oleifera* L) Pretest	142,05	13,582	0,018	137
Moringa leaf extract (*Moringa oleifera* L) Posttest	171,45	11,047		

Discussion

Hypertension is an abnormal increase in blood pressure in the arteries continuously. Hypertension is one of the diseases that is the biggest risk factor for death.[10] This is supported by[11] a study entitled The Effect of Moringa (*Moringa oliefera*) infusion on reducing hypertension in Balun Village, Turi District, Lamongan Regency. The data were analyzed using the Wilcoxon test with a significance level of α = 0,05. The results showed that most of the respondents before the treatment suffered from grade 2 hypertension, as many as 21 people (52,5%) while after the treatment almost half of the respondents suffered from grade 2 hypertension, namely as many as 18 people (45,0%.) SPSS results with p = 0,000 and Z = -4,973 which means that there is an effect of giving Moringa infusion on reducing hypertension.

Based on the results of the study, it was shown that from 137 respondents the difference in blood pressure before the intervention of Moringa leaf extract (*Moringa oleifera* I) (Pretest) was 171 times while in counseling before being given treatment (Pretest) was 163 times. The average difference between Moringa leaf extract (*Moringa oleifera*) and Pretest Counseling is 8 times. The results of the statistical test using the paired t-test obtained the value of Sig. 0,94> 0,05. H0 is accepted which means there is no difference between Moringa leaf extract (*Moringa oleifera*) and the extension group. Thus, both groups were homogeneous and met the requirements for intervention research. Prior to the intervention, the majority of the samples were patients with hypertension, their average blood pressure was 180/100-190/110 MmHg.

After the intervention with the administration of Moringa leaf extract (*Moringa oleifera*), the results showed that of 137 respondents showed that the difference in Moringa leaf extract (*Moringa oleifera*) Pre-test was 142 times while at the Posttest it was 171 times. The average difference between the Moringa leaf extract (*Moringa oleifera*) Pretest and Post Test is 29 times. This indicates that Moringa leaf extract (*Moringa oleifera*) contains the presence of alkaloid compounds, flavonoids, tannins, and steroids that can lower blood pressure. The results of the statistical test using the paired t-test obtained the value of Sig. 0,018 < 0,05, H0 is rejected and Ha is accepted which means there is a difference in blood pressure when consuming Moringa leaf extract (*Moringa oleifera*).

Moringa leaf extract (*Moringa oleifera*) before being consumed by patients has passed an ethical clearance test so that it is feasible and lawful for consumption by patients with hypertension. 2 (two) capsules per day, morning and evening. After consuming the majority of respondents who were checked for blood pressure, their blood pressure decreased significantly.

The study [11] showed that the decrease in each concentration increases from the test sample to the blank indicated the presence of antioxidant activity in Moringa leaf acetone extract which could reduce hypertension. Moringa leaves are rich in potassium so that sodium levels in the blood can be controlled thereby lowering high blood pressure. The phytosterol content in Moringa leaves can also replace the role of bad cholesterol in the blood. By consuming Moringa leaves, blood flow becomes smooth so that the risk of deposition of substances that can cause high blood pressure can be avoided. Besides that, Moringa leaves are rich in potassium so that sodium levels in the blood can be controlled which has implications for reducing high blood pressure. The content of phytosterols in Moringa leaves can also replace the role of bad cholesterol in the blood.

In line [12] with the research entitled phytochemical screening and antioxidant activity test of Moringa leaf acetone extract (*Moringa oleifera*) which stated that the results of phytochemical screening of Moringa leaf acetone extract showed strong indications for lowering blood pressure.

According to [11] to show that Moringa leaves can lower blood pressure, this can happen because Moringa leaves contain vitamin A, vitamin C, vitamin B, calcium, potassium, iron, and protein, in very high amounts which are easily digested and assimilated by the human body. Traditional or non-pharmacological treatment of hypertension can use Moringa leaf extract or Moringa Aleifera Lam, Moringa trees can grow well in hot to tropical climates such as in Indonesia.[12]

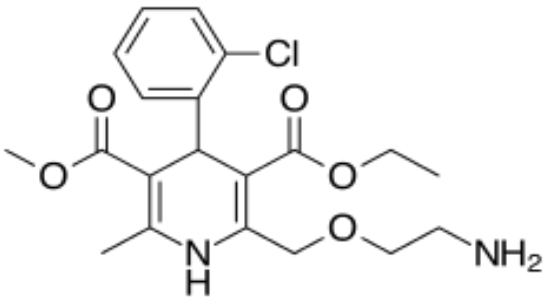
The study [13] showed that the systolic blood pressure in the intervention group before was 163,75 mmHg, the 5th (fifth) day was 151,25, the 10th day was 142.06 and the 14th day was 133.75. The mean diastolic blood pressure in the pre-

intervention group was 98.94, the 5th (fifth) day was 91.50, the 10th day was 85.31 and the 14th day was 83.25 by performing a multivariate repeated ANOVA test, the P value = 0.000. While the LDL value is 125.25 g/dL, HDL 56.69 g/dL, and triglycerides 151.25 g/dL using the unpaired T-test, the p-value = 0.001. so that Moringa leaf extract (*Moringa oleifera*) given to hypertensive patients with hypercholesterolemia in the form of captopril and simvastatin can reduce systolic blood pressure, diastolic blood pressure, LDL cholesterol, and triglycerides and increase HDL cholesterol.

According to the researchers, when conducting research at the PTM Posbindu, the Kendari City Mata Health Center Working Area, it showed that the majority of respondents had a history of high blood pressure and often took medication from a doctor. When the intervention was given by giving Moringa leaf extract (*Moringa oleifera*) for 2 (two) weeks, the results showed that the average respondent had normal blood pressure based on age, from 190/100MmHg to 140/90Mmhg.

Research [14] shows that the antihypertensive drug (Amlodipine) is one of the hypertension drugs (high blood pressure lowering) which is classified as a calcium antagonist. Calcium antagonists are intended to inhibit the entry of Ca ions into cells. Ca ions must be inhibited because if the level of Ca ions in cells increases, it can stimulate smooth muscle contractions thereby increasing the heart burden which can lead to hypertension, while Moringa leaf extract also contains calcium (Ca) of 1600-2200 mg whose function is to reduce blood pressure in hypertension.

Figure 1. Antihypertensive Chemical Drug Compound (Amlodiphin)



Conclusion

There is an effect of giving Moringa leaf extract (*Moringa oleifera*) on the incidence of hypertension in the working area of the Kendari City Mata Health Center with a mean value of 142, 05, or 142 times in the pre-test and the mean value in the post-test, which is 171.45 or 171 times with a mean difference between pre-test and 171. test and post-test that is 29 times. So that it is expected to be a motivation for the person in charge of the non-communicable disease program and health promotion at the Health Center, to further increase outreach activities both through print media such as brochures, leaflets, posters, pamphlets, and other interesting electronic media in order to increase public knowledge in preventing hypertension.

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