

## Effectiveness of Hydrosion Therapy (Hydrotherapy and Benson) and Dhikr Relaxation Therapy on Hemodynamic Function in the Elderly

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### ABSTRACT

**Background:** The non-communicable diseases that affect seniors the most frequently. In a pandemic like the one we currently have, complementary therapy is necessary as a support for medical therapy. Smooth blood circulation is achieved by hydrotherapy-soaked feet, Benson's relaxation, and dhikr create a state of calm, which increases endorphin hormones, increases vascular vasodilation and lowers blood pressure, improves pulse rate, and increases oxygen saturation. The effects of hydrosion treatment and dhikr relaxation therapy on older patients' hemodynamic function.

**Method:** The sample size for this quasi-experimental study, which includes 38 senior Muslims with hypertension and a pre- and post-test design without a control design, is 38. paired T-test and Wilcoxon bivariate analysis.

**Results:** A P value of 0.000 indicated a difference in systolic blood pressure between before and after hydrotherapy and Benson intervention with dhikr. Before and after hydrotherapy and Benson's intervention with dhikr, there was a difference in diastolic blood pressure with a P value of 0.032. With a P value of 0.221, there was no difference in pulse frequency between before and after receiving hydrotherapy and Benson treatments with dhikr. Before and after hydrotherapy and Benson intervention with dhikr, there are variations in oxygen saturation with a P value of 0.004.

**Conclusion:** Hydrosion treatment and dhikr relaxation therapy are useful for improving older patients' hemodynamic function by reducing blood pressure and raising oxygen saturation levels. But the frequency of the pulse is unaffected.

### INTRODUCTION

In Indonesia, Non-Communicable Diseases (NCDs) account for up to 64% of all fatalities and are on the rise. Cardiovascular illness (30%), cancer (13%), respiratory disease (7%), diabetes mellitus (3%) and other NCDs (10%) account for the majority of NCDs. For the

past ten years, cardiovascular disease (heart, stroke, and hypertension) has been the leading cause of death. (data on the health profile of the Special Region of Yogyakarta in 2012). NCDs is a hazard that needs to be taken seriously, especially when promoting healthy lifestyles to help people lower NCDs risk factors (Trisnowati, 2018).

Elderly hypertension shows the highest prevalence at the age of over 65 years between 60-80% with a mortality of around 50% over the age of 60 years (Riskesdas, 2018). Hypertension should not be ignored, especially by the elderly because it can increase the risk of death and complications, basically, hypertension can be controlled pharmacologically and non-pharmacologically. Pharmacological management is by administering diuretics, ACE inhibitors,  $\beta$ -blockers,  $\alpha$ -blockers, and arteriolar vasodilators. Non-pharmacological management includes dietary changes to include a high potassium, low salt diet, physical activity, and complementary therapy. This therapy is a natural treatment such as herbal therapy, nutritional therapy, progressive relaxation, meditation, laughter therapy, acupuncture, acupressure, aromatherapy, reflexology, and hydrotherapy (Umemura et al., 2019). It also includes complementary therapies such as hydrotherapy and reflexology. (Dalimartha, 2008). Water is used as the treatment and healing medium in hydrotherapy. The blood circulates more easily and the nerves in the feet that supply the body's critical organs, such as the heart, lungs, stomach, and pancreas, can be

stimulated by hydrotherapy, which involves bathing the feet in warm water at 40 to 42 degrees Celsius for about 20 minutes. (Mataputun et al., 2020).

Benson's relaxation therapy is a complementary therapy that can be used to manage hemodynamics in addition to hydrotherapy (Ratnawati et al., 2018). Benson's relaxation therapy is a complementary therapy and a modality that uses formulations of particular words or sentences that are read repeatedly and regularly to induce a stronger relaxation response. These formulations include elements of faith and belief. In Benson's unwinding treatment, the breathing system is the cycle by which  $O_2$  enters through the upper respiratory tract, then, at that point, enters the lungs (bronchi) and is helped all through the body through the veins and courses so  $O_2$  needs are met. Humans are in a state of equilibrium if the brain's  $O_2$  requirements are met. In most cases, humans will experience a relaxed state as a result of this condition. Corticotropin Releasing Factor (CRF) is produced by the hypothalamus as a result of feelings of relaxation. The adrenal medulla's production of enkephalin rises as a result of CRF activating the pituitary gland to produce more Proopiomelanocortin

(POMC). The pituitary organ additionally creates  $\beta$ -endorphins as synapses which influence the temperament to unwind (Rateau, 2019). According to Benson and Klipper (1975) Benson's relaxation is done by doing a long inspiration which will slowly stimulate the lung stretch receptors due to lung inflammation. This situation provides a signal which is then sent to the medulla oblongata which will provide information about increased blood flow. This information will be passed on to the brainstem, as a result the parasympathetic nerves experience increased activity and the sympathetic nerves experience decreased activity on the chemoreceptors, so that an increase in blood pressure and lung inflammation will reduce the frequency of heart rate and cause vasodilation in a number of blood vessels (Stang, 2022).

According to a number of Herbert Benson studies, a person's mental strength plays a significant role in helping them recover from various illnesses. Benson showed that truth be told spells, to be specific sure equations that are perused over and over again, fix different infections, particularly hypertension and coronary illness (Murwidi & Abdullah, 2019). In Islam, a sentence that can be perused over and over is dhikr. The phrases "laa ilaha

illallah," "astaghfirullah," and "subhanallah" are included in these dhikr sentences. The believing Muslims have the right to receive angelic care, an outpouring of mercy, peace, and simultaneously become the pride of Allah SWT the more intensely they perform dhikr as part of fulfilling the commands of the Qur'an (Septiawan & Idris, 2021).

Based on Sudiartawan's research on the efficacy of foot soak hydrotherapy in lowering blood pressure of hypertensive patients in Dauharu Jembrana Village with a one group pretest-posttest experimental research design without a control group. For 37 respondents with hypertension, the treatment consisted of 20 minutes of hydrotherapy in which the feet were immersed in water as deep as 25 centimeters. Data analysis using Paired T-Test and descriptive test. The results showed that the results of the T test obtained a probability value (2-tailed) of  $0.000 < 0.01$ . So that there is a very significant difference in blood pressure before and after being given foot soak hydrotherapy therapy, with a decrease in systolic blood pressure of 124.3 mmHg and diastolic blood pressure of 0.62.2 mmHg (Sudiartawan & Adnyana, 2022).

Based on Cahyati's research on the effect of Benson's relaxation and aromatherapy on glucose levels. This type of research is quantitative with quasi-experiments. Designed the pre and post-test and used a control group. The intervention group did Benson's relaxation and aromatherapy exercises while the control group only did Benson's relaxation. Based on the results of the study, the average value of control blood glucose levels the pre-intervention group was  $237.74 \pm 121.03$  mg/dl, and after the intervention it became  $202.03 \pm 77.48$  mg/dl. The average value of blood glucose levels in intervention group before and after the intervention to  $218.00 \pm 81.02$  mg/dl and  $170.31 \pm 71.70$  mg/dl each. Statistical test results obtained p-value of 0.063. There is no significant difference between pre and post blood glucose level intervention in the control group ( $p=0.063$ ) while the difference was significant between blood glucose in the pre and post intervention in the intervention observed group ( $p$ -value 0.001)(Cahyati et al., 2020) .

Although hydrotherapy therapy with Benson relaxation has been the subject of prior research, neither in Indonesia nor elsewhere, it has been demonstrated to be safe and effective in assisting in the

control of blood pressure. This therapy is also an alternative treatment that is utilized for palliative and dying patients; however, no experimental research has been conducted on the therapy. hydrotherapy and Benson unwinding with dhikr treatment on hemodynamic capabilities (beat recurrence, fringe oxygen immersion, so this examination is the main review and has never been finished by past investigations.

Wonosari Wedomartani Village, Ngemplak Sleman, is a village with a large number of elderly people, namely approximately 60 elderly people, 90% of the population is Muslim. The top ten diseases suffered by the elderly are hypertension. Based on information from local village officials, the elderly in the village have never received hydrosoln therapy and dhikr therapy.

## **METHODS AND MATERIALS**

The type of research used in this research is a quasi experiment. The research design used in this research is a pre and post test without control. The location of this research was carried out in Wonosari Village, Wedomartani Ngemplak, Sleman. It was carried out on September 23-29, 2022. The sampling technique in this study used total. sampling.

The inclusion criteria in this study include:

- 1) Islamic religion
- 2) The patient is willing to be a respondent.

Exclusion criteria in this study include:

- 1) Uncooperative.
- 2) Hydrophobia.
- 3) There are accompanying diseases of diabetic foot ulcers.

The sample size in this study is 38 elderly. Hemodynamic measurements by measuring blood pressure, pulse frequency and oxygen saturation were measured before and after the intervention was given on the first day and the 7th day. Hydrotherapy intervention by means of the respondent sitting relaxed on a chair and soaking the respondent's feet into a basin filled with warm water at 36°C, with water level as high as ankles, while moving his toes for 10 minutes, benson therapy by asking the respondent to focus his mind on God while closing his eyes and doing deep breathing by inhaling air from the nose and exhaling slowly through the mouth. Dhikr therapy is carried out by giving the respondent prayer beads while saying dhikr sentences silently (*subhanallah, alhamdulillah, allahuakbar, laaillahailallah*) for 10 minutes, if there are disturbing thoughts, refocus the mind. When finished, sit down first and rest. The

intervention is carried out for 7 days, once per day. In this study, before carrying out bivariate analysis, a normality test was carried out with the Shapiro-Wilk test for data samples of less than 50 samples. The bivariate analysis used the Paired T-Test test if the normality test results obtained are normally distributed data. Meanwhile, if the normality test results obtained are not normally distributed, then the bivariate analysis used is the Wilcoxon test.

## RESULTS AND DISCUSSION

### 1. Characteristics of Respondents

The frequency distribution of the characteristics of the respondents in this study includes gender and age, which can be seen in table 1.

Based on the gender characteristics of the respondents, the majority were female, namely 24 respondents (63.2%). Meanwhile, based on age, the number of respondents in the final elderly category (56-65 years) and seniors (> 66 years) have the same percentage, namely 50% each.

Table 1. Frequency Distribution Based on Gender and Age Characteristics of Respondents Wonosari village, Wedomartani, Ngemplak Yogyakarta September 2022

Characteristics of Respondents	Frequency (f)	Percentage (%)
<b>Gender</b>		
Man	14	36,8
Woman	24	63,2
<b>Total</b>	38	100

Age (Years)		
Late elderly (56-65)	19	50.0
Seniors (> 66)	19	50.0
<b>Total</b>	<b>38</b>	<b>100</b>

## 2. Blood Pressure Before and After Intervention in the Elderly

Based on the results of blood pressure measurements within seven days there was a decrease in each time after the intervention was carried out, for the first day systolic blood pressure the mean

difference was 12.00. Systolic blood pressure on day 2, the mean difference was 8.11. Systolic blood pressure on day 3, the mean difference was 8.29. Systolic blood pressure on day 4, the mean difference was 8.50. Systolic blood pressure on day 5, the mean difference was 5.32. Systolic blood pressure on day 6, the mean difference was 8.58. Systolic blood pressure on day 7, the mean difference was 11.08.

Table .2. Central Tendency Systolic Blood Pressure Day 1 - Day 7

Blood pressure systolic	Min-Max	Means	Mean difference	Standard Deviation
<b>Day 1</b>				
Before intervention	107-188	149.87	12.00	24.03
After intervention	98-186	137,87		21.83
<b>Day 2</b>				
Before intervention	98-188	143.03	8,11	22.35
After intervention	109-186	134.92		17.54
<b>Day 3</b>				
Before intervention	104-188	140.97	8,29	21.30
After intervention	99-186	132.68		18.93
<b>Day 4</b>				
Before intervention	100-189	142.53	8.50	22,42
After intervention	96-186	134.03		21,41
<b>Day 5</b>				
Before intervention	93-188	136,11	5,32	21,41
After intervention	99-186	130.79		19,42
<b>Day 6</b>				
Before intervention	110-188	141.82	8.58	20,39
After intervention	97-186	133,24		17,48
<b>7th day</b>				
Before intervention	110-188	143.08	11.08	19.31
After intervention	98-186	132.00		17.09

Source: Primary Data

Diastolic blood pressure before and after intervention in the elderly from day 1 to day 7 in the elderly. Based on the results of blood pressure measurements within seven days there was a decrease in each time after the intervention was carried out, for

the first day diastolic blood pressure the mean difference was 12.00. Day 2 diastolic blood pressure, the mean difference was 8.11. Day 3 diastolic blood pressure, the mean difference is 2.84. Day 4 diastolic blood pressure, mean difference 3.26. Day



5 diastolic blood pressure, the mean difference is 2.34. Day 6 diastolic blood pressure, mean difference 3.61. Diastolic

blood pressure on the 7th day, the mean difference is 2.42.

Table 4.3. Central Tendency Diastolic Blood Pressure Day 1 - Day 7

Diastolic Blood Pressure	Min-Max	Means	Mean difference	Standard Deviation
<b>Day 1</b>				
Before intervention	68-117	86,92	2.53	12,23
After intervention	64-108	84,39		11,36
<b>Day 2</b>				
Before intervention	60-110	86,24	4.03	11,84
After intervention	60-103	82,21		12,13
<b>Day 3</b>				
Before intervention	68-104	83.61	2.84	10,22
After intervention	58-100	80,76		11,22
<b>Day 4</b>				
Before intervention	68-112	86.58	3,26	11,28
After intervention	60-112	83,32		12,02
<b>Day 5</b>				
Before intervention	52-110	83,39	2.34	12,68
After intervention	60-110	81.05		11,43
<b>Day 6</b>				
Before intervention	67-102	85,76	3.61	11,12
After intervention	60-103	82,16		10,86
<b>7th day</b>				
Before intervention	110-188	85.08	2,42	11,27
After intervention	98-186	82.66		9,17

Source: Primary Data

### 3. Pulse Frequency Before and after Intervention in the Elderly

Pulse frequency before and after intervention in the elderly from day 1 to day 7 in the elderly. Based on the results of measuring the pulse frequency within seven days, there was a decrease in each time after the intervention was carried out, for the first day's pulse frequency, the mean difference was 3.68. The pulse

frequency on day 2 means the difference is 2.87. The pulse frequency on the 3rd day, the mean difference is 1.39. The pulse frequency on day 4, the mean difference is 2.37. The pulse frequency on day 5, the mean difference is 2.53. The pulse frequency on the 6th day, the mean difference is 4.26. The pulse frequency on the 7th day, the mean difference is 1.89.

Table 4 Central Tendency of Pulse Frequency Day 1 - Day 7

Pulse Frequency	Min-Max	Means	Mean difference	Standard Deviation
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e				
<b>Day 1</b>				
Before intervention	60-100	78,84	3.68	11.08
After intervention	56-91	75,16		10.36
<b>Day 2</b>				
Before intervention	56-100	77,92	2.87	11,17
After intervention	59-93	75.05		10.05
<b>Day 3</b>				
Before intervention	54-97	76,79	1.39	10.41
After intervention	60-91	75,39		8,92
<b>Day 4</b>				
Before intervention	58-98	78.95	2.37	10.82
After intervention	54-94	76.58		10,17
<b>Day 5</b>				
Before intervention	56-99	77,92	2.53	11.63
After intervention	56-107	75,39		10.68
<b>Day 6</b>				
Before intervention	57-113	77,87	4,26	12.85
After intervention	55-96	73,61		9,23
<b>7th day</b>				
Before intervention	60-100	78.00	1.89	11.91
After intervention	60-98	76,11		10.75

Source: Primary Data

#### 4. Peripheral Oxygen Saturation Before and After Intervention in the Elderly

Table 5 Central Tendencies Peripheral Oxygen Saturation Day 1 - Day 7

Peripheral Oxygen Saturation	Min-Max	Means	Mean differenc e	Standard Deviation
<b>Day 1</b>				
Before intervention	94-100	97.97	0.39	1.32
After intervention	98-100	97.58		5.09
<b>Day 2</b>				
Before intervention	94-100	98.50	-0.42	1.41
After intervention	96-100	98.92		1.26
<b>Day 3</b>				
Before intervention	96-100	97.89	-0.92	1.20
After intervention	96-100	98.82		1.11
<b>Day 4</b>				
Before intervention	96-100	98.74	-0.11	1.27
After intervention	96-100	98.84		1,13
<b>Day 5</b>				
Before intervention	96-100	98.76	-0.26	1.28
After intervention	95-100	99.03		1.30
<b>Day 6</b>				
Before intervention	96-100	97.92	-0.87	1,12
After intervention	96-100	98.79		1.06
<b>7th day</b>				
Before intervention	95-100	98.13	-0.68	1.23
After intervention	96-100	98.82		1.18

Source: Primary Data.

Based on the results of measuring oxygen saturation within seven days,



difference was 0.39. The frequency of oxygen saturation on day 2 means the difference is -0.42. The frequency of oxygen saturation on day 3, the mean difference is -0.92. The frequency of oxygen saturation on day 4, the mean difference is -0.11. The frequency of

oxygen saturation on day 5, the mean difference is -0.26. Frequency of oxygen saturation on day 6, mean difference -0.87. The frequency of oxygen saturation on day 7, the mean difference is -0.68.

### 5. Bivariate test results of systolic blood pressure before and after treatment

Table 6. Wilcoxon Test of Systolic Blood Pressure Before and After Intervention in the Elderly in Wonosari Village, Wedomartani Ngemplak Sleman Yogyakarta September 2022

Systolic Blood Pressure	Mean Ranki ng	Z	P-value
Pre Systolic Blood Pressure (H1)	20,52	-4,439	0.000*
Post Systolic Blood Pressure (H7)	8,42		

\*Wilcoxon test

Based on the results of the bivariate test with the Wilcoxon test, there was a difference in systolic blood pressure before and after being given the hydrotherapy and

Benson interventions with dhikr with a P value of 0.000 (<0.05).

### 6. Diatolic blood pressure bivariate test results before and after treatment

Table 7. Paired T Diastolic Blood Pressure Test in the elderly in Wonosari Village, Wedomartani Ngemplak Sleman Yogyakarta September 2022

Diastolic Blood Pressure	Means	St. Deviatio n	Q	P-value
Pre Diastolic Blood Pressure (H1)	4,263	11.78	2,232	0.032*
Post Diastolic Blood Pressure (H7)				

\*Paired T Test

Based on the results of the bivariate test with the Paired T test, there was a difference in diastolic blood pressure before and after being given the hydrotherapy and

Benson interventions with dhikr with a P value of 0.032 (<0.05).

### 7. Pulse Frequency Bivariate Test Results Before and after treatment

Table 8. Paired T Pulse Frequency Test in the elderly in Wonosari Village, Wedomartani Ngemplak Sleman Yogyakarta September 2022

Pulse frequency	Mean s	St. Deviati on	Q	P-value
Pre Pulse Frequency (H1)	2,273	13.55	1.245	0.221*
Pulse Post Frequency (H7)				

\*Paired T Test

Based on the results of the bivariate test with the Paired T test, there was no difference in pulse frequency before and after being given the hydrotherapy and

Benson interventions with dhikr with a P value of 0.221 ( $> 0.05$ ).

## 8. Peripheral Oxygen Saturation Bivariate Test Results Before and after treatment

Table 9. Wilcoxon Test for Peripheral Oxygen Saturation in the Elderly in Wonosari Village, Wedomartani Ngemplak Sleman Yogyakarta in September 2022

Systolic Blood Pressure	Mean Rank ing	Z	P-value
Peripheral Oxygen SaturationPre (H1)	14,17	-2,916	0.004*
Peripheral Oxygen SaturationPosts (H7)	15,22		

\*Wilcoxon test

Based on the results of the bivariate test with the Wilcoxon test, there was a difference in oxygen saturation before and after

being given the hydrotherapy and Benson interventions with dhikr with a P value of 0.004 ( $< 0.05$ ).

## 1.2. Discussion

### 1.2.1. The Effect of Hydroson Therapy and Dhikr Relaxation on Blood Pressure in the Elderly.

Based on the results of blood pressure measurements, within seven days there was a decrease in the average decrease in blood pressure after each intervention, both systolic and diastolic blood pressure. The results of the bivariate test showed that there was a difference in systolic blood pressure before and after the hydrotherapy

intervention and Benson and dhikr with a p- value of 0.000 ( $< 0.05$ ), there was a difference in diastolic blood pressure before and after the hydrotherapy intervention and Benson and dhikr with a p-value of 0.032 ( $< 0.05$ ).

Hydrotherapy is a restorative methodology that boosts the qualities and benefits of water, in clinical and elective medication enjoying benefits in helpful

impact, with few secondary effects. Water is readily available, non-irritating, has excellent solvency, excellent viscosity, and high temperature conductivity, among other benefits. Pure water also has a density that is comparable to the average density of water in the human body, though it varies slightly depending on the body part or temperature changes. The effects of hydrotherapy typically manifest as thermal, mechanical, and chemical effects. According to An and Lee (2019), hydrotherapy's thermal effect promotes blood circulation and vasodilation (An & Lee, 2019).

Benson therapy is the development of a breathing relaxation technique based on the patient's level of discomfort. This technique has the potential to create an internal environment that aids patients in achieving a state of health and well-being (Sari, 2020). Benson relaxation is a form of relaxation therapy that also incorporates one's faith. It involves regularly repeating words or sentences based on one's beliefs, such as "God's name" or "words with soothing religious elements," and giving one's will to God. During relaxation, there is a long inspiration that causes the lung stretch receptors to be slowly stimulated. This allows the signal to get to the medulla,

which tells you about how much more blood is flowing. activity on the chemoreceptors, resulting in a response that slows the heart rate and widens several blood vessels. As a result, relaxation can alleviate tension and promote relaxation. The anterior pituitary is stimulated to secrete enkephalins and endorphins, which function as neurotransmitters that affect the mood to be relaxed and happy, when feelings of relaxation are transmitted to the hypothalamus, which in turn produces corticotropin-releasing hormone (CRH). Likewise, the foremost pituitary secretes Adreno Corticotropic Chemical (ACTH) with the goal that it diminishes and controls the adrenal cortex controlling cortisol emission. The hypothalamus produces corticotropin releasing hormone (CRH) and stimulates the anterior pituitary to secrete endorphins and enkephalins, which are neurotransmitters that affect the mood to be relaxed and happy, as a result of a decrease in Adreno Corticotropic Hormone (ACTH) and cortisol. In addition, the anterior pituitary secretes adrenal corticotropic hormone (ACTH), which reduces and regulates cortisol secretion in the adrenal cortex. The hypothalamus produces corticotropin releasing hormone (CRH) and stimulates the anterior pituitary to secrete endorphins

and enkephalins, which are neurotransmitters that affect the mood to be relaxed and happy, as a result of a decrease in Adreno Corticotrophic Hormone (ACTH) and cortisol. In addition, the anterior pituitary secretes adrenal corticotrophic hormone (ACTH), which reduces and regulates cortisol secretion in the adrenal cortex. Stress and tension are reduced when cortisol and Adrenocorticotrophic Hormone (ACTH) levels are lower (Firzan & Darmayanti, 2020; Nashori et al., 2019).

According to Meiyana, Nekada and Sucipto (2019) research, the combination of hydrotherapy and Benson relaxation—known as hydroson—is known to lower blood pressure by 7.25 millimeters of mercury, with a 0.0001 value. With a value of 0.002, there was a decrease of 2.50 mmHg (Meiyana et al., 2019). A decrease in the elasticity of blood vessels, a narrowing of blood vessel walls, and high blood viscosity are all factors that contribute to the development of hypertension. These factors have the potential to aggravate heart performance and cause an increase in blood pressure, both systolic and diastolic (Dewi, 2016; Haris & Tambunan, 2009). According to Ratnawati and Aswad's research (2019) There is an effect of Benson therapy on

reducing blood pressure in people with hypertension in the Working Area of the Hulonthalangi Health Center, Gorontalo City with a systolic blood pressure pValue of 0.000 <0.005 (Ratnawati & Aswad, 2019).

Dhikr is an exercise for the soul that can help one achieve balance in their physical, emotional, mental, and spiritual lives. It has been shown that Benson therapy lowers blood pressure in people with hypertension in the Working Area of the Hulonthalangi Health Center, Gorontalo City. The Numeric Rating Scale (NSR) defines meditation as "focusing the mind toward a state of consciousness that brings a state of calm, clarity, and happiness." One of the common Muslim rituals that can elicit a relaxation response and have an impact on long-term health and feelings of happiness is the spiritual relaxation of dhikr. Dhikr treatment is additionally essential for supernatural contemplation which can hinder the impacts of pressure by bringing down cortisol levels (Yanti, 2012). According to Widodo & Purwaningsih (2013) study in Social Wening Wardoyo Ungaran, a difference in the quality of life in the intervention group after receiving meditation is  $p: 0.000$  (Widodo & Purwaningsih, 2013). According to the

findings of a study that was carried out by Sulistyarini (2013) show that there is a very significant difference in the decrease in systolic and diastolic blood pressure after being given relaxation with a behavioral approach in the form of imagery guides and hypnosis in hypertension sufferers (Sulistyarini, 2013). Based on the research of Purwaningsih and Windasari (2022) that there are differences in the quality of life before and after being given dhikr to respondents with a P-Value of 0.00 ( $<0.05$ ) (Purwaningsih & Windasari, 2022). Based on Rifki's research (2018) stated that the average decrease in systolic blood pressure was 2.80 mmHg after being given dhikr therapy, with a P value of 0.001 ( $<0.05$ ) (Rifki, 2018).

Systolic pulse is connected with thoughtful nerve movement, the thoughtful sensory system sends motivations to the adrenal medulla which then secretes norepinephrine and epinephrine which follow up on vascular smooth muscle and afterward vasoconstriction happens, pulse and intravascular volume increment so that circulatory strain expands (Hall & Hall, 2020). Psycho-neuro-immunological theory can provide an explanation for healing techniques. The reading of dhikr has an impact on the sympathetic nervous

system as well as the anterior hypothalamus of the central nervous system. The parasympathetic nervous system, one of which releases the endorphins hormone, which improves heart health and promotes relaxation (Hawari, 2015).

### **1.2.2. Influence Hydroson Therapy and Dhikr Relaxation with Pulse Frequency in the Elderly.**

According to the results of measuring pulse frequency within seven days, there was a decrease following each intervention, with the highest mean difference occurring on the sixth day, which was 4.26, and the smallest mean difference occurring on the third day, which was 1.39. Even though pulse frequency decreased, statistical tests revealed that there was no difference between before and after the hydroson therapy and dhikr intervention, with a P value of 0.221 ( $> 0.05$ ). This study supports Saiki's 2000 study in Japan on evaluating the effectiveness of warm foot soaks on heart rate variability in patients with multiple disabilities, the results of which showed no change in heart rate but resulted in a significant increase in blood flow (Saeki, 2000). This study's findings are inconsistent

with those of Herwanti's (2015) study, which found that daily dhikr and Slow Deep Breathing Exercise (SDE) reduced heart rate by an average of six beats per minute in patients with congestive heart failure in comparison to rest or even pranayama (Herwanti, 2019).

In addition, this study differs from Meiyana, Nekada, and Sucipto's (2019) investigation of the administration of a combination of hydrotherapy and Benson relaxation (hydroson) for decreased pulse. With pulse results before therapy of 82.30 x/minute and after therapy of 80.64 x/minute, there was a decrease of 1.66 x/minute with a value of 0.003 (Meiyana et al., 2019). According to another study by Tahmasbi H. and Hasani S. (2016) on the effect of Benson therapy on the anxiety of patients undergoing angiography, the average pulse before intervention was 74.71 x/min, while the average pulse after intervention was 71.32 x/min, with a P value of 0.0001.

More than 60% of stress in health services is caused by an increase in the hormones epinephrine and nor epinephrine that enter the bloodstream, these conditions trigger or exacerbate conditions that cause headaches, palpitations, increased pulse frequency.

Four essential components of Benson's meditation and relaxation are necessary: a mental device (a simple word, phrase, or activity to repeat to keep the mind from wandering), passivity, a calm environment, and a comfortable position. From these components, Benson developed a 6-step technique for eliciting responses for study at the Thorndike Memorial Laboratory and Deaconess Beth Israel Medical Center. In 1996, only two of the four components were considered important: mental tools and passivity. The goal is to activate the parasympathetic nervous system, which causes humans to relax. When the pituitary gland relaxes, it stimulates the hormones dopamine, endorphins and serotonin. One of its functions is the hormone dopamine increase work and blood flow to the heart, improve heart rate frequency (Benson & Klipper, 1975; Rateau, 2019).

Pulse frequency is influenced by many factors, including age, gender, physical activity, body position. An increase in pulse rate is concomitant with an increase in sympathetic nervous activity and a decrease in parasympathetic nervous activity. Conversely, a decrease in pulse rate is



accompanied by an increase in parasympathetic nervous activity and a decrease in sympathetic nervous activity. The activity of these nerves is controlled by a control system located in the brainstem, namely the heart control center. In addition to the sympathetic and parasympathetic nerves, the pulse is also regulated by the hormonal system, namely epinephrine and norepinephrine. Epinephrine is secreted by the adrenal medulla into the blood on sympathetic stimulation which functions to regulate heart rhythm. There was no difference in pulse frequency before and after the intervention in this study, which could be due to the fact that before the intervention, the respondents were in a completely resting position. do not do strenuous physical activity, so that the decrease in pulse rate after the intervention is not much different from the pulse frequency before the intervention. In addition, the age of the respondents tended to be homogeneous with the late elderly and seniors categories, so that the highest mean pulse frequency before the intervention was 78.95, and the highest average pulse frequency after the intervention was 76.58.

### 1.2.3. Hydroson Therapy and Dhikr Relaxation with Oxygen Saturation in the Elderly.

Based on the results of measuring oxygen saturation within seven days, there was an increase after each intervention, for the frequency of oxygen saturation on the first day, the mean difference was 0.39. The frequency of oxygen saturation on day 2 means the difference is -0.42. The frequency of oxygen saturation on day 3, the mean difference is -0.92. The frequency of oxygen saturation on day 4, the mean difference is -0.11. The frequency of oxygen saturation on day 5, the mean difference is -0.26. Frequency of oxygen saturation on day 6, mean difference -0.87. The frequency of oxygen saturation on day 7, the mean difference is -0.68. Based on the results of the bivariate test with the Wilcoxon test, there was a difference in oxygen saturation before and after being given the hydrotherapy and Benson interventions with dhikr with a P value of 0.004 (<0.05).

Oxygen saturation is the ability of hemoglobin to bind oxygen. Shown as degree of saturation or saturation (SaO<sub>2</sub>). The highest saturation (saturation) is 100%, meaning that all hemoglobin binds oxygen. On the other ISSN 1858-3385, E-ISSN 2549-7006 221

hand, the lowest saturation is 0%, meaning that there is no oxygen at all bound by hemoglobin. Normal oxygen saturation is above 95% (Rupii, 2005). The percentage of hemoglobin saturation is defined as the amount of oxygen carried by hemoglobin compared to the amount of oxygen that can be carried by hemoglobin (Hudak & Gallo, 2010).

Factors that affect oxygenation  
There are four factors that affect the adequacy of circulation, ventilation and transportation of respiratory gases to tissues, namely: Physiological factors  
Every condition that affects cardiopulmonary will affect the body's ability to meet oxygen. The general classification of cardiac disorders includes conduction imbalance, impaired vascular function, myocardial hypoxia, cardiomyopathy, and peripheral tissue hypoxia. Respiratory disorders include: hyperventilation, hypoventilation, and hypoxia. Other physiological processes that affect the oxygenation process are decreased oxygen-carrying capacity such as anemia increased metabolic demands such as: pregnancy, fever, infection, changes that affect the movement of the chest wall or the central nervous system

such as: trauma, abnormal structural configuration changes, graphic myasthenia, guillain barre syndrome and others. Developmental factors  
Developmental stage (age) and the normal aging process will affect tissue oxygenation. Premature babies are at risk of developing hyaline membrane disease, which is thought to be caused by surfactant deficiency. The respiratory system and cardiac system in the elderly undergo changes throughout the aging process. In the arterial system, atherosclerotic plaque occurs so that systemic blood pressure increases. Decreased chest wall compliance in elderly clients associated with osteoporosis and costal cartilage calcification. Ventilation and gas transfer decrease with age. Behavioral factors  
Behavior or lifestyle, either directly or indirectly will affect oxygen demand. Behavioral factors that affect oxygen demand include: nutrition, physical exercise, smoking, substance abuse and stress. Environmental factors  
The environment also affects oxygenation. The incidence of pulmonary disease is higher in foggy areas, in urban areas it is higher than in rural areas. The workplace can increase the risk, namely air pollution in the

work environment. Continuous stress will increase the body's metabolic rate and the need for oxygen (Nashori et al., 2019; Rateau, 2019)

Hydrotherapy soaking feet in warm water results in vasodilation and increases blood flow to the periphery so that the transportation and diffusion of blood to the tissues becomes adequate (Damayanti et al., 2021;

Kusniawati & Suhanda, 2017; Meiyana et al., 2019). Benson's therapy and dhikr are centered on spirituality and regulating breathing to cause relaxation and reduce tissue oxygen demand (Aryana & Novitasari, 2013; Benson & Klipper, 1975; Damayanti et al., 2021; Haryanto, 2014)

## **CONCLUSIONS AND SUGGESTIONS**

### **CONCLUSION**

- a. Hydroson therapy (Hydrotherapy with Benson Relaxation) and dhikr therapy are effective on Hemodynamic Function: lowering blood pressure in the elderly
- b. Hydroson therapy (Hydrotherapy with Benson Relaxation) and dhikr therapy have no effect on reducing pulse in the elderly
- c. Hydroson therapy (Hydrotherapy with Benson Relaxation) and dhikr therapy are effective on Hemodynamic Function: increasing oxygen saturation in the elderly

### **RECOMMENDATION**

- a. For Yogyakarta Respati University  
Especially for library managers, they should be able to add literacy and references related to hydroson

therapy and dhikr therapy for educators and students to apply the results of this research for community service activities and to develop further research on patients with other non-communicable diseases

- b. For Society

Especially the elderly, can apply hydroson therapy and dhikr therapy independently, so that they can act as supporting therapies in the management of hypertension.

- c. For Further Researchers

Can develop research results of hydroson therapy and dhikr therapy in patients with cardiovascular disorders.

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