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THE EFFECT OF GINGER WARM WATER FOOT SOAK THERAPY ON BLOOD PRESSURE REDUCTION IN ELDERLY PATIENTS

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Abstract: *Hypertension is one of the main health problems in the elderly with an increasing and often uncontrolled prevalence. This condition can trigger serious complications such as stroke, heart disease, and impaired function of other organs, so proper management is needed. In addition to pharmacological therapies, nonpharmacological interventions such as hydrotherapy and complementary herbs are beginning to be considered as alternatives to help lower blood pressure. This study aims to evaluate the therapeutic effect of soaking feet in warm water with ginger on changes in blood pressure in the elderly with hypertension. The study used a case report design with two elderly respondents with hypertension, conducted for seven consecutive days in September 2025. Blood pressure was measured before and after daily therapy and then analyzed descriptively in the form of individual blood pressure changes. The results showed a decrease in blood pressure in both respondents after the intervention. In the first responder, the initial systolic blood pressure of 178 mmHg changed to 160 mmHg on day 5, and diastolic blood pressure from 96 mmHg to 98 mmHg after the last day of intervention, with fluctuations decreasing after each therapy session. In the second respondent, the initial systolic blood pressure of 166 mmHg decreased to [illegible] mmHg on day 5, while diastolic pressure dropped from 101 mmHg to 98 mmHg. These results show that ginger warm water foot soaking therapy has the potential to have an effect in lowering blood pressure in the elderly with hypertension.*

Keywords: *Hypertension, Elderly, Foot Soaking Therapy, Ginger Warm Water*

INTRODUCTION

Hypertension is one of the health problems that affects almost the entire human population (Mills et al., 2020). It is estimated that around 1.28% of people aged 30–79 years worldwide have hypertension (Alves et al., 2021). This disease falls into the category of non-communicable diseases that contribute to premature mortality (Gupta & Xavier, 2018). Hypertension is a clinical problem and a public health problem because it is often undiagnosed and not well controlled (Lukitaningtyas & Cahyono, 2023). The elderly are one of the groups that are greatly affected by hypertension problems (Arifin et al., 2016).

Hypertension can lead to various serious complications such as stroke, coronary heart disease, and kidney failure (Intari et al., 2025). Delays in the control of hypertension can worsen patients' conditions, especially in those who are elderly (Chen et al., 2025). Elderly people with hypertension are at high risk of experiencing a decrease in quality of life due to physical limitations arising from complications of the disease. Therefore, blood pressure control efforts are very urgent to be carried out from an early age (Apriliani, 2023).

Hypertension is defined as a persistent increase in blood pressure, with the criteria of systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg (Khasanah & Nurjanah, 2020). Systolic blood pressure indicates the maximum pressure when the heart pumps blood, while diastolic describes the minimum pressure when the heart is at rest (Efendi et al., 2025). Hypertension is often asymptomatic, so it is also called a silent killer (Fitriana, 2024). The elderly as an elderly age group are more prone to hypertension due to physiological changes in the cardiovascular

system (Yuniati & Sari, 2022). Hypertension has been proven to be the main risk factor for cardiovascular disease and mortality in the elderly (Kjeldsen, 2018).

Globally, the prevalence of hypertension continues to increase along with the increase in population and lifestyle changes (Gunadjaya et al., 2021). In 2000, about 972 million adults in the world were recorded to have hypertension, and this figure is projected to increase to 1.56 billion or about 60% of the adult population by 2025 (Forouzanfar et al., 2017). The prevalence of hypertension also differs by gender and age group. Women have a prevalence of 36.9%, while men are 31.3%. Based on age group, the prevalence at 18-24 years old was 13.2%, 20.1% at 25-40 years old, and at more than 75 years old it increased sharply to 69.5% (Debora et al., 2023).

As the number of elderly population increases, the prevalence of hypertension in this age group also continues to increase (Khotimah, 2023). Elderly people with hypertension have a higher risk of developing cardiovascular complications including stroke and kidney failure (Riyada et al., 2024). Hypertension treatment is a key factor to reduce the risk of complications (Andini et al., 2024). However, the elderly have limited access to medications, pharmacological side effects, and routine problems are often obstacles in controlling blood pressure. Therefore, complementary therapy can be an alternative option.

Previous research has shown that ginger warm water foot soaking therapy has a significant effect on lowering blood pressure in hypertensive patients (Muksin et al., 2023). The study used a quasi-experimental quantitative design with a pre-post test and control group, and involved 30 respondents. As a result, there was an average decrease in systolic blood pressure from 154.67 mmHg to 124.67 mmHg, as well as a decrease in diastolic blood pressure from 96.67 mmHg to 82.00 mmHg in the intervention group. However, the study was still limited to general patients, not specifically the elderly, and used a sizable sample size with a control group. This study tries to fill the gap by focusing on elderly patients, using a Pre-Experimental One Group Pre-Test Post-Test design with descriptive analysis and domain analysis.

RESEARCHMETHOD

This study uses the *Case Report* which aims to describe changes in blood pressure in hypertensive elderly after being given foot therapy soaking warm water with ginger. The research was conducted for five consecutive days in April 2025. During this period, each respondent was observed daily with blood pressure measurements before and after the intervention.

Two respondents were selected using *purposive sampling techniques* based on the inclusion and exclusion criteria that had been set by the researchers. The independent variable in this study was ginger warm water foot soaking therapy, while the dependent variable was changes in the respondents' systolic and diastolic blood pressure. Blood pressure measurements are carried out using a calibrated sphygmomanometer. Measurements were taken twice in each session (*pre-test* and *post-test*) for blood pressure values.

The intervention procedure is carried out with the following steps:

a) Ginger is boiled to a boil;
b) The water is cooled to a warm temperature that is safe and tolerable by the respondent.
c) Both respondents' feet were soaked up to the ankle area for 15-20 minutes.
d) After the intervention is complete, blood pressure is measured again.

RESULTS AND DISCUSSION

Table

This study involved two elderly respondents with hypertension who were female. The results of pre-Test and post-Test systolic and diastolic blood pressure measurements for seven consecutive days can be seen in Table 1. The graph of the measurement results is presented in Figure 1.

Table 1 Blood Pressure Measurement Results of Elderly Respondents with Hypertension *Pre-Test* and *Post-Test* for Five Days

Respondents	Day	*Pre* Systolic (mmHg)	*Post* Systolic (mmHg)	*Pre* Diastolic (mmHg)	*Post* Diastolic (mmHg)
1	1	178	175	96	90
	2	175	169	110	100
	3	168	168	98	80
	4	176	176	102	98
	5	168	160	98	98
2	1	166	160	101	96
	2	160	150	110	100
	3	162	158	101	94
	4	159	149	100	92
	5	161	152	101	98

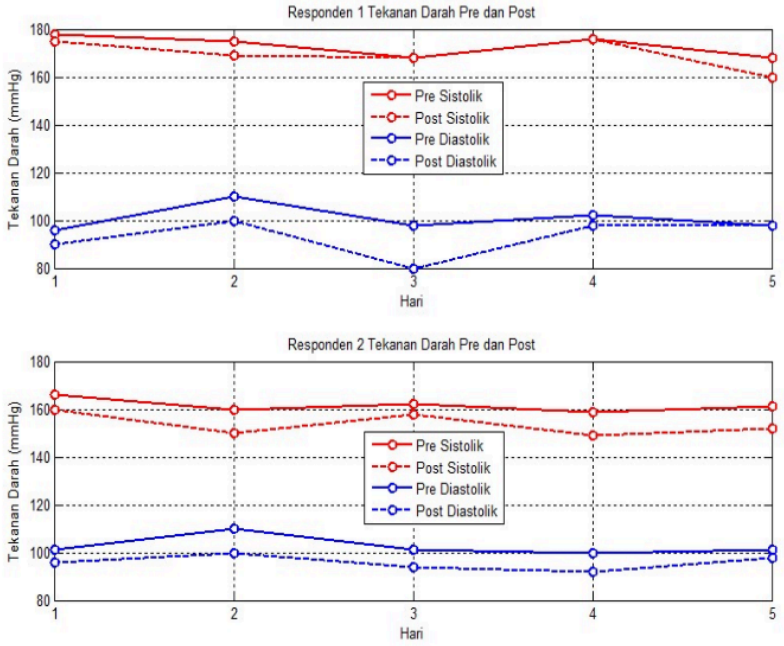

Figure 1. Systolic Blood Pressure *Pre* and *Post Test*

Measurements were taken on systolic and diastolic blood pressure before (*pre-Test*) and after (*post-Test*) intervention for five days. The measurement results in the form of mean values, number of respondents (N), minimum values, and maximum can be seen in Table 2.

Table 2 Distribution of Blood Pressure Frequency Before and After Giving Ginger Warm Water Foot Soaking Therapy in Hypertensive Elderly Patients

Variable	*Mean*	N	Minimum	Maximum
Pre-Systolic	167,3	3	159	178
Pre-Diastolic	101,7	3	96	110
Post- Systolic	161,7	3	149	176
Post-Diastolic	94,6	3	80	100

Discussion

Analysis of Blood Pressure Pattern Domains Against *Pre* and *Post Tests*

Based on pre *and* post *systolic blood pressure graphs* in two hypertensive elderly respondents during five days of ginger warm water foot soaking intervention, there was a pattern of varied changes as shown in Figure 2. In Figure 2, it can be seen that in Respondent 1, *the* pre-Test systolic blood pressure was in the range of 168-178 mmHg, while *the* post-Test value showed a lower pattern on most measurements. Decreases were seen on day 1 (178 to 175 mmHg), day 2 (175 to 169 mmHg), and day 5 (168 to 160 mmHg). On the 3rd and 4th days, *the* pre-Test and post-Test values were at the same number (168 and 176 mmHg) indicating that there was no change on the day. This pattern simply*presents* that therapy can provide a stabilizing and lowering effect on blood pressure, although it does not occur consistently.

In Respondent 2, the decline pattern was more pronounced and stable than in Respondent 1. Almost all days of measurement, *the* post-Test score was lower than the *pre-Test score*. For example, day 1 (166 to 160 mmHg), day 2 (160 to 150 mmHg), day 3 (162 to 158 mmHg), day 4 (159 to 149 mmHg), and day 5 (161 to 152 mmHg). The decrease was in the range of 3-10 mmHg, which explains the consistent response to therapy.

Then, based on Figure 2, it also showed diastolic blood pressure in both respondents, where there was a variation in the pattern of decline after soaking the feet in warm ginger water.

In Respondent 1, diastolic blood pressure *Pre Test* is in the range of 96-110 mmHg. On some days, the therapy results in a fairly good decrease, such as on the first day (96 to 90 mmHg) and the third day (98 to 80 mmHg). On the 2nd and 4th days there was also a decrease, namely from 110 to 100 mmHg and from 102 to 98 mmHg. On day 5, the *pre-Test* and *Post-Test* is at the same value of 98 mmHg so it does not show any change. When you look at the pattern, it shows a fluctuating response but still provides a significant decrease, especially on the third day which shows the greatest decrease.

In Respondent 2, the pattern of decrease in diastolic blood pressure appeared to be more consistent than in Respondent 1. The initial diastolic blood pressure was in the range of 100-110 mmHg, while *the* post-Test value was in the lower range of 92-100 mmHg. Decreases were seen on day 1 (101 to 96 mmHg), day 2 (110 to 100 mmHg), day 3 (101 to 94 mmHg), and day 4 (100 to 92 mmHg). On day 5, there was a slight decrease from 101 to 98 mmHg, and remained below the *pre-Test value*. This pattern shows that respondents experience a fairly stable diastolic decline every day, indicating a more regular physiological response to therapy.

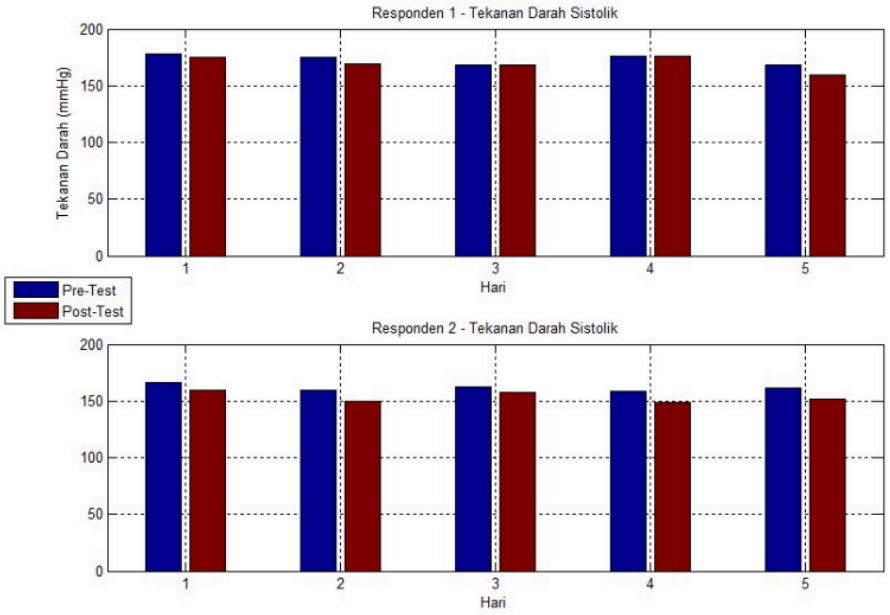

Figure 2. Comparison of *Pre-Post Test Interventions* of the Two Respondents

Analysis of the Effect of Ginger Warm Water Foot Soaking Therapy on Blood Pressure Reduction in Elderly Patients

Based on Table 2, the results of the study in the intervention group with three elderly respondents with hypertension obtained an average systolic blood pressure before being given ginger warm water foot soaking therapy of 167.3 mmHg, while the average systolic after being given therapy decreased to 161.7 mmHg. The average diastolic blood pressure before therapy was 101.7 mmHg and after therapy decreased to 94.6 mmHg. Although the sample size is relatively small, these results show a difference in the average blood pressure before and after the intervention with a tendency to decrease especially in diastolic blood pressure.

Hypertension is a condition of persistently increased blood pressure, which according to WHO is defined as systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg in adults (Khasanah & Nurjanah, 2020). In old age, hypertension is more common due to changes in the elasticity of blood vessels and degenerative processes. In this study, non-pharmacological interventions such as soaking their feet in warm ginger water were expected to help reduce their blood pressure.

Several factors can affect the blood pressure of the elderly, both internal and external factors. Internal factors include age, gender, and genetics, while external factors include stress, a high-salt diet, obesity, smoking habits, and physical activity (Setiawan & Azizah, 2023). Physiologically, warm water can provide a vasodilating effect, decrease blood viscosity, and increase blood flow to the periphery. This is in accordance with the theory that exposure to warm water will stimulate receptors in the legs which then activate the parasympathetic nerve, resulting in a decrease in blood pressure (Muksin *et al.*, 2023). The addition of ginger to the soaking water also provides pharmacological effects because the gingerol content is a vasodilator and a mild anticoagulant that helps facilitate blood circulation (Muksin *et al.*, 2023).

The results of this study are in line with the research of Muksin *et al.* (2023) which found that ginger warm water foot soaking therapy had a significant effect on lowering blood pressure in hypertensive patients, although the sample count was larger in the study and used a control group. The difference with this study is that the number of respondents was limited (n=2) and only the intervention group was used.

Nevertheless, the trend of decreasing blood pressure remains visible, especially at diastolic values. It found that ginger warm water foot soaking therapy remains potential as a non-pharmacological intervention to help lower blood pressure in the elderly, although further research with larger sample sizes is still needed.

CONCLUSION

Based on the results of a study with a seven-day intervention of ginger warm water foot soaking in three elderly hypertensive respondents, it was found that there was a tendency to decrease blood pressure, especially at diastolic pressure. The mean value of systolic blood pressure decreased from 167.3 mmHg to 161.7 mmHg, while the mean value of diastolic blood pressure decreased from 101.7 mmHg to 94.6 mmHg. Domain analysis showed a different pattern of decline in each respondent, but in general there was improvement after the intervention. It found that ginger warm water foot soaking therapy has the potential to be one of the non-pharmacological alternatives in helping to lower blood pressure in the hypertensive elderly.

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