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The Effect of Noni Fruit on the Blood Pressure of Elderly Patients at TPMB (Midwife Independent Practice) T, Purwakarta Regency, Indonesia

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A B S T R A C T

The higher the life expectancy of the elderly, the more problems that arise in the elderly due to the aging process and degenerative problems that reduce the body's resistance. Hypertension is one of the leading causes of premature death worldwide and hypertension kills nearly 8 billion people every year worldwide. This study aimed to determine the effect of noni fruit on reducing blood pressure in the elderly in TPMB T, Purwakarta Regency, Indonesia. This study is experimental research with a one group pre-post-test approach and uses primary data, namely in the form of blood pressure measurements of research respondents. A total of 30 research subjects participated in this study, where the research subjects met the inclusion criteria. This study shows that the intervention of giving noni fruit extract is effective in lowering blood pressure. There was a decrease in blood pressure after administering noni fruit extract and it was stated to be statistically different, $p<0.05$. In conclusion, there is an effect of administering noni fruit extract on the blood pressure of elderly patients with hypertension at TPMB T, Purwakarta Regency, Indonesia.

1. Introduction

Hypertension, or high blood pressure, is a common health problem in the elderly. This condition can increase the risk of various serious diseases such as stroke, heart disease, and other circulation disorders. Therefore, managing blood pressure is very important in maintaining the health of the elderly. In addition to healthy lifestyle changes and medical treatment that may be necessary, there is also a role that the consumption of certain fruits can play in maintaining blood pressure in the elderly. One fruit that is now getting more and more attention is noni fruit. The elderly and individuals of all ages should have their blood pressure measured regularly, especially if they have risk factors for hypertension such as family history, unhealthy diet, lack of physical activity, or older age. Prevention is better than cure. Adopt a healthy lifestyle, such as consuming A balanced diet, avoiding excessive salt, exercising regularly, and managing stress, are steps that can help prevent hypertension. If a person is diagnosed with hypertension, effective management is essential. This can include medical treatment prescribed by a doctor and ongoing lifestyle changes. It is important to adhere to medical recommendations and monitor blood pressure regularly. Uncontrolled hypertension can increase serious risks such as heart attack, stroke, kidney damage, and circulation disorders. Therefore, managing high blood pressure well can prevent this potentially fatal complication.[1-3]

Noni fruit, which has the scientific name *Morinda citrifolia,* has been known in traditional medicine in

various cultures throughout the world. This fruit is renowned for its extraordinary health potential, especially in the management of hypertension. In the context of the elderly, the role of noni fruit in maintaining their blood pressure is an interesting topic to discuss. Several scientific studies have revealed various health benefits associated with consuming noni fruit, including its ability to reduce high blood pressure. Several active components in this fruit, such as compounds metabolites secondary and antioxidants, have the potential to influence the cardiovascular system in a positive way. In this case, noni fruit can help maintain blood pressure at a healthier level for the elderly. Noni fruit contains a number of active compounds, including iridoids, flavonoids, and polyphenols, which have been found to have antihypertensive properties. This compound can work in various ways to influence the cardiovascular system. Several studies have shown that noni fruit can act as a vasodilator, meaning it can help dilate blood vessels. This can help lower blood pressure because with wider blood vessels, blood flow becomes smoother, and blood pressure can decrease. The antioxidant content in noni fruit is also important in maintaining cardiovascular health. Antioxidants help fight oxidative damage to cells and blood vessels, which can help maintain blood vessel elasticity and prevent inflammation. Noni fruit can also help reduce oxidative stress in the body. Oxidative stress can damage blood vessel cells and worsen hypertension. By reducing oxidative stress, noni fruit can contribute to blood pressure management.[4-6] This study aimed to determine the role of noni fruit on blood pressure in hypertensive elderly in TPMB T, Purwakarta Regency, Indonesia.

2. Methods

This study is experimental research with a one-group pre-post-test approach and uses primary data, namely in the form of blood pressure measurements of research respondents. A total of 30 research subjects participated in this study, where the research subjects met the inclusion criteria. The inclusion criteria for this study were elderly patients diagnosed with hypertension at TPMB T, Karawang Regency, Indonesia. Make sure the patient has rested for at least 5 minutes before measurement. Avoid smoking or drinking caffeine at least 30 minutes before measurement, as this may affect the measurement results. The patient should sit comfortably in an upright position with the legs straight and the soles of the feet flat on the floor. The arm where blood pressure will be measured should be in a relaxed position and at the same level as the heart. Make sure the sphygmomanometer and stethoscope are in good condition and clean. The sphygmomanometer cuff should be strapped to the patient's arm, usually slightly above the elbow, and the cuff should be level with the heart. Close the air valve on the sphygmomanometer and then slowly blow air into the cuff until the cuff fills enough to stop blood flow in the arm artery. This is the air blockage stage. With the help of a stethoscope, place the diaphragm of the stethoscope over the brachial artery (usually on the inside of the elbow) and listen for the pulse. Then, slowly open the air valve on the sphygmomanometer so that air begins to escape from the cuff. Note the pressure when you first hear a clear pulse; this is the systolic pressure. Continue to monitor the pressure drop in the cuff. Note the pressure when the pulse sounds stop hearing; this is the diastolic pressure.

The noni fruit preparation used in this study is a commercial noni fruit extract that is already on the market and has received BPOM permission. Noni fruit extract is used routinely once a day for 14 days. Data analysis was carried out using SPSS version 25 software. Univariate and bivariate analyses were carried out in this study. Univariate analysis was carried out to present the frequency distribution of each test variable, and bivariate analysis was carried out to determine the relationship between the test variables, with a p-value <0.05.

3. Results and Discussion

Table 1 presents the effectiveness of the pre and post-test interventions. This study shows that the intervention of giving noni fruit extract is effective in lowering blood pressure. There was a decrease in blood pressure after administering noni fruit extract, and it was stated to be statistically different, p<0.05.

Table 1. Comparison of blood pressure before and after intervention.

Variable	Pre-test	Post-test	P-value*
Systolic blood pressure (mmHg)	153±11,23	127±11,51	0,001
Diastolic blood pressure (mmHg)	96±7,13	83±5,87	0,001

*T-test dependent, p<0,05.

Noni fruit contains iridoid compounds such as noni-ppt, dextrose acid, and acetic acid. Noni-PPT is a compound that has been found in noni fruit and has attracted research attention because of its antioxidant activity. This compound has been studied for its ability to help protect cells in blood vessels from oxidative damage. This can help maintain healthy blood vessels and prevent inflammation that can affect blood pressure. Dextrose acid is one of the compounds found in noni fruit that has attracted attention in health-related research. Meanwhile, acetic acid is an organic acid that can also be found in noni fruit. Both dextrose and acetic acid have been noted for their potential vasodilator effects, meaning they may help dilate blood vessels.[7-9]

Noni fruit contains various polyphenols, which belong to a group of bioactive compounds known to have strong antioxidant properties. The polyphenols in noni fruit, such as flavonoids, catechins, and quercetin, may provide various benefits for cardiovascular health, including a potential positive influence on blood pressure. Polyphenols are compounds that are effective against cell damage caused by free radicals and oxidative stress. This is important because oxidative damage can damage blood vessel cells, reduce their elasticity, and increase the risk of inflammation. By protecting blood vessel cells, polyphenols can help maintain a healthy cardiovascular system. Polyphenols have been linked to improving blood vessel elasticity. Elastic blood vessels can adapt to changes in blood pressure better, which can help reduce high blood pressure.[10,11]

Xeronin is one of the compounds that has been the focus of research in the context of noni fruit (*Morinda citrifolia*). This compound has attracted the attention of researchers because of its potential to influence the release of serotonin and endorphins in the body, which in turn can have a positive impact on health and blood pressure regulation. Serotonin is a neurotransmitter that has an important role in regulating mood and mood. Initial research shows that xeronin in noni fruit can stimulate the release of serotonin in the body. This can help increase feelings of well-being and relieve stress. Endorphins are natural compounds that act as natural analgesics and can help reduce pain and stress. Xeronin has also been linked to the potential to stimulate the release of endorphins, which can help relax the body and relieve tension. By stimulating the release of serotonin and endorphins, Xeronin can have a relaxing effect on the body. It can affect the cardiovascular system in positive ways, such as reducing high blood pressure. However, it is important to remember that more research is needed to better understand how xeronin specifically affects blood pressure and cardiovascular health.[12,13]

The scopoletin compound is one of the components found in noni fruit (*Morinda citrifolia*), which has attracted attention in research regarding its effect on blood pressure. This compound has been linked to potential vasodilator effects, meaning it can help dilate blood vessels, relax blood vessel muscles, and potentially lower blood pressure. Scopoletin is a

compound that is known to have vasodilator properties, which means it can help blood vessels widen. With wider blood vessels, blood flow becomes smoother, and this can help reduce blood pressure, especially high blood pressure. Scopoletin has also been associated with its ability to relax the muscles of blood vessel walls. When these muscles are more relaxed, blood pressure can decrease because the blood vessels become wider and more flexible. With its vasodilator and vascular muscle-relaxing effects, scopoletin has the potential to promote good blood circulation in the body. This can help reduce the workload on the heart and maintain a healthy cardiovascular system.[14,15]

4. Conclusion

There is an effect of administering noni fruit extract on the blood pressure of elderly patients with hypertension at TPMB T, Purwakarta Regency, Indonesia.

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