

Strategies for Reducing Anxiety of Patients with Chronic Kidney Disease During Hemodialysis

Esrom Kanine^{1*}, Johana Tuegeh¹, Esther Tamunu¹, Tinekke Tololiu¹, Getruida Banon.H Alow¹, Grace A. Merentek²

¹Kementerian Kesehatan Politeknik Kesehatan Manado, Indonesia

²Sekolah Tinggi Ilmu Kesehatan Bethesda Tomohon, Indonesia

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ABSTRACT

Anxiety is one of the most common psychosocial problems experienced by patient of Chronic Kidney Disease (CKD) who are undergoing hemodialysis. Anxiety significantly affects the function and quality of life of a person with according some studies, anxiety was happened 30 % among the CKD patients who are experiencing hemodialysis. This study aims to analyse the effectivity of strategies for reducing anxiety of patients with CKD disease during hemodialysis. This research using the design of quantitative research. Seventeen samples were requited using purposive sampling strategy, using quasi experimental pre-test and post-test without control group. Some including age 30-55 year old, had mild anxiety experience (score min.5) and were in normal blood pressure in time of the intervention. The level of anxiety was measured by Hamilton Anxiety Rating Scale. Data was analysed using Wilcoxon test, with p value < 0,05. The mean anxiety levels decreased before and after intervention were 12.76 to 8.76, median 13.00 to 9.00 (Wilcoxon test equal to -3.425 and p value = 0.001). This findings will be useful manual of reducing anxiety in hemodialysis unit.

Keywords: CKD Anxiety, Training Managing Anxious Thoughts

INTRODUCTION

The kidneys function to filter the blood if there is a lot of salt, fluid, and metabolic waste so that the chemical composition in the body remains stable. The prevalence of chronic kidney disease (CKD) in North Sulawesi Province is higher (0.4%) compared to the national prevalence of 0.2% (Risksdas, 2013). CKD is a progressive kidney function disorder that cannot be reversed, requiring a kidney replacement. When someone suffers from CKD, the patient must receive therapy such as hemodialysis or a kidney transplant (Sudoyo et al, 2010).

Hemodialysis is a kidney function replacement therapy that aims to remove residual protein and maintain water and electrolyte balance between the patient's blood compartment and the dialysate solution compartment through a semipermeable membrane that acts as an artificial kidney (Sudoyo et al, 2010).

The number of CKD patients undergoing hemodialysis continues to increase from year to year. The Indonesian Renal Registry (IRR) report noted that 4,977 new patients suffered in 2007, an increase of 17,193 in 2014, while data on the chance of surviving one month for people undergoing hemodialysis was 87.3% and the chance of surviving 1 year was 46.7%.

240 CKD patients are undergoing hemodialysis twice a week in the Dahlia room at Prof. R.D. Kandou Hospital, Manado. Of this number, it is estimated that 72 people (30%) experienced mild to moderate fluctuations in anxiety. Hemodialysis patients experience many psychosocial problems, such as depression, anxiety, loneliness, social isolation, hopelessness, and helplessness (Ahkari et al, 2014). Another cause is the long time undergoing hemodialysis, namely 4-5 hours, which is sometimes perceived by CKD patients as having difficulty accepting the fact that they have to undergo hemodialysis for the rest of their lives.

Anxiety is an individual's emotional and subjective experience which is described as fear that has no clear source and responds to a person's psychology, behavior, cognition, and attitude (Stuart, 2005). Anxiety significantly affects a person's function and quality of life. This condition is based more on an attitude of resignation and accepting the situation that hemodialysis is only an attempt to prolong life expectancy.

One non-pharmacological therapy to overcome anxiety is cognitive behavior therapy (CBT). CBT as a non-pharmacological therapy is very strategic for reducing anxiety and restructuring cognitive functions in learning new behaviors. Another non-pharmacological therapy is relaxation training which is believed to be able to reduce anxiety in addition to biofeedback therapy, systematic desensitization, interoceptive exposure, flooding, vestibular desensitization training, response prevention, and eye movement desensitization and reprocessing.

Relaxation exercises have also been used in the clinical field since the early 20th century when Edmund Jacobson conducted research and reported it in a book *Progressive Relaxation* published by Chicago University Press in 1938. In his book, Jacobson explained the things a person does when tense and relaxed. When the body and mind relax, automatically the tension that often makes the muscles tighten will be ignored (Zalaquet & McCraw, 2000 in Ramdhani & Putra, 2009).

This study aims to analyze the characteristics of CKD patients including age, gender, and length of time suffering from CKD, and analyze differences in anxiety responses in CKD patients before and after the finger hypnosis relaxation training intervention. Research Objectives : This study aims to obtain an overview of the influence of the application of relaxation training modules and managing anxious thoughts and the ability to explore experiences of reducing anxiety in CKD clients while undergoing hemodialysis. Specific Objectives : Know the characteristics of age, work, and the length of time the client has suffered from CKD. Analyzing the differences in anxiety responses of CKD clients before and after relaxation training and managing anxious thoughts. Exploring descriptions of CKD clients' experiences of reducing anxiety while undergoing hemodialysis after relaxation training and managing anxious thoughts.

LITERATURE REVIEW

1. The Concept of Anxiety

Peplau (1963; Stuart, 2005), identified four levels of anxiety and described them as follows: (1) Mild anxiety is related to tension in daily life and causes a person to become alert and increase his or her perceptual field. Anxiety fosters the learning process and produces growth and creativity. (2) Moderate anxiety allows a person to focus on important things and put aside others so that a person experiences selective attention but can do something more focused. (3) Severe anxiety greatly reduces a person's perception so that there is a tendency to focus on something detailed and specific and unable to think about anything else. All behavior is aimed at reducing tension. (4) Panic from anxiety is related to fear and feeling terrorized and unable to do anything even with direction. The impact of panic will increase motor activity, reduce the ability to relate to other people, distort perception and loss of rational thinking.

2. Predisposing Factors and Anxiety Precipitation

Stuart (2005) states that there are several theories that can explain the occurrence of anxiety, including biological factors related to the human brain. The brain contains special receptors for benzodiazepines that regulate anxiety. GABA inhibitors also play a major role in the biological mechanisms associated with anxiety. Anxiety is also accompanied by physical disorders, thereby reducing a person's capacity to cope with stressors.

The psychological factor that causes anxiety is caused by emotional conflict that occurs between two personality elements, namely the id and the superego, according to the psychoanalytic view. Anxiety arises from feelings of fear of lack of acceptance and interpersonal rejection. Likewise, the behavioral view explains that anxiety is a product of frustration, namely anything that interferes with a person's ability to achieve the goals they want to achieve. Socio-cultural factors have the view that anxiety is something that is commonly found in families, including economic factors and educational background. Precipitating factors include future physiological incapacity that reduces capacity to carry out daily activities, which is called a threat to integrity, while threats to

a person's self-system endanger a person's identity, self-esteem and integrated social functioning. Individuals will try to mobilize coping resources in their environment to overcome their anxiety, while coping mechanisms at moderate and severe levels of anxiety.

3. Anxiety Measurement Scale and Non-Pharmacological Therapy for Anxiety

There are several measuring instruments that can be used to measure anxiety, namely Beck Anxiety Inventory (BAI), Hamilton Rating Scale for Anxiety (Wheeler, 2008; Videbeck, 2008). In this study researchers used the anxiety measurement instrument Hamilton Rating Scale for Anxiety or HARS because the instrument This reliability test has been carried out with Cronbach's coefficient-alpha reliability of 0.95 and the resulting r value (corrected item-total correlation) is above the r table value (0.05)

Psychotherapy that can be given to clients with anxiety includes: behavioral therapy (Videbeck, 2008; & Varcarolis and Halter, 2010), positive reframing, assertive training (Videbeck, 2008), milieu therapy, cognitive therapy, cognitive-behavioral therapy (Bennett, 2003 ; Varcarolis & Halter 2010; & Kyrios, et al, 2011), relaxation muscle therapy, thought stopping (Varcarolis & Halter, 2010), psychoanalytic therapy (Bennett, 2003), Several studies related to anxiety include: research by Southwic, et al (2006) found that logotherapy through the meaning of life can cure chronic PTSD caused by war. Sutejo's (2009) research on the effect of group logotherapy on anxiety in post-earthquake residents found a more significant reduction in anxiety in the group given logotherapy.

4. The Concept Of Anxiety Reduction

Relaxation training is a set of exercises that are very effective in reducing anxiety and tension. This exercise can be done individually and combined with techniques in cognitive behavioral therapy (CBT) plus other supportive therapies. The manifestations of relaxation training have physiological, cognitive, and behavioral impacts. Manifestations of relaxation training have an impact on physiological aspects, including decreased blood pressure, normal pulse rate, normal oxygen consumption and respiration, normalizing metabolism, peripheral vasodilation, and increasing peripheral temperature. Manifestations in the cognitive system include increased mental concentration, and positive suggestions to oneself while behavior is manifested by always responding positively to the surrounding environment (Stuart, 2005).

5. The Concept Of Hemodialysis In Chronic Kidney Disease

CKD is described as an irreversible and progressive condition of the kidneys maintaining metabolic and electrolyte balance including uremia, metabolic acidosis, anemia, electrolyte balance disorders in the endocrine system caused by diabetes, hypertension, glomerulonephritis and polycystic kidney disease. Surgery and dialysis are medical efforts to maintain kidney function. Dialysis is a process used to remove fluids and body waste products when the kidneys are unable to carry out the process.

Chronic dialysis is needed for chronic kidney failure in cases where uremia affects the entire body and is characterized by symptoms of nausea and vomiting, severe anorexia, increased lethargy and mental confusion. For CKD sufferers, hemodialysis will prevent death but does not reverse kidney disease and is unable to compensate for the loss of metabolic activity and the therapy affects quality of life. CKD clients undergo dialysis therapy throughout their lives and this is usually done 3-4 times a week (Brunner & Suddarth, 2002).

Hemodialysis is the use of an artificial kidney machine to do things that the nephrons can no longer do in patients with chronic kidney failure (Scalon, 2006). Hemodialysis is a process used to remove fluids and waste products from our body, the kidneys are unable to carry out this process. (Brunner & Suddarth, 2001; Suzzane, 2002).

In hemodialysis the blood flow which is full of toxins and nitrogenous waste is diverted from the patient's body to the dialyzer where the blood is cleaned and then returned to the patient's body (Brunner & Suddart, 2001, in Suzzane, 2002. As a large dialyzer is a flat plate and a hollow artificial fiber kidney which contains thousands of smooth tubules, which work as a semi-permeable membrane. Blood flow passes through the tubules, while the dralycyte fluid circulates around them. The exchange of waste from the blood into the dialysate fluid will

occur through the tubular semi-permeable membrane namely: diffusion, osmosis and ultrafiltration.

Toxins and waste substances in the blood are removed through a diffusion process by moving from a direction that has a high concentration to the dialysate fluid composed of all important electrolytes with an ideal extracellular concentration. Blood electrolyte levels can be controlled by creating a pressure gradient, in other words water moves from an area with higher pressure (the patient's body) to a lower pressure (dialysate fluid). This gradient can be increased by adding negative pressure applied to this tool as a suction force on the membrane and filtering the water output. Because the patient cannot excrete water. This force is needed to expel fluid until it reaches isovolemia (fluid balance). At the end of dialysis therapy, many waste substances that have been removed electrolyte balance have been restored and the system can also be renewed.

Purpose of Hemodialysis As a replacement therapy, hemodialysis aims to remove protein metabolism products such as urea, creatinine and uric acid, remove excess water, maintain or restore the body's buffer system, maintain or restore the body's electrolyte levels, and improve the patient's health status.

6. The Concept Of Relaxation Training

Physical disorders can threaten a person's self-integrity, these threats take the form of external and internal threats (Stuart & Laraia, 2005). Taylor (2007) said that the threat of physical disturbances that occur in an individual's life can become a stressor that can cause stress and anxiety.

Relaxation training is a progressive muscle relaxation therapy that aims to tighten and relax the muscles in one part of the body at a time to provide a feeling of physical relaxation. This progressive muscle tightening and relaxing movement is carried out successively (Snyder & Lindquist, 2002). In this relaxation, the patient's attention is directed to differentiate the feelings experienced when the muscle group is relaxed and compared to when the muscles are tense.

Relaxation training is an easy and simple relaxation technique and has been widely used. Relaxation training is a procedure to achieve relaxation in muscles through two steps, namely by applying tension to a muscle group, and stopping the tension and then focusing on how the muscle relaxes, feeling a relaxing sensation, and the tension disappears (Richmond, 2007).

7. Indications and contraindications for Relaxation Training

Relaxation training is a form of mind-body therapy in complementary and alternative therapy (CAM) (Moyad & Hawks, 2009). Complementary therapy is a traditional treatment that has been recognized and can be used as a companion to conventional/medical therapy. Its implementation can be done simultaneously with medical therapy (Moyad & Hawks, 2009)

Some things that may be contraindications for PMR training include acute injury or musculoskeletal discomfort, and severe/acute heart disease (Fritz, 2005). PMR training can improve conditions that can cause hypotension, so it is necessary to check blood pressure to identify hypotensive tendencies (Snyder & Lindquist, 2002). Relaxation can cause hypotension, so it is necessary to check blood pressure to identify hypotensive tendencies (Snyder & Lindquist, 2002).

8. Benefits of Relaxation Training

Stress and anxiety trigger several sensations and physical changes, including increased blood flow to the muscles, muscle tension, speeding up or slowing down breathing, increased heart rate, and reduced digestive function (Ankrom, 2008). If the stress and anxiety experienced continue continuously, repeated psychophysiological responses can harm the body. Brown (1997; Snyder & Lindquist 2002) states that the stress response is part of a closed feedback pathway between the muscles and the mind. Appraisal of a stressor results in muscle tension that sends a stimulus to the brain and creates a feedback pathway. Relaxation training will inhibit this pathway by activating the work of the parasympathetic nervous system and manipulating the hypothalamus by focusing the mind to strengthen positive attitudes so that stress stimulation to the

hypothalamus is reduced (Copstead & Banasik, 2000).

9. Relaxation Training Steps

There are various variations of procedures carried out in carrying out relaxation exercises. In this study, researchers will use a relaxation training instrument developed by Haryati (2009) with the following relaxation training steps:

- (1) Muscles in the hip and leg area including the buttocks, thighs, calves, and feet to tighten the hip area. The procedure is to press the heel of your foot on the floor/back of the bed, bend your toes down as if touching the soles of your feet, and curl your toes up as if to touch your knees.
- (2) Muscles in the abdomen, chest, back and upper extremities. Exercises for the abdominal muscles are to press the abdominal area outwards and inwards. Back muscles by arching the back. The steps for the chest muscles are to take a deep breath and tighten the chest muscles. In the upper extremities, hold the arms and hands into fists, straighten the arms with stiff fingers facing upwards, make fists, bend the arms at the elbows, tighten the arms while still making fists, lift the shoulders as if touching the ears, raise the right shoulder as if touching your right shoulder. Raise your left shoulder as if touching your left shoulder.
- (3) Muscles in the neck and face area. The exercise to do is to press the back of your head on a pillow or the back of a chair, nod your head, or bend your neck towards your chest. The face (forehead, eyes, jaw, tongue, and lips) is frowning, blinking the eyes, clenching the jaw tightly, and pressing the lips together tightly.

METHODS

1. Population and Sample

The total population in the quantitative study was 240 CKD patients with a sample size of 35 CKD patients according to the sample calculation formula by Lemeshow (2004). The non-probability sampling technique (purposive sampling) is used in a quantitative approach by meeting the inclusion criteria: age 25 – 55 years, have experienced or are currently experiencing an anxiety response with a score as low as 5, able to communicate well and, able to express their experiences, not experiencing disease complications heart disease and hypertension while undergoing hemodialysis and are willing to become participants by giving consent as a respondent or participant.

2. Research Instruments and Data Collection Techniques

The Hamilton Anxiety Rating Scale (HARS) instrument is used to measure the anxiety scale. In-depth interview guide using semi-structured questions complete with field notes. Quantitative research data collection techniques are carried out in the following stages: the first stage is carried out after the researcher is approved and declared to have passed the ethical test by the Health Research Ethics Commission of the Manado Ministry of Health Polytechnic. The second stage is to ask for the respondent's consent on the informed consent sheet. then pre-test by screening the patient for anxiety.

3. Statistical Analysis

Quantitative data were processed using the SPSS computer program and analyzed univariately on the variables age and time suffering from CKD (mean, median, SD and min-max). The chi square test for normal data was used in bivariate analysis for anxiety responses.

RESULTS AND DISCUSSION

This research was conducted for one month from the second week of October to the week of November 2017 in the hemodialysis unit of Prof. Dr..R.D Kandou Manado Hospital, North Sulawesi Province, Indonesia. The results of the statistical analysis of quantitative data on CKD patients are seen in Tables 1 to 3. The results of

statistical analysis of quantitative data are as follows:

Table 1. Demographic characteristics of patients with CKD, n= 17

Variable	Frequency	Percentage
Gender:		
Man	9	52.9
Woman	8	47.1

Table 2. Distribusi Frekuensi Demografi Pasien CKD, n= 17

Variable	Mean	Median	SD	(min-max)
Age	45.35	51	9.956	25 - 55
Suffering from CKD for a long time	1.88	2	1.317	1 - 6

Table 2. Elements of Anxiety Measurement According to HARS, n= 17

Elements of Anxiety Measurement According to HARS	Frequency	Percentage
Anxious atmosphere	10	58.8
Easily tense	10	58.8
Afraid	13	76.4
Insomnia	11	64.7
Intellectual change	6	35.3
Depressive mood	11	64.7
<i>Somatic disorders:</i>		
Somatic	11	64.7
Sensory	15	88.2
<i>Disturbance :</i>		
Cardiovascular	3	17.6
Respiration	2	11.8
Gastrointestinal	2	11.8
Urinary	9	52.9
Automatic symptom	7	41.2
Changes in behavior	11	64.7

Table 4. Anxiety Response CKD, n= 17

Anxiety Response	Mean	Median	(min-max)
Pre test	12.71	13	7-15
Post test	8.76	9	6-12

Tabel 5. Differences in Anxiety Responses in CKD Patients, n= 17

Anxiety Response	Mean	Difference	Z Table ($\alpha=5\%$)	Z Count	P Value
Pre test	12.71	3.95	1.96	-3.425	0,001
Post test	8.76				

Statistical analysis for bivariate data used a non-parametric test (Wilcoxon test) for non-normal data distribution. The results of statistical analysis show that the difference in anxiety response before and after the intervention was 3.95 points with the calculated Z value in the Wilcoxon test being (- 3.425) and a p-value of 0.001.

The results of this study showed that the anxiety response of 17 CKD patient respondents fluctuated at mild to moderate anxiety levels. CKD patients undergoing hemodialysis are very vulnerable to psychosocial problems of anxiety and depression which affect the patient's quality of life.

Several research reports, including those by Vasilopoulou, et al (2016), reported a comparison of anxiety and depression responses in 395 CKD patients undergoing hemodialysis in Greece. 38.2%.

The results of the study showed that the anxiety response before the five-finger relaxation and hypnosis exercises was the highest at 15.00 points, at the mild anxiety level. Literature studies explain that anxiety is described as a feeling of fear that is unclear and not supported by the situation (Videbeck, 2008).

Even though the anxiety was at a mild level, the researchers paid special attention to one element of the statement on the HARS instrument regarding the assessment of self-perception during hemodialysis as a trigger factor for unpleasant mood changes. A total of 10 respondents (58.82%) out of 17 respondents experienced mood changes with a percentage of 50% in men (5 respondents) and women (5 respondents). Another statement in the HARS instrument explains mood changes related to a depressive mood which is described as experiencing decreased concentration. The research results showed that there were 11 respondents (64.7%) out of 17 respondents with a percentage of 54.4% for women and 45.5% for men.

The results of this study are supported by a research report by Najafi (2016), which reported that there was no difference in the prevalence of depression and anxiety in the two groups of hemodialysis patients, whereas in the correlation analysis test it was reported that anxiety was correlated with age. The prevalence in women (41.7%) is lower than in men (31.5%). Another study reported that the prevalence of anxiety and depression in CKD patients undergoing hemodialysis did not affect the prevalence of anxiety and depression in CKD patients (Seidel, et al. 2014). The researchers' assumption emphasizes that internal factors in anxiety are caused by CKD patients' fragile self-confidence in their abilities while undergoing hemodialysis which contributes to threats, internal conflict, and feelings of fear.

The results of this study describe an anxiety condition characterized by feelings of fear about the future experienced by 13 respondents (76.5%) and insomnia experienced by 11 respondents (64.7%). According to theoretical studies, the human brain is a unique organ in regulates thought processes, language, consciousness, and human emotions, including coordinating human behavior. The role of neurotransmitters influences attitudes, emotions, and behavior. Excessive neurotransmitters acetylcholine and serotonin in the brain trigger depression and anxiety.

Based on the results of this research, some respondents experienced intellectual changes as an anxiety response to feelings of fear, tension, and insomnia. Aggarwal, et al., (2017), reported the results of a cross-sectional study of 200 stage III CKD patients reporting a significant correlation in the prevalence of depression (69%), anxiety (71%), and insomnia (86.5%).

The HARS instrument explains that thoughts and feelings of tension are factors that trigger CKD patients to easily experience feelings of worry when undergoing hemodialysis. Research data shows that 10 respondents (58.8%) expressed feelings of worry easily. Emotional conflict and studies of family responses also support anxiety (Stuart & Laraia, 2005). Demographic characteristics.

Research by Martha, et al., (2008), reported that progressive muscle relaxation exercises reduced tension during headaches, insomnia, treatment in cancer patients, reduced pain in inflammatory arthritis patients. The results of this study showed that the anxiety response decreased at the lowest scoring level by 6 points after the intervention. Although it was not significant, the decrease in anxiety response scoring before intervention was from 15 points to 12 points in the post test measurement compared to the pre test.

Several related studies, including by Carolyn, et al., (1989), reported that the results of statistical tests had a significant effect on reducing anxiety and improving mental health (p -value < 0.001) by combining transcendental meditation techniques, progressive muscle relaxation and cognitive behavioral strategies on a group of black students. The results of this research are supported by research by Karin, et al., (2015). The effect of progressive muscle relaxation on reducing the secretion of the hormone cortisol which causes psychological stress in 100 students. The research results reported that there was a difference in the decrease in the hormone cortisol before and after progressive muscle relaxation of 10% and 8%. The effectiveness of this intervention was not influenced by neuroticism, gender, age and smoking status.

LIMITATIONS

Our study has some limitations. The limitations of the study include the relatively small sample size, the fact that data were collected from a single center, the fact that the data obtained from CKD patient were not compared with other CKD patient control group, which makes it difficult to determine whether the observed changes in anxiety responses are due to the intervention or other factors.

CONCLUSIONS

The results of the study describe the benefits and significance of combining relaxation exercises and five-finger hypnosis to reduce anxiety response scores in CKD patients undergoing hemodialysis. Nurses can apply the five-finger relaxation and hypnosis training module as non-pharmacological therapy for CKD patients in the hemodialysis unit. A large and varied sample is needed so that this research is more innovative and varied.

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