Research Article

Comparison the Effectiveness of Autogenic Relaxation and Deep Breath Relaxation on Fatigue Value in Renal Failure Patients During Hemodialysis

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Abstract

Background: Fatigue is one of the problems with a fairly high prevalence among the effects of hemodialysis which hurt the quality of life. Fatigue can be done with relaxation. Relaxation can be done with autogenic and deep breath relaxation.

Objectives: This study aims to compare the effectiveness of Autogenic Relaxation and Deep Breathing Relaxation on the Fatigue Value of Chronic Kidney Failure Patients Undergoing Hemodialysis.

Methods: This study used a quasi-experimental two-group randomized pre-post test design. The sample in this study amounted to 40 respondents in total sampling. Bivariate analysis using independent t-test.

Results: The results showed that there was no difference in the results between autogenic relaxation and deep breathing relaxation.

Conclusion: Autogenic relaxation and deep breathing relaxation are equally effective in reducing fatigue in renal failure patients undergoing hemodialysis

Keywords: autogenic, fatigue, hemodialysis, deep breathing

Introduction

Chronic Renal Failure is a condition in which there is a decrease in kidney function optimally to remove residual substances and excess fluids from the body. The disease is progressive and generally irreversible. Symptoms of this disease are generally no appetite, nausea, vomiting, dizziness, shortness of breath, feeling tired, edema of the feet and hands, as well as uremia.[1] According to the World Health Organization (WHO) in 2015, it was stated that the incidence of Chronic Kidney Disease (CKD) worldwide reached 10% of the population, while Chronic Renal Failure patients undergoing hemodialysis (HD) were

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estimated at 1.5 million people worldwide. The incidence rate is estimated to increase by 8% annually. GGK occupies a chronic disease with the 20th highest mortality rate in the world. According to the National Chronic Kidney Disease Fact Sheet, (2017) in the United States, there are 30 million adults (15%) who have CKD disease. According to the Center for Disease Control and Prevention, the prevalence of GGK in the United States in 2012 was more than 10%, or more than 20 million people.[2,3] Laporan Hasil Riset Kesehatan Dasar (Riskesdas) in 2018, the prevalence of CKD disease in Indonesia was 499,800 people (2%), with the highest prevalence in Maluku with 4351 people (0.47%) experiencing GGK disease.[4] Based on Riskesdas in 2013, the prevalence of GGK was 0.2% the highest in Central Sulawesi was 0.5%.[5]

Hemodialysis patients always face various problems such as fatigue or fatigue due to the chronic nature and side effects of hemodialysis, which negatively affect their quality of life.[6] Fatigue is a subjective sense of weakness, loss of energy, fatigue, and malaise. This is known as a biological warning when human health is threatened. This disorder reduces the sense of well-being and has many effects on the physical, emotional, and cognitive dimensions of the patient's experience.[7] Some studies show that 71.0% to 92.2% of patients experience fatigue and that fatigue is the most important condition to observe in patients with chronic kidney disease.[8] One of the treatments for fatigue is carried out by nonpharmacological measures. One of them is through relaxation. One of the relaxation techniques in overcoming fatigue is autogenic relaxation. Autogenic relaxation will cause a warm sensation in the extremities so that vasodilation of blood vessels occurs which will result in an increased blood supply to the organs, able to increase metabolism in cells and produce energy.[9] In addition to autogenic, deep breath relaxation can also lower fatigue When we do deep breathing exercises, oxygen flows into the blood vessels and all body tissues, removing toxins and unused metabolic waste, this can increase metabolism and produce energy. Deep breathing exercises will maximize the amount of oxygen entering and supplying throughout the tissues so that the body can produce energy and lower fatigue levels.[10] Therefore, the study wants to know comparison the effectivenessof Autogenic Relaxation and Deep Breathing Relaxation on the Fatigue Value of Chronic Kidney Failure Patients Undergoing Hemodialysis.

Methods

This study used a quasi-experiment design of two group's randomized pre-posttest design. This research was conducted in February – March 2022 in the Hemodialysis Room of the Metro City Islamic Hospital. The sample in this study was 40 respondents using total sampling. The inclusion criteria in this study were that respondents did not experience hearing loss, were able to move and had full awareness. The data collection tool in this study was in the form of a questionnaire that included the characteristics of respondents who covered age, gender, and length of time undergoing hemodialysis. The guide in management is to use Standard Operating Procedures (SOP) for autogenic relaxation and Deep Breath Relaxation. Fatigue measurement using FAS (Fatigue Assessment Scale) was recorded using an observation sheet. The study used two groups, namely the intervention group with *autogenic* relaxation and another intervention group with breath relaxation. After undergoing hemodialysis in both groups, autogenic relaxation was performed for group I, and deep breath relaxation was performed for group II. After that, level measurement is carried out the fatigue continued the administration of intervention *autogenic* relaxation and deep breath relaxation.

Results

In the univariate analysis, researchers outlined the characteristics of respondents based on age, gender, and length of HD. The results of the univariate analysis are presented in the table below.

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Table 1. Distribution of Respondents by Age, Gender, and Length HD

Variable	(df)	(%)	Mean	SD	Min-Max
Age					
Relaxation Autogenik	20	100	49	7,750	37 – 61
Deep Breath Relaxation	20	100	48	8,110	35 – 60

Table 2. Distribution of Respondent by Gender and Length Hemodialysis

Variable	Intervention				Total	%
	Autogenic Relaxation		Deep Breath Relaxation			
	n	%	n	%		
Gender						
Male	9	45	9	45	18	45
Female	11	55	11	55	22	55
Length Of HD						
< 5 Years	9	45	13	65	22	55
≥ 5 Years	11	55	7	35	18	45

The results of this study showed that the majority of respondents aged 48 - 49 years with the youngest age in the autogenic relaxation group of 37 years, while the oldest age in the autogenic relaxation group was 37 years, while the oldest age in the autogenic relaxation group was 37 years, while the oldest age in the autogenic relaxation group was 37 years, while the oldest age in the group deep breath relaxation that is 60 years. Judging from the sex in this study, both women and men in both interventions were the same, namely men (45%) and women (n= 55%). The length of undergoing hemodialysis in the *autogenic* relaxation group was less than 5 years for as many as 9 respondents and in the deep breath relaxation as many as 13 respondents. Bivariate analysis was carried out to see the average difference in fatigue score reduction between two intervention groups, namely the autogenic relaxation group and deep breath relaxation

Table 3. Average Fatigue Value Before and After Autogenic Relaxation and Deep Breath Relaxation

Group	Measurement	Mean	Min – Max (CI: 95%)	Difference	P-value
Relaxation Autogenic	PreTest	42,5	22,6 – 24,2	23,4	< 0,001
	Post Test	19,1			
Deep Breath Relaxation	PreTest	43,2	21,9- 24,3	23,1	< 0,001
	Post Test	20,1			

Based on the table above, it can be seen that there is a significant statistical difference between the fatigue level score before *the autogenic* relaxation intervention and the fatigue level score after *the* autogenic relaxation intervention (p<0.001) with a score difference of 23.1. Since the difference in fatigue level scores is more than 20, it can be said that there is a clinically significant difference between the fatigue level score before and the fatigue level score after the Autogenic Relaxation Intervention. The table above also shows that there is a significant statistical difference between the fatigue level score before the deep breath relaxation intervention and the fatigue level score after the deep breath relaxation intervention (p<0.001 value) and the difference in the score of 23.1. A difference in fatigue level scores of more than 20 indicates there is a clinically significant difference between

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fatigue level scores before and fatigue level scores after deep breath relaxation interventions.

Table 4. Differences in average Fatigue Level Score declines between 2 intervention groups

Group	Mean	Min – Max (CI: 95%)	Difference	P-value
Relaxation Fatigue Level Score Drop Autogenic	23,4	1,1 – 1,7	0,3	0,66
Decreased Fatigue Level Score Deep Breath Relaxation	23,1			

Based on table 3, it can be seen that there was no difference between the decrease in fatigue level scores between the two intervention groups and p > 0.66. It can also be seen from the average score difference that the decrease in the fatigue level score in the autogenic relaxation group (mean=23.4) and the decrease in the fatigue score in the deep breath relaxation group (mean=23.1) are not much different. Therefore, looking at the results of the bivariate study, it can be concluded that H_0 was rejected.

Discussion

Age is one of the factors that influence the incidence of chronic kidney disease to undergo hemodialysis. As we get older the more the body's cells weaken, it is a natural thing, as well as kidney function, at the age of 40 the number of nephrons that function decreases every 10% every 10 years. This is supported by research by Tandi (2014) which shows that the age at risk for kidney failure is more than 55 years.[11] The same study was also conducted by Syaiful, Oenzil, and Afriant in 2014 with the results of a study that respondents were more than 40 years old, and a large number of patients stated that increasing age is one of the main causes of fatigue. Lack of knowledge about coping mechanisms for fatigue is mentioned as another reason.[12] Chronic kidney disease in Indonesia shows the highest male sex characteristics of 4.17% compared to the female sex.[4] The results of research by Faridah, Lestar, & Rizkyawan (2020) showed that respondents who underwent hemodialysis were dominated by more male respondents than female respondents because it was caused by men affected by chronic kidney failure more often experience hypertension, obesity and diabetes mellitus which are risk factors for chronic kidney failure, while women have more estrogen hormones. This estrogen hormone serves to inhibit the formation of cytokines to inhibit osteoclasts from overly absorbing bones so that calcium levels are balanced to prevent fatigue (*fatique*). This is in line with the results of the study that respondents were more men than women.[13]

The length of experience of respondents who underwent HD in group I and group II was more than 5 years. Research shows that there is a significant relationship between the duration of running HD and fatigue levels. Those who underwent HD for more than 5 years, felt more tired than less than 5 years, although respondents had been accustomed to routine dialysis for many years, they did not significantly change their coping behavior. Patients who have been undergoing hemodialysis for a long time will have high levels of ureum and creatinine. A high ureum will interfere with the production of the hormone erythropoietin. As a result, the number of red blood cells decreases or the so-called anemia, as a result of which the patient will experience fatigue, fatigue, and lethargy which is a symptom of fatigue.[14] Autogenic relaxation creates a sensation or feeling of calm, lightness, and warmness that spreads throughout the body is an effect that can be felt.[15]

Autogenic relaxation is one of the relaxation techniques that are often widely used because of its simplest technique.[16] This relaxation technique aims to reduce tension, anxiety, and fatigue by relaxing the muscles of the body.[17] The relaxation that is done

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affects the work of the heart to pump blood throughout the body so that in this state the blood supply flowing to the brain will increase, this increase in blood flow will make nutrients and oxygen increase which will result in an increase in blood supply to the organs, able to increase metabolism in cells that produce energy so that the body will feel more energized and able to perform an activity.[18] Autogenic relaxation can stimulate the production of the neurotransmitter NO (nitride oxide) which affects the work of smooth muscles to become more relaxed so that fatigue will decrease. This research is in line with research conducted by Meeus, M., Nijs, J., Vanderheiden, T., Baert, I., Descheemaeker, F., & Struyf, F. (2015) entitled "The effect of relaxation therapy on autonomic functioning, symptoms and daily functioning, in patients with chronic fatigue syndrome or fibromyalgia: a systematic review" states that the relaxing effect of one of which is autogenic relaxation can reduce chronic fatigue in patients while undergoing treatment.[19] The same study conducted by Marafante, G., Bidin, L., Seghini, P., & Cavanna, L. (2016) with the title "Mood and distress in cancer patients after Autogenic Training (AT): a pilot study in an Italian Oncologic Unit" states that autogenic can reduce mood, stress, and fatigue in cancer patients undergoing treatment in a hospitalization.[20]

The results showed that there was an effect of deep breath relaxation on fatigue values. When we do deep breathing exercises, oxygen flows into the blood vessels and all tissues of the body, removing toxins and unused metabolic waste, increasing metabolism, and producing energy. Deep breathing exercises will maximize the amount of oxygen that enters and is supplied to all tissues so that the body can produce energy and lower fatigue levels.[21] This research is in line with research conducted by Jafar (2019) that physiologically, deep breath relaxation techniques will stimulate the parasympathetic nervous system to increase endorphin production, lower blood pressure, and increase lung expansion so that it can develop optimally, and the muscles become relaxed.[22] The technique is easy to do, easy to learn, does not harm and less cost is the advantage of the deep breathing relaxation technique, carried out in a short time and can be done before, during, and after the hemodialysis process and also at home.[23]

Conclusion

The stud concluded that there was no difference in the decrease in FAS scores between the two intervention groups with $p > 0.66$. It can also be seen from the average score difference that the decrease in the FAS score in the autogenic relaxation group (mean=23.4) and the decrease in the FAS score in the deep breath relaxation group (mean=23.1) are not much different. Therefore, Autogenic relaxation and deep breathing relaxation are equally effective against fatigue reduction in patients undergoing hemodialysis.

Conflict of Interest Declaration

There is no conflict of interest in this research.

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