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Combination Therapy: Murottal and Slow Stroke Back Massage (SSBM) Affecting the Blood Pressure of Hemodialysis Patients

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Abstract--- *For the clinical condition of hemodialysis, patients can be seen to struggle with many parameters such as interdialytic weight gain, blood pressure before and after hemodialysis, blood sodium levels, and the patient's physical activity. Measurement of blood pressure is the simplest way to assess these factors because blood pressure can describe the hemodynamic situation of the patient at that time. With optimal blood pressure, it is expected that the patient's quality of life will be good. To achieve optimal blood pressure, complementary therapies can be performed, one of which is a combination therapy of murottal and Slow Stroke Back Massage (SSBM). The purpose of this study was to determine the effect of murottal and SSBM on changes in blood pressure in hemodialysis patients. This study had a quasi-experiment one group pretest and posttest design, involving 17 respondents chosen by a purposive sampling technique. Respondents in this study were hemodialysis patients who had hypertension and fulfilled the inclusion and exclusion criteria. Measurement of blood pressure was done with a sphygmomanometer before and after combination therapy with murottal and SSBM. The data normality test was done using the Shapiro-Wilk test and data analysis was done using a paired t-test. The mean blood pressure before giving the combination therapy, systolic pressure was 170.41 mmHg and diastolic was 119.18 mmHg. The mean blood pressure after combination therapy was 145.94 mmHg for systolic pressure and 108.65 mmHg for diastolic. There were significant changes in systolic and diastolic blood pressure after murottal and SSBM combination therapy (p <0.000). There were significant changes in systolic and diastolic blood pressure after giving combination therapy with murottal and SSBM. Murottal Al-Qur'an can reduce cortisol levels which are stress hormones that contribute greatly to high blood pressure. SSBM can increase the serotonin hormone in the body, reduce stress and release norepinephrine and epinephrine hormones which play a role in lowering blood pressure.*

Keywords--- *Hemodialysis; Blood Pressure; SSBM; Murottal*

I. INTRODUCTION

Management of health problems in patients undergoing hemodialysis is quite complicated, in terms of fluid restriction and diet [1], following treatment recommendations [2] and management of physical activity [3] which are some of the problems that are often difficult to manage[4]. A benchmark for hemodialysis health care providers in assessing the clinical condition of hemodialysis patients is by calculating Interdialytic Weight Gain (IDWG) [5], blood

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sodium levels, as well as evaluating the appropriate physical activity [6], and measurement of blood pressure before and after hemodialysis therapy [7]. Hypertension can be one of the causes or can be a complication of chronic kidney failure and is often found in hemodialysis patients [8]. WHO states that hypertension control is a global health priority because there are 9.4 million deaths worldwide due to hypertension, both hypertension as an etiology or due to complications from other diseases [9]. Hypertension is an increase in diastolic and systolic blood pressure more than the normal limit, which is 120/80 mmHg [10].

Chronic kidney disease (ESRD) is increasing globally, affecting about 10% of the adult population [6]. In America 15 to 30% of adults develop hypertension and chronic kidney failure [8]. Data for 2017 from the Indonesian Nephrology Association states that hypertension is ranked first which results in chronic kidney failure with a prevalence of 36%. According to data from the Indonesian Renal Registry (IRR) in 2017, there were 51,604 patients in 2007 increasing in 2017 to 108,723, while in 2018, according to Riskesdas, in Indonesia, the prevalence of hypertension was 34.1% and kidney failure disease was 3.8%. Data in the Central Java region shows the prevalence of hypertension to be 38% and kidney failure 4% [11]. Efforts to control risk factors that influence the incidence of chronic renal failure and by looking at the complications that occur in hemodialysis clients are increasing; one action that must be done is controlling blood pressure.

There are many therapeutic techniques that can be used to reduce blood pressure not only pharmacologically but can also use complementary therapy techniques as an alternative therapy for lowering blood pressure such as Slow Stroke Back Massage (SSBM). The SSBM technique is done by giving a slow and gentle massage on the back area lasting from 3 to 10 minutes. The therapeutic effect resulting from the SSBM therapy is feeling relaxed and feeling comfortable on the muscles, nerves and vascular. SSBM can provide several positive effects for the body, including reducing blood pressure and improving blood circulation [12]. SSBM therapy has been proven to reduce systolic and diastolic blood pressure by 70.8% and 83% [13].

Another complementary therapy that can be used to reduce blood pressure in hypertensive patients is murottal Al-Qur'an. The murottal technique is done by playing the recorded sound of a Qur'an reading by a qori or reader of the Qur'an. To understand the relationship between murottal and decreased blood pressure, it is important to remember the physiological background for the neurovascular relationship between stress and the cardiovascular system [14]. Physiological reactions to stress involve the hypothalamus, pituitary, adrenocortical and sympatho-adrenomedula. This stimulation produces large amounts of vasoconstricting hormones which increase blood pressure and cause repeated blood pressure increases which can eventually cause hypertension [15].

Murrotal therapy not only stops the physiological reaction to stress, with its effect on blood pressure, but also increases alpha wave formation in the brain. Alpha waves are believed to relieve various mental symptoms such as pain and stress [16]. In addition, alpha EEG activation will maintain cardiac synchronicity of the heart, which helps in physiological synchronous recovery after the homeostatic depletion period [17]. The murrotal technique is one of the therapies that has a relaxing effect and is proven to reduce blood pressure in hypertensive patients [18]. The results of a preliminary study in one private hospital in Semarang in the last three months obtained data on 110 hemodialysis patients and more than 70% of them had hypertension.

II. METHODS

- Participants and Procedure

The study used a quasi experiment with a one group pretest and posttest design involving 17 respondents. The sampling technique used was purposive sampling. The study population was hemodialysis patients who had hypertension and fulfilled the inclusion and exclusion criteria. The inclusion criteria of this study were as follows: 1) patients with chronic kidney failure who did hemodialysis and had hypertension; 2) patients who were cooperative or willing to respond to the research; 3) patients who took antihypertensive drugs regularly; 4) patients with good hearing function. The exclusion criteria for this study were as follows: 1) weakness, deformity, or fracture in the back that did not allow intervention; 2) damage to the integrity of the skin; 3) patients with unfavorable conditions that it was not possible to study, such as: TTV (blood pressure, pulse, respiratory rate, and temperature) & unstable oxygen saturation. Respondents in this study were given therapy in the form of Slow Stroke Back Massage (SSBM) and murottal to ascertain the patient's blood pressure before and after combination therapy. Before the first therapy, systolic blood pressure and diastolic pre-intervention data were taken. SSBM and murottal combination therapy were performed three times with a two-day interval. After being given a combination of the third SSBM and murottal therapy, systolic blood pressure and diastolic post intervention data were obtained.

- Statistical Analysis

Univariate analysis included the characteristics of respondents: gender, age, history of dialysis, occupation, and education and is presented in tabular form. Changes in blood pressure pre and post interventions combination therapy of SSBM and murottal were statistically analyzed by paired T test after previously having been tested for normality of data with the Shapiro-Wilk test. The level of significance determined was $p < 0.05$.

III. RESULTS

- Socio-demographic characteristics of the respondents

Table 1. Socio-demographic characteristics respondents

Variable	Frequency	Percentage (%)
Gender		
Male	15	88.2
Female	2	11.8
Age		
26-35	2	11.8
36-45	1	5.9
46-55	4	23.5
56-65	7	41.2
>65	3	17.6
History of Dialysis		
<1 year	3	17.6
1-5 years	12	70.6
>5 years	2	11.8
Occupation Status		
Employed	13	76.5
Unemployed	4	23.5
Educational Background		
Uneducated	1	5.9
Elementary school	4	23.5
Junior high school	7	41.2
Senior high school	5	29.4

A total of 17 respondents followed the intervention combination therapy SSBM and murottal 100%. Overall, 15 respondents were male and the majority were in the age range 56-65 years (41.2%). Most of the respondents had a history of dialysis of 1 to 5 years in range. Overall, 13 respondents were employed and most had elementary school as their educational background.

- Blood pressure

The mean score for blood pressure pre combination therapy SSBM and murottal in this study was 17.41 (SD=25.57) for systolic and 119.18 (SD=9.14) for diastolic. The mean score of blood pressure post combination therapy SSBM and murottal was 145.94 (SD=22.50) for systolic and 108.65 (SD=13.15) for diastolic. The normality test was done using a Shapiro-Wilk test and showed that all data were normally distributed; this is shown in Table 2.

Table 2. Normality test

Systolic	Blood pressure	Mean ± SD	Median (min – max)	p
Pre	Systolic	170.41 ± 25.57	172 (130 – 208)	0.113*
	Diastolic	119.18 ± 9.14	119 (101 – 140)	0.674*
Post	Systolic	145.94 ± 22.50	147 (107 – 186)	0.839*
	Diastolic	108.65 ± 13.15	110 (79 – 133)	0.709*
	Systolic	-24.47 ± 8.42	-24 (-39 – -10)	0.821*
	Diastolic	-10.03 ± 6.88	-7 (-22 – -1)	0.060*

*Normal (p>0.05)

- Correlation between combination therapy with murrotal and SSBM with blood pressure

Paired t-test analysis showed that there was a significant effect of combination therapy with murrotal and SSBM on blood pressure, both systolic and diastolic (p=0.00). Detailed results can be seen in Table 3.

Table 3. Paired t-test

Therapy	Blood pressure	
	Systolic	Diastolic
Pre test	170.41 ± 25.57	119.18 ± 9.14
Post test	145.94 ± 22.50	108.65 ± 13.15
P	0.000*	0.000*

IV. DISCUSSION

Demographic characteristics have contributed to the occurrence of hypertension and will cause an increase in mortality rates in hemodialysis patients. The results showed that the majority of respondents were male, in total 15 (88.2%), while female respondents were fewer in number, namely 2 (11.8%). Overall, 73% of hemodialysis patients were male and 27% were female [19]. Most hypertension sufferers are male, but women also have 2.7 times the risk of developing hypertension [20]. From the history of hemodialysis, more than 70% of respondents had undergone hemodialysis for 1-5 years. The average respondent in a similar study had a history of hemodialysis for 48 months [21] and 3 months, 3 years [22]. These patients were being given anti-hypertensive drugs to maintain the cardiovascular system and reduce the progression of kidney damage.

In this study, most of the respondents were junior high school graduates (41.2%). Education had an influence on the disease being faced by patients [23]. The higher the level of education, the higher the awareness in seeking treatment and better care to cure the disease [21]. Most of the respondents in this study were workers, in total 13 (76.5%). Respondents who worked had 3.2 times more risk of developing hypertension than respondents who did not work [24]. Environment and workload can cause various health and psychological problems, such as hypertension [25].

In this study, a combination of SSBM and murrotal therapy was performed which was proven to significantly reduce both systolic and diastolic blood pressure (p = 0.000). SSBM can increase serotonin in the body, reduce stress and release norepinephrine and epinephrine which play a role in lowering blood pressure [26]. Gentle massage on the

skin of the back provides a relaxing effect by decreasing the activity of the simapatis nerve and increasing the parasympathetic nerve thereby stimulating the release of the endorphin hormone that causes vasodilation in blood vessels [27]. SSBM therapy which is carried out routinely for two weeks can reduce blood pressure in female respondents aged from 50-55 years [28]. Pre and post SSBM blood pressure measurements also showed significant decreases in systolic and diastolic blood pressure [29]. SSBM is an appropriate nursing intervention to reduce stress, reduce anxiety, reduce pain, tension, fatigue, blood pressure and increase vigor [30].

Religious therapy can be a complement to the medical treatment process to accelerate the healing of patients; this therapy is widely used in developed countries [31]. Murottal Al-Qur'an is believed to increase the production of endorphin hormones which will reduce stress and increase feelings of comfort and relaxation so that the body's response is to lower blood pressure, heart rate and pulse. There was a significant decrease in blood pressure after listening to the Qu'ran [18] and there was a slight decrease in diastolic blood pressure in older subjects after listening to the murrotal Qur'an [32].

To understand the relationship between the Qu'ran's murrotal listening intervention and blood pressure reduction, it is important to remember the physiological processes in the complex neurovascular system between stress and the cardiovascular system. Physiological reaction to stress involves the hypothalamic-pituitary-adrenocortical axis and the sympatho-adrenomedula [17]. This axis stimulation produces large amounts of vasoconstrictive hormones which increase blood pressure; and repeated increases in blood pressure can ultimately cause hypertension [33]. The EEG shows that listening to the murrotal Al Qur'an produces a relatively higher Alpha amplitude than the Beta wave, which reflects the calm and relaxation of the participants when listening to the recitation of the Qur'an [32].

V. Conclusion

We found that applying SSBM and murrotal Qur'an combination therapy can reduce blood pressure in hypertensive patients undergoing hemodialysis. This study helps health professionals and researchers in understanding other complementary therapies that enrich the independent intervention that nurses can do. It is suggested that future studies should apply this intervention on a larger scale.

Conflict Of Interest

No conflicts of interest have been declared.

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