



Differences Between the Effects of The Benson Relaxation Technique and Deep Breath on Anxiety, Sleep Quality, and Fatigue in Hemodialysis Patients

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ABSTRACT

Psychological and physical problems often occur in hemodialysis patients such as anxiety, sleep quality and fatigue which if not treated immediately, can reduce the patient's quality of life. Benson relaxation and deep breathing can lower anxiety, sleep quality, and fatigue in hemodialysis patients. With decreased anxiety, higher sleep quality and decreased fatigue, the patient's quality of life could be enhanced. This study aims to determine the differences in anxiety, sleep quality and fatigue in hemodialysis patients treated using the Benson relaxation technique and deep breathing. The research method used quasi-experimental on several 52 respondents who were selected through the simple random sampling technique and were divided into 2 intervention and control groups. The Kruskal-walis test showed that the p -value = 0.000 < 0.05 was obtained in anxiety. The difference rank value is higher in the Benson relaxation of 37.96. on sleep quality, p -value = 0.000 < 0.05. The rank difference is higher in the Benson relaxation of 34.56. At the same time, the data management results on fatigue obtained a p -value = 0.014 < 0.05. The difference in Rank value is higher in the Benson relaxation of 34.56. It can be concluded that Benson's relaxation therapy can reduce anxiety, sleep quality, and fatigue because it uses spiritual values that can improve the quality of life of hemodialysis patients.

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ABSTRAK

Masalah psikologis dan fisik sering terjadi pada pasien hemodialisis seperti kecemasan, kualitas tidur dan kelelahan yang apabila tidak segera untuk ditangani dapat menurunkan kualitas hidup pasien. Relaksasi yang dapat dilakukan untuk menurunkan kecemasan, kualitas tidur dan kelelahan pada pasien hemodialisis adalah dengan melakukan relaksasi Benson dan napas dalam. Dengan menurunnya kecemasan, meningkatnya kualitas tidur dan menurunnya kelelahan dapat meningkatkan kualitas hidup pasien. Penelitian ini bertujuan untuk mengetahui perbedaan kecemasan, kualitas tidur dan kelelahan pada pasien hemodialisis yang diterapi menggunakan teknik relaksasi Benson dan napas dalam. Metode penelitian menggunakan quasi eksperimen pada sejumlah 52 responden yang terpilih melalui teknik simple random sampling dan dibagi menjadi 2 kelompok intervensi dan kontrol. uji *kruskal walis* menunjukkan bahwa pada kecemasan, didapatkan nilai p -value= 0.000<0.05. nilai rank selisih lebih tinggi pada relaksasi benson sebesar 37.96. pada kualitas tidur, didapatkan nilai p -value= 0.000<0.05. Rank selisih lebih tinggi pada relaksasi Benson sebesar 34.56. Sedangkan Hasil pengelolaan data pada kelelahan, didapatkan nilai p -value= 0.014<0.05. Nilai Rank selisih lebih tinggi pada relaksasi Benson sebesar 34.56. Dapat disimpulkan bahwa terapi relaksasi Benson dapat

menurunkan kecemasan, meningkatkan kualitas tidur dan menurunkan kelelahan lebih baik karena menggunakan nilai spiritual yang dapat meningkatkan kualitas hidup pasien hemodialisis.

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INTRODUCTION

Renal failure patients undergoing hemodialysis frequently encounter physical and mental issues. Hemodialysis therapy necessitates that patients overcome a number of restrictions, including fluid intake, food, financial issues, and duration of hemodialysis, prompting patients to experience anxiety (Beizae *et al.*, 2018). Anxiety is characterized by excessive dread that leads to clinically substantial impairment of function in the patient. Anxiety might develop for no obvious reason (Nadort *et al.*, 2022). Anxiety is one of the reasons causing sleep disruptions in hemodialysis patients. Poor sleep could have a detrimental impact on the patient's physical and mental components and cause a decrease in the patient's daily job activities (Meawad Elsayed, 2019). In addition, sleep disturbances if not addressed appropriately might induce weariness to patients (Harorani *et al.*, 2020)

Fatigue is an uncomfortable problem that is typically characterized by a weakness and limited energy and not relieved by rest and recovery (Picariello *et al.*, 2021; Zuo *et al.*, 2022). This disturbance might be considered as a biological alert when health is threatened. This disorder produces limitations in self-care tasks, hinders role function, reduces the ability to undertake routine care, and causes dependence on health care (Salehi *et al.*, 2020; Karadag *et al.*, 2019). Thus a therapy is needed that could alleviate anxiety, sleep quality and fatigue in hemodialysis patients, including by conducting Benson relaxation and deep breathing relaxation (Khosravani *et al.*, 2017; Pouraboli *et al.*, 2019).

Deep breathing relaxation is a method used to provide self-control when experiencing physical or mental discomfort (Ariga, 2019). Deep breathing relaxation will stimulate the parasympathetic nervous system, which will increase the production of endorphins, the heart rate will decrease, and the lungs will expand to their maximum capacity, allowing the muscles to relax and thereby reducing anxiety, increasing sleep, and decreasing fatigue (Ria Astarina Pertiwi, 2020; Ghorbani *et al.*, 2019; Pouraboli *et al.*, 2019).

A person's therapeutic action will be more effective and ideal if it is combined with his or her spiritual values or beliefs (Hasina *et al.*, 2019). The Benson relaxation technique is one of the therapies associated with spiritual components. The Benson relaxation technique uses the parasympathetic nervous system, which acts to lower a person's physiological and emotional stress response. Benson's relaxation technique works by suppressing the activity of the sympathetic nerves, which can lessen the body's oxygen consumption; as a result, the muscles relax, producing a sense of serenity and contentment. Relaxation inhibits the parasympathetic nervous system, making the patient more comfortable in order to improve sleep quality, reduce anxiety, and manage fatigue (Heidari Gorji *et al.*, 2014; Abu Maloh *et al.*, 2022). Therefore, the objective of this study was to determine the differences in anxiety, sleep quality, and

fatigue among hemodialysis patients treated with the Benson relaxation technique and deep breathing relaxation.

METHOD

Study design and participants

A quasi-experimental pre-post test with a control group was utilized as the research design. This study was conducted at the Hemodialysis Room of a Malang hospital. In this study, respondents in one treatment group were given Benson relaxation techniques to reduce anxiety, increase sleep quality, and reduce fatigue in hemodialysis patients; these results were compared to those of a control group. The control group was taught to relax with deep breathing. The anxiety, sleep quality, and fatigue levels of the control group were measured before and after receiving deep breathing relaxation. Respondents are hemodialysis patients who suffer anxiety, sleep quality issues, and fatigue, and meet the following inclusion criteria: 1) Willing and eager to participate in study. Respondents are older than 18 years of age. Patients are able to communicate and read. 4. Capable of relaxing. 5. Receive hemodialysis twice every week; exclusion criteria include: Patients with physical restrictions or mobility obstacles. 2) Patients suffering from an orientation issue. 3) The patient is unresponsive.

Sampling procedure

Simple random sampling is utilized to determine the sample. This study's sample size was determined by numerical comparisons between two groups. (Dahlan, 2018). Each group was found to consist of 26 respondents. For Benson relaxation, there were as many as 25 respondents, and for deep breathing relaxation, there were as many as 26.

Data collection

This study measured anxiety using the HRS-A Questionnaire (Hamilton Rating Scale For Anxiety), measured sleep quality with the PSQI (Sleep Quality index) questionnaire, and measured fatigue with the Facit Fatigue scale questionnaire (version 4). In this study, a checklist of Benson relaxation therapy and deep breathing methods was utilized.

Procedure

Respondents who were willing to participate in the study were required to complete an informed consent form before participating. The researcher next administered the HRS-A (Hamilton Rating Scale For Anxiety) to measure anxiety, the PSQI (Sleep Quality index) to examine sleep quality, and the Facit Fatigue scale questionnaire (version 4) to measure fatigue in hemodialysis patients.

Data Analysis

Use SPSS version 25.0 to analyze data using statistical methods. The Kruskal-Wallis test was used to compare anxiety, sleep quality, and fatigue levels between the Benson

relaxation and deep breathing relaxation groups. Meanwhile, the Kruskal-Wallis test was performed to determine the mean ranking of the two groups, which were highly effective at decreasing anxiety, sleep quality, and fatigue.

RESULTS

Table 1.
 Distribution of responders by gender, degree of education, employment status, and length of hemodialysis

Respondent characteristics	Category	Bensons group		Deep breathing relaxation group	
		n	%	n	%
Age	18-44 years	9	34.6	7	26.9
	45-59 years	13	50.0	4	15.4
	60-74 years	4	15.4	13	50.1
Gender	Man	15	57.7	13	50.0
	Female	11	42.3	13	50.0
Educational level	Elementary School	9	34.6	7	26.9
	Junior High School	1	3.8	4	15.4
	Senior High School	15	57.7	13	50.0
	Collage	1	3.8	2	7.7
Job status	Housewife	10	38.5	10	38.5
	Civil servant	7	26.9	4	15.4
	Entrepreneur	9	34.6	10	38.5
	Farmer	0	0.0	2	7.7
Hemodialysis duration	< 1 years	6	23.1	11	42.3
	1-< 2 years	3	11.5	1	3.8
	2-3 years	5	19.2	4	15.4
	>3 years	12	46.2	10	38.5

The majority of respondents in this study were male, as indicated by the data in table 1: 15 respondents (57.7%). In the control group, the number of male and female respondents was the same: 13 respondents (50%) and 13 respondents (50%) equally. In the intervention group, the highest level of education was high school with 15 respondents (57.7%), while in the control group, the highest level of education was high school with 13 respondents (50.5%). In the employment status data, the majority of respondents were housewives; the distribution of respondents in the intervention group was 10 respondents

(38.5%), whereas the distribution of respondents in the control group included housewives and civil servant. There were 10 respondents who worked as housewives (38.5%), and 10 respondents who worked as private employees (38.5%). The duration of hemodialysis varies between the intervention and control groups. In the intervention group, the majority of patients (46.2%) had been undergoing hemodialysis for more than three years. In the control group, eleven individuals (42.3%) had undergone hemodialysis for less than one year.

Tabel 2.
 The results of the Mann-Whitney test in the treatment group and the control group for anxiety

Variable	Group	Mean	SD±	p-value
Anxiety	Benson	17.69	6.541	0.000
	Deep breathing relaxation group	4.30	5.54	

According to table 2, there was a significant difference between anxiety levels before and after receiving Benson relaxation and deep breathing relaxation.

According to table 3, there was a significant difference in the quality of sleep before and after Benson relaxation and deep breathing relaxation were administered.

Tabel 3.
 The results of the Mann-Whitney test in the treatment group and the control group on sleep quality

Variable	Group	Mean	SD±	p-value
Sleep quality	Benson	7.85	2.79	0.000
	Deep breathing relaxation group	3.50	4.16	

Tabel 4.
Results of the Mann-Whitney test in the treatment group and the control group for fatigue

Variable	Group	Mean	SD±	p-value
Fatigue	Benson	11.69	4.74	0.014
	Deep breathing relaxation group	6.61	7.56	

Table 5.
Results of the Kruskal Wallis test in the Benson group and the deep breathing group

Variable	Group	N	Mean Rank	P-value
Anxiety	Benson	26	37.96	0.000
	Deep breathing relaxation group	26	15.04	
Sleep quality	Benson	26	34.56	0.000
	Deep breathing relaxation group	26	18.44	
Fatigue	Benson	26	31.67	0.014
	Deep breathing relaxation group	26	21.33	

According to table 4, there was a significant difference in fatigue before and after Benson relaxation and deep breathing relaxation were administered.

According to table 5, there was a significant difference between the effectiveness of benson relaxation and deep breathing on hemodialysis patients' anxiety, sleep quality, and fatigue. The mean rank value for the anxiety variable was 37.96 for benson relaxation and 15.04 for deep breathing relaxation, indicating that benson relaxation increased the decrease in anxiety in hemodialysis patients. Therefore, it might be concluded that benson relaxation is more effective than deep breathing relaxation in reducing anxiety, with a p-value of 0.000 < 0.05.

Based on the mean Rank value of 34.56 for the sleep quality variable for benson relaxation and the minimum value of 18.44 for deep breathing relaxation, it could be concluded that benson relaxation improves the sleep quality of hemodialysis patients. Therefore, it could be concluded that benson relaxation is more successful than deep breathing relaxation at increasing sleep quality, as the value (p value) = 0.000 < 0.05.

Based on the mean Rank value for the fatigue variable of 31.67 for benson relaxation and 21.33 for deep breathing relaxation, it could be concluded that benson relaxation reduces fatigue in hemodialysis patients. Therefore, it might be concluded that benson relaxation is more effective than deep breathing relaxation in lowering fatigue in hemodialysis patients (p- value) = 0.014 < 0.05. In the Kruskal-Wallis test, the effectiveness of relaxation could be determined based on the ranking mean of the fatigue variable and the mean difference. The ranking of the highest mean differences in the Benson relaxation was determined as a consequence of data processing.

DISCUSSION

The results of this study reveal a significant difference between anxiety levels before and after the Benson relaxation intervention and deep breathing relaxation (p=0.000). By lowering metabolism and strengthening cardiac contractions, respiration, and blood pressure, as well as the release of epinephrine in the sympathetic nervous system from the patient's physiological situation, benson relaxation helps overcome anxiety. (Sajadi *et al.*, 2017). Benson Relaxation could block the activation of the sympathetic nerves, which will lessen the body's oxygen

consumption, and it will also relax the muscles, resulting in a sense of calm and comfort. Spiritual behavior will have an effect on the hypothalamus, particularly in the region responsible for autonomic nerve regulation. The autonomic nervous system is controlled by the hypothalamus, which is part of the limbic system. Relaxation reduces anxiety and increases autonomic stability through increasing the activity of the core of the hypothalamus, which controls parasympathetic nervous system activity (Anisah & Maliya, 2021).

Deep breathing relaxation techniques are considered to relieve anxiety by relieving the muscle tension that results from anxiety (Noorrahman, 2022). Deep breathing relaxation techniques can minimize the development of lactic acid in the muscles by increasing the availability of oxygen, while the brain's lowered oxygen demand is balanced (Rohmah *et al.*, 2021). In his study, Inra *et al.*, (2019) stated that by taking slow, deep breaths, blood vessels would become more elastic, circulation and blood flow would become more uniform, causing the body to become warmer, and the heart's workload would be reduced, thereby decreasing feelings of comfort and reducing anxiety.

Before and after the Benson relaxation and deep breathing relaxation interventions, there was a statistically significant difference in sleep quality (p=0.000). Benson's relaxation technique works by blocking the activity of the sympathetic nerves, so reducing the body's oxygen consumption and allowing the muscles to relax, creating a sense of calm and comfort. Relaxation inhibits the parasympathetic nervous system, making the patient more comfortable and enhancing the quality of their sleep (Abu Maloh *et al.*, 2022).

Breath relaxation therapy modulates breathing patterns, which can activate parasympathetic nerves in blocking the sympathetic central system in controlling heart rate, thereby relaxing the body. Deep breathing relaxation is relaxing as a stimulus to multiple senses, so that tension will be released and the body will become relaxed and pleasant, hence promoting optimal sleep patterns (Ghorbani *et al.*, 2019; Toussaint *et al.*, 2021).

According to the findings of this study, there is a significant difference between weariness before and after the Benson relaxation intervention and deep breathing relaxation (p=0.014). Benson relaxation will improve the equilibrium between the anterior and posterior hypothalamus, reduce sympathetic activity and catecholamine release, alleviate muscle tension, reduce

blood pressure and heart rate, and regulate breathing. Through Benson relaxation, individuals are able to relax all of their muscles, thereby reducing their anxiety. Relaxation can displace stress and anxiety responses, that could significantly contribute to fatigue (Mahmoudirad et al., 2017; Muliantino et al., 2020).

Deep breathing physiologically stimulates the parasympathetic nervous system, causing it to boost hormone production, decrease heart rate, and promote lung expansion for optimal development. Consequently, muscles will relax. Moreover, deep breathing will ensure that the body receives a maximum quantity of oxygen, which will feed all body tissues with oxygen so that they can produce energy, hence reducing fatigue (Jafar, 2019).

The Kruskal-Wallis test findings revealed anxiety ($p=0.000$), sleep quality (0.000), and fatigue ($p=0.014$). Data processing showed the greatest mean difference ranking for benson relaxation, therefore it may be stated that anxiety, sleep quality, and fatigue are affected differently in hemodialysis patients who are administered benson relaxation and deep breathing. The effects of Benson relaxation and deep breathing on anxiety, sleep quality, and fatigue are same. Spiritual considerations or positive phrases that a patient believes could generate an interior atmosphere that aids in the attainment of better health (Sulistyarningsih et al., 2016). Benson relaxation works by focusing on the mind's relaxing qualities. The Benson method of relaxing functions from the mind to the muscles. Benson relaxation focuses on certain words or phrases that are repeated in a regular rhythm and are accompanied by an attitude of submission to God Almighty, who will offer a response or stimulus in relaxing the heart, thereby causing the entire body to relax (Safitri et al., 2018; Alzaghmouri et al., 2021).

Deep breathing relaxation is achieved through slow, deep, and slow breathing, which induces a state of relaxation. The focus of breathing relaxation is on the breathing rhythm. This brings the individual into contact with the breathing process and gives him a sense of control over it. The practice of mindful breathing begins with an examination of the chest and abdominal motions that accompany breathing. A calm individual's breathing is characterized by relaxed abdominal muscles and a perceptible movement of the upper abdomen (Payne & Donaghy, 2010; Asman, 2019).

Deep breathing and the Benson relaxation method both work by reducing sympathetic nerve activity, which can reduce the body's requirement for oxygen. A feeling of calm and contentment is created after the muscles are relaxed. Relaxation causes the parasympathetic nervous system to be repressed, which puts the patient at ease and helps to reduce anxiety, improve sleep, and decrease fatigue (Abu Maloh et al., 2022; Diyah et al., 2021).

The implication of this research is to provide an overview to nurses in providing nursing interventions in reducing anxiety, improving sleep quality and fatigue. The purpose of this research is to give nurses a broad review of nursing interventions that can be used to lessen anxiety, enhance sleep quality, and reduce fatigue. In order to help hemodialysis patients feel less anxious, sleep better, and be less fatigued, nurses might need Benson relaxation treatments and deep breathing relaxation.

LIMITATION

Data assessment used a questionnaire which was subjective to the respondent so that the data obtained

depended only on the honesty of the respondent and the researcher could not control patient compliance in doing Benson relaxation and deep breathing at home because there was no follow-up via telephone because not all patients used mobile phones in the hemodialysis room.

CONCLUSIONS AND RECOMMENDATIONS

According to the study's findings, Benson relaxation and deep breathing relaxation performed twice daily for four weeks had the same impact on hemodialysis patients' levels of anxiety, sleep quality, and fatigue reduction.

The findings of this study are anticipated to serve as an example for nurses in adopting Benson relaxation techniques and deep breathing to assist patients in reducing anxiety, enhancing the quality of their sleep, and decreasing fatigue in order to improve their quality of life and patient satisfaction.

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ETHICAL CONSIDERATIONS

This research has received an ethical approval letter from the health research ethics committee of the faculty of health sciences, Brawijaya University, Malang, number 3972/UN10.F17.10/TU/2022.

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