# THE EFFECT OF WARM WATER FOOT SOAK THERAPY ONREDUCING *FATIGUE* IN PATIENTS WITH HYPERTENSIONIN THE WORK AREA JAKENAN HEALTH CENTER

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**Abstract**
Hypertension is a condition where the increase in systolic is a few mm Hg from the normal normal blood pressure and the diastolic increase is a few mm Hg from the initial blood pressure. Hypertension causes various kinds of symptoms, one of which is fatigue, which if not treated immediately will affect a person's quality of life. Handling hypertension itself can be done pharmacologically, namelyby using drugs or non-pharmacologically, one of which is warm water foot soak therapy. The workingsof warm water foot soak therapy is by conduction where there is a transfer of heat or warmth from thefeet to the rest of the body which will dilate blood vessels thereby providing a relaxing effect which can reduce fatigue levels. This study aims to determine the effect of warm water foot soak therapy on reducing fatigue in patients with hypertension in Jakenan puskesmas work area. This type of research is quasi-experimental, the research sample was taken using a purposive sampling technique, data collection was carried out using the FACIT (Functional Assessment Chronic Illness Therapy) Fatigue Scale instrument. The results of the study obtained a p value of 0.000 (p <0.05) which means that thereis a significant effect of warm water foot soak therapy on reducing fatigue in patients with hypertensionin Jakenan puskesmas work area. It can be concluded that the level of fatigue or fatigue experienced by hypertension sufferers in Jakenan puskesmas work area decreased after being given warm water foot soak therapy.

**Key words: [***Hypertension, Fatigue, Warm Water Foot Soak Therapy***]**

## INTRODUCTION

Hypertension is one of the most common cardiovascular diseases and often found in society . The Ministry of Health of the Republic of Indonesia (2019) stated that currently hypertension is a major problem not only in Indonesia but also in the world because hypertension is one of the entry points for various diseases such as kidney failure, diabetes, stroke, heart disease (Pratama et al., 2020) . Hypertension or what is usually called high blood pressure is a condition where the systolic increase is a few mmHg from the original blood pressure which is usually normative and the diastolic increase is a certain number of mmHg from the original blood pressure (Ainurrafiq et al., 2019) .

Data from *the World Health Organization* (WHO) in 2018 shows that hypertension attacks 22% of the world's population. Southeast Asia is the region that ranks third in the world with the highest prevalence of hypertension, namely 25% of the total population (Ministry of Health of the Republic of Indonesia, 2019) . In Thailand, 17% of hypertension cases were found from the total population, Vietnam 34.6%, Singapore 24.9%, Malaysia 29.9% and Indonesia 15%. 15% of Indonesia's 230 million population means that almost 35 million Indonesians are affected by hypertension (Elvira & Anggraini, 2019) . From the results of Basic Health Research (Riskesdas) in 2018, the prevalence of hypertension in Indonesia was 34.1%. This figure has increased quite significantly compared to the results of Riskesdas in 2013 which stated that the incidence of hypertension in Indonesian society was 25.8% (Maskanah et al., 2019) .

Based on data from Riskesdas in 2018, the prevalence of hypertension in Central Java province was 37.57% (Central Java Provincial Health Office, 2021) . In 2021, the Pati District Health Service showed that the number of hypertension sufferers aged over 15 years reached 101,579 people and the highest number of hypertension cases was in Jakenan District with 13,501 people. This figure has increased when compared with data from the Pati District Health Service in 2020 which shows the incidence of hypertension in the Jakenan area was 10,140 people (Pati Health Service, 2021) .

*The American Heart Association* (AHA) in the Ministry of Health in 2018 stated that hypertension is a *"Silent Killer"* where the symptoms vary greatly in each individual and are almost the same as other diseases (Telaumbanua & Rahayu, 2021) . Symptoms that appear in hypertension sufferers include dizziness, blurred vision, and pain in the nape and neck (Isnaini & Purwito, 2019) . Apart from these symptoms, fatigue *is* one of the clinical manifestations that often appears in hypertension sufferers (Wang et al., 2010 in Lainsamputty, 2020) . In a study conducted by Tartavoulle et al., (2018) it was stated that in hypertension sufferers, the prevalence of fatigue was generally found to be 60%, physical fatigue 55.8%, and mental fatigue 32.5% (Lainsamputty et al., 2021 ) .

*Fatigue* or tiredness in hypertensive patients generally occurs because high blood pressure in hypertensive patients can cause the heart to enlarge so that the heart is unable to push blood to circulate throughout the body, resulting in a buildup of blood in several tissues such as the lungs, which can cause Hypertension sufferers experience shortness of breath. This can result in oxygen needs not being met properly, causing disruption of blood circulation which causes a buildup of metabolic waste in the legs which ultimately causes complaints of *fatigue* (Santoso et al., 2022) .

The negative impact of *fatigue* itself is a decrease in heart function and quality of life (Utami et al., 2019) . Apart from that, *fatigue* also causes rest disorders which can affect the quality of life (Putra & Darliana, 2021) . In research conducted by Georgios et al., (2015) it was stated that hypertensive patients who had higher levels of fatigue tended to have a worse quality of life (Lainsamputty et al., 2021) . Continuous *fatigue will weaken the body and reduce the body's ability to function and cause disruption to a person's physical activity, therefore fatigue* or tiredness in hypertension sufferers must be treated immediately to minimize other negative impacts (Matura, 2018) .

Handling or managing hypertension itself can be done in 2 ways, namely with pharmacological and non-pharmacological therapy. Non-pharmacological management of hypertension can be chosen to avoid drug side effects by carrying out various types of therapy such as progressive relaxation techniques, music therapy, diet therapy, exercise, yoga and hydrotherapy or soaking the feet in warm water (Triyanto, 2014) . Soaking your feet in warm water is a technique that is quite easy for everyone to do. Warm water foot soak therapy can stimulate the adrenaline hormone and widen blood vessels so that blood circulation becomes smooth and fast and eases the function of the heart in pumping blood throughout the body (Mardiana & Andari, 2022) . Increased blood circulation due to widening of blood vessels has a relaxing effect on the entire body so that it can reduce fatigue (Ernawati & Maulana, 2015).

This is in line with research conducted by (Aswir & Misbah, 2018) with the title "Analysis of Nursing Practices in CKD ( *Chronic Kidney Disease* ) Patients with Warm Water Foot Soak Intervention on Fatigue Levels in the Hemodialysis Room at Abdul Wahab Sjahranie Hospital Samarinda in 2018" which states that the level of fatigue in clients in the hemodialysis room has decreased as seen from the client's response. He seemed more comfortable after the warm water foot soak therapy and the results of the *fatigue scale questionnaire* showed a decrease in the fatigue score from 40 to 34.

From the results of a preliminary study conducted by researchers in the working area of the Jakenan Community Health Center, Pati Regency, it was found that the number of hypertension sufferers aged over 15 years was 225 people, some of whom complained of experiencing *fatigue* or tiredness. From the results of this preliminary study, respondents said they had never done warm water foot soak therapy to reduce *the fatigue* they felt.

Based on the background description above, considering the high incidence of hypertension cases in Indonesia and the impacts caused by hypertension itself, one of which is *fatigue* and previous research regarding warm water foot soak therapy which has been proven to reduce the level of *fatigue* in patients. Heart Failure and CKD ( *Chronic Kidney Disease* ) and research has never been conducted on warm water foot soak therapy to reduce *fatigue* in patients with hypertension, so researchers are interested in taking the title "The Effect of Warm Water Foot Soak Therapy on Reducing *Fatigue* in Patients with Hypertension".

## METHODS

This type of research uses approach quantitative with method experiments using design *one group pre -post test design* . The sampling technique used *the purposive sampling* method , the population in this study was 225 people and the sample was 45 respondents. This research was conducted in the work area Public health center Jakenan in April -May 2023. Data collection used the *FACIT Fatigue Scale*

instrument which consists of 13 statement items . In this research Univariate and bivariate analysis using the *Wilcoxon test.*

## RESULTS AND DISCUSSION

### *Univariate Analysis*

a. *Fatigue* Scale Before Intervention

**Table 4.6**
***Fatigue* Scale Mean**
**Before giving Warm Water Foot Soak Therapy**
**in the Jakenan Community Health Center Working Area (N = 45)**

| Variable | N | Mean | elementary school | Min-Max |
|---|---|---|---|---|
| Intervention Fatigue Scale | 45 | 10.24 | 3,399 | 6-23 |

Based on table 4.6, it shows that the *fatigue scale* for patients suffering from hypertension in the Jakenan Health Center Working Area before being given warm water foot soak therapy was an average of 10.24, which means the patient experienced severe *fatigue* .

b. Fatigue Scale After Intervention

**Table 4.7**
***Fatigue* Scale Mean**
**Se has been given Warm Water Foot Soak Therapy**
**in the Jakenan Community Health Center Working Area (N = 45)**

| Variable | N | Mean | elementary school | Min-Max |
|---|---|---|---|---|
| Post-Intervention Fatigue Scale | 45 | 39.49 | 7,996 | 31-52 |

Based on table 4.7, it shows that the *fatigue scale* of patients suffering from hypertension in the Jakenan Community Health Center Work Area After being given warm water foot soak therapy the average was 39.49, which means the patient experienced mild *fatigue* .

### *Bivariate Analysis*

**Table 4.8**
**The Effect of Warm Water Foot Soak Therapy**
**Towards Reducing *Fatigue* in Patients with Hypertension in the Jakenan Community Health Center Working Area (N = 45)**

| Variable | Fatigue Scale | | *p* value |
|---|---|---|---|
| | Frequency | Percentage (%) | |
| Pre-Test | 45 | 100% | 0,000 |
| Post-Test | 45 | 100% | |

Based on table 4.8 above, it shows that the difference in the *fatigue scale* before and after being given warm water foot soak therapy with a statistical test using the *Wilcoxon test* obtained *a p* value on *the fatigue scale* of 0.000 ($p < 0.05$) so that $H_1$ is accepted and $H_0$ is rejected which can be concluded that there is an influence warm water foot soak therapy to significantly reduce *fatigue in patients with hypertension in* the Jakenan Community Health Center Working Area.

**Fatigue Scale Before Warm Water Foot Soak Therapy**

Based on the results of research conducted on 45 hypertensive patients, it is known that the average *fatigue scale* before being given the warm water foot soak therapy intervention was 10.24, which means that the patient experienced severe *fatigue* .

Sleep disorders experienced by patients with hypertension, especially the elderly, can also influence the occurrence of *fatigue* because poor sleep quality causes physical effects in the form of *fatigue* , muscle pain, worsening hypertension, blurred vision, and reduced concentration or unfocus (Aspiani, 2014). Based on the research results, *the fatigue* experienced by respondents before carrying out warm water foot soak therapy was categorized as severe *fatigue* because all respondents received *fatigue scale scores* below 30, where a score range of less than 30 indicates severe fatigue (Sihombing et al., 2016) . Severe *fatigue* is a condition that describes a fairly severe condition of fatigue characterized by feeling tired, weak, lethargic, or very tired, very difficult to start something, little or no energy, and even very much needing help to carry out activities ( Sihombing et al., 2016) .

In the FACIT *Fatigue Scale questionnaire* , the range of fatigue scale values is between 0-52, where the higher the value obtained, the better the quality of life, which means fatigue also decreases, and vice versa, if the lower the value obtained, the quality of life will also improve. worsens, which means the fatigue felt is also getting worse (Sihombing et al., 2016) . Based on the research results, of the 45 respondents, 31 of them got scores in the 5-10 range, 11 people got scores in the 11-15 range, 1 person got a score in the 16-20 range, and 2 people got scores in the 21-20 range. 30. This shows that all respondents before the warm water foot soak therapy experienced severe *fatigue* even though they were in different score ranges. This is supported by the respondent's statement in the warm water foot soak therapy pre-intervention questionnaire where in the first question code which stated "I feel tired" the majority of respondents gave a check mark or their choice in the "very much" column, which means that before doing the foot soak therapy warm water, the majority of respondents experienced *fatigue* or severe fatigue, characterized by feeling very tired.

**Fatigue Scale After Warm Water Foot Soak Therapy**

After being given warm water foot soak therapy, the average *fatigue scale* was 39.49, which means that the patient experienced mild *fatigue* . Soaking your feet in warm water is a process that stimulates the nerves in your feet to work, and functions to dilate blood vessels and improve blood circulation. The main basis for using warm water for treatment is the hydrostatic and hydrodynamic effects (Hembing, 2015). The hydrostatic pressure of water on the body encourages blood flow from the legs to the chest cavity and the blood will accumulate in the large blood vessels of the heart. Warm water will encourage the enlargement of blood vessels and increase heart rate. This effect occurs quickly after warm water foot soak therapy is given. The working principle of this therapy will cause dilation of blood vessels which will affect arterial pressure by baroreceptors in the cortical sinus and aortic arch which will convey impulses carried by nerve fibers which carry signals from all parts of the body to inform the brain and provide sufficient oxygen regarding lowering levels. *fatigue* or exhaustion (Aswir & Misbah, 2018) .

Based on the research results, the *fatigue scale* , which was initially heavy, decreased to light after giving warm water foot soak therapy to hypertension sufferers in Tambahmulyo village. From the research instrument that researchers used to determine the level of fatigue of respondents, namely the FACIT *Fatigue Scale,* it was found that the score changes were quite significant, where all respondents who initially experienced severe *fatigue* with a score below 30 with a range of different values experienced a change to mild *fatigue* with a score above 30. Sihombing et al (2016) in their research regarding the Validation of the FACIT Fatigue Scale Questionnaire in Chronic Kidney Disease Patients Undergoing Routine Hemodialysis stated that the higher the value or score obtained, the better the quality of life, which means the level of fatigue will decrease (Sihombing et al. ., 2016) .

Based on the research results, of the 45 respondents (100%) who initially experienced severe *fatigue* with a score below 30 with a range of different values, it changed to mild *fatigue* where 19 people scored in the range of 31-35, 10 people scored in the range of 31-35. the score range was 36-40, and 16 people got scores in the 41-52 range. Even though the level of *fatigue* has decreased, the difference in scores obtained by each respondent shows that the fatigue experienced is different even though it is still in the same category. This is proven in the FACIT *Fatigue Scale questionnaire* which researchers use to measure the level of fatigue of respondents where respondents who have a higher score have a better quality of life because of the 13 questions available, the majority of respondents after being given warm water foot soak therapy stated feeling tired, feeling tiredness, feeling lethargic and difficulty starting something that at first was felt to be a lot reduced to little or even nothing. This shows that warm water foot soak therapy has an effect on reducing the level of *fatigue* in patients with hypertension.

**The Effect of Warm Water Foot Soak Therapy on Reducing *Fatigue* in Patients with Hypertension**

Based on the research results, *a p value of* 0.000 (p<0.05) was obtained on the *fatigue scale* , which means that there is a significant effect of warm water foot soak therapy on reducing *fatigue* in patients with hypertension. This research is in line with research by Aswir and Misbah (2018) regarding the analysis of nursing practices in CKD ( *Chronic Kidney Disease* ) patients with warm water foot soak intervention on fatigue levels in the Hemodialysis room at Abdul Wahab Sjahranie Hospital, Samarinda with the results that there was a significant effect of foot soak therapy. Warm water reduces *fatigue* in CKD ( *Chronic Kidney Disease* ) patients.

Based on the research results, 100% (45 respondents) experienced severe *fatigue* before carrying out warm water foot soak therapy, after carrying out warm water foot soak therapy 100% (45 respondents) experienced a decrease in the *fatigue scale* so that they became mild *fatigue* . This is supported by research conducted by Mardiana and Andari (2022) entitled Reducing *Fatigue Scale* for Heart Failure Patients in the Jalan Gedang Bengkulu Public Health Center Working Area wit h Warm Ginger Water Foot Soak Therapy. In this study, the results showed that before doing the warm ginger water foot soak, all patients experienced a severe level of *fatigue scale* (100%) whereas after doing the foot soak with warm ginger water, all patients experienced a mild level of *fatigue scale* (100%) with the average *fatigue scale* before soaking their feet in warm ginger water at 21.33 and the average *fatigue scale* after soaking their feet in warm ginger water was 43.73, resulting in a decrease *Fatigue* scale for heart failure patients in the Jalan Gedang Bengkulu Community Health Center Working Area with warm ginger water foot soak therapy was very effective with *a p value of* 0.000<0.05.

Scientifically, warm water has a physiological impact on the body, firstly it has an impact on blood vessels where the warmth of the water makes blood circulation smooth, secondly it is a loading factor in the water which will strengthen the muscles and ligaments that affect the body's joints (Lalage, 2015). In a study conducted by Nurhasanah & Khumaidi (2020), it was found that after respondents were given warm water foot soak therapy in a basin/bucket filled with warm water at a temperature of 38°-40° C for 15 minutes in the morning for 3 consecutive days -It will also stimulate the hormone adrenaline and widen the blood vessels so that blood circulation will be smooth and fast (Nurhasanah & Khumaidi, 2020).

Smooth blood circulation will influence arterial pressure by baroreceptors in the cortical sinus and aortic arch which will convey impulses carried by nerve fibers that carry signals from all parts of the body to inform the brain about blood pressure, blood volume and the special needs of all organs to the nerve center. sympathetic to the medulla so that it will stimulate systolic pressure, that is, stretching of the ventricular muscles will stimulate the ventricles to immediately contract. At the beginning of the contraction, the aortic valve and semilunar valve have not yet opened. To open the aortic valve, the pressure inside the ventricle must exceed the aortic valve pressure. A condition where ventricular contractions begin to occur so that by widening the blood vessels, blood flow will be smooth so that it will be easier to push blood to the heart, thereby reducing systolic pressure. In diastolic pressure, a state of isovolemic ventricular relaxation when the ventricles relax, the pressure in the ventricles drops drastically, blood flow is smooth with the dilation of blood vessels which will reduce diastolic pressure (Batjun MT, 2015).

The decrease in blood pressure, both systolic and diastolic, due to widening of blood vessels, which ultimately makes blood circulation smooth, also has an effect on reducing the *fatigue scale* experienced by patients with hypertension because the widening of blood vessels will affect arterial pressure by baroreceptors in the cortical sinus and aortic arch, which will convey impulses carried by nerve fibers that carry signals from all parts of the body to inform the brain and provide sufficient oxygen to reduce fatigue levels (Aswir & Misbah, 2018).

*the fatigue* scale in hypertensive patients was shown by patients who looked more relaxed and comfortable and more enthusiastic in their daily activities than before because the feeling of fatigue experienced by patients decreased after carrying out warm water foot soak therapy for 3 consecutive days. This can be proven from the FACIT *Fatigue Scale questionnaire* used by researchers to measure the level of fatigue of respondents where of the 45 respondents before the warm water foot soak therapy, 35 people said they felt very tired, 8 people said they felt quite tired, and 2 people said they felt very tired. moderate fatigue. Then, after being given warm water foot soak therapy, of the 45 respondents, 15 people said they were not tired at all, 27 people said they felt a little tired, and 3 people said they felt

moderately tired. Based on this, it can be concluded that after carrying out warm water foot soak therapy the level of *fatigue* experienced by patients with hypertension decreased quite significantly.

The effect of warm foot soak therapy on reducing *fatigue* in patients with hypertension is also due to the effect of water's hydrostatic pressure on the body which encourages blood flow from the feet to the chest cavity so that blood accumulates in the large vessels of the heart (Utami et al, 2019). Widening blood vessels will increase blood circulation which will have a relaxing effect on the entire body so that it can reduce fatigue *(* Ernawati & Maulana, 2015).

## CONCLUSION

There is a significant effect of warm water foot soak therapy on reducing *fatigue* in patients with hypertension in the Jakenan Community Health Center Work Area proven with where are the Wilcoxon test results ? obtained *p value* 0.000 ($p < 0.05$) so that $H_a$ is accepted and $H_0$ is rejected.

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