

THE EFFECTIVENESS OF PSYCHOEDUCATION TO REDUCE ANXIETY AND INSOMNIA AMONG PATIENTS WITH CHRONIC KIDNEY FAILURE IN HEMODIALYSIS UNIT

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ABSTRACT

Patients with chronic kidney disease who undergo hemodialysis may feel anxiety and experience insomnia. Anxiety is one of the factors that affects insomnia in patients with chronic kidney disease. One of the nursing interventions to reduce patient anxiety and insomnia is psychoeducation. The purpose of this research was to determine the effect of psychoeducation to reduce anxiety and insomnia in patients with chronic kidney failure treated in the hemodialysis unit. This was a quasi-experimental research using pre-test and post-test design with control group. The total sample was 54 respondents using a convenience sampling technique. Insomnia was measured using the Insomnia Severity Index questionnaire and anxiety was measured using the Zung Self Rating Anxiety Scale questionnaire. Psychoeducation intervention was carried out within three weeks. The results showed there were differences of anxiety score in the intervention group ($p < 0.001$) and control group ($p = 0.022$). There were differences of insomnia score in the intervention group ($p < 0.001$) and control group ($p = 0.029$). The results of multivariate test showed that the factors significantly related to anxiety were age and comorbidity. Psychoeducation using booklets was effective to reduce anxiety and insomnia of patients with chronic kidney disease undergoing hemodialysis.

Keywords: *Anxiety; chronic kidney disease; hemodialysis; insomnia; psychoeducation*



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INTRODUCTION

Chronic Kidney Disease (CKD) is one of global health issues. CKD is defined as a progressive or irreversible loss of kidney function characterized by a decrease in glomerulus filtration rate, an increase in urinary albumin excretion, or both (Jha et al., 2013). Chronic kidney Disease (CKD) is a condition of damaged kidneys causing ineffective blood filtration. It is manifested by a progressive decrease in kidney function and developing from early stage (I and II) to middle stage (III and IV) and eventually develops into kidney failure (stage V) (Ronco & La Manna, 2017).

Based on Centers for Disease Control and Prevention (CDC) in 2019, it is counted approximately 15% of adults population or about 37 million people in the United States suffered CKD, where 9 out of 10 adults did not notice if they had CKD. In

Indonesia, according to Indonesia Renal Registry (IRR) (2018), in 2018 there were 66,433 new CKD patients and 132,142 existing CKD patients who were actively undergoing hemodialysis. Based on Basic Health Research (RISKESDAS) in 2018, there was an average prevalence of CKD of 2.0% in 2013 to 3.8% in Indonesia.

There are several treatment for patients with CKD, including Continuous Ambulatory Peritoneal Dialysis (CAPD), hemodialysis (HD), and kidney transplantation. Hemodialysis (HD) is one of the treatment options in patients with CKD. Hemodialysis is a medical treatment for CKD patients so they can live longer. However, this treatment has adverse effects on the physical and psychological conditions of patients with (Indonesia Ministry of Health, 2018).

CKD is one of the diseases that causes its sufferers to feel anxious both because of the disease and the undergoing treatment. Tanvir et al., (2013) showed that 47.30 % (18/38) HD patient experienced mild anxiety, 28,94% (11/38) HD patient experienced moderate anxiety, and 23,64 (9/38) HD patient experienced severe anxiety. A study conducted by Rahman & Pradido, (2020) showed that the prevalence result of mild anxiety in HD patients as many as 86.5% (148/171) and moderate anxiety of 13.5% (23/171). Patients with chronic kidney failure who undergo hemodialysis therapy frequently consider that they must rely on a dialysis machine to survive. Besides, they argue that their life will be jeopardized and their life expectancy will be reduced, so that it triggers anxious that they will not be around much longer. Anxiety experienced by patients undergoing hemodialysis also affect the sleep quality (Ningrum et al., 2017).

Insomnia is a common sleep problem among patients with CKD. Stress, anxiety, and depression are factors that cause insomnia in patients with CKD (Ahmad et al., 2013). Rosdiana (2011) showed the relationship between anxiety and the incidence of insomnia. The results showed that there were 64.9% of patients with CKD (37 out of 49 patients) having severe anxiety experienced insomnia, while among patients with mild anxiety, there were 42.9% (21 out of 57 patients) of them experienced insomnia.

Sleep disorders experienced by patient with CKD undergoing hemodialysis are approximately 50-80% (Maung et al., 2016).. These problems are varied and ranged from insomnia, restless legs syndrome, to obstructive sleep apnea. Insomnia is reported in approximately 60% of patients undergoing hemodialysis, ranging from difficulty in sleeping to difficulty in maintaining sleep in a quarter of the patients (Noda et al., 2006).

Nursing intervention are able to be applied to overcome anxiety and insomnia is psychoeducation. Psychoeducation is a modality therapy carried out professionally by integrating and synergizing psychotherapy and educational interventions (Wowor et al., 2019). Psychoeducation is not a treatment, but it is designed to be part of the overall care plan. For example, knowledge of an individual's disease is essential for individuals and their families to be able to design optimal treatment and care plans (Supratiknya, 2011). Knowes (1985) in Rachmaniah (2012) stated that psychoeducation implementation could be provided by health providers such as doctors, psychologists, nurses, and midwives. Several studies prove that psychoeducation has a significant effect on reducing anxiety in CKD patients undergoing HD (Espahbodi et al., 2015; Wowor et al., 2019).

A preliminary study conducted at Hemodialysis Unit of PKU Muhammadiyah Hospital in Yogyakarta by interviewing 5 patients with CKD undergoing hemodialysis. This reported that patient with CKD experienced most anxious state when they were first diagnosed with kidney failure and had to undergo hemodialysis. it also revealed that 4 of 5 patients felt anxious, afraid, and nervous, declined their disease condition, had their disrupted activities, and experienced sleep disorder when they obtained their first hemodialysis.

Espahbodi et al., (2015) and Wowor et al., (2019) conducted psychoeducational research to reduce anxiety in hemodialysis patients, but research on psychoeducation in

reducing anxiety and insomnia has not been explored further in Indonesia especially at PKU Muhammadiyah Hospital Yogyakarta. Therefore, This research aims to determine "The effectiveness of psychoeducation to reduce anxiety with insomnia among patients with chronic kidney failure in hemodialysis unit of PKU Muhammadiyah Hospital Yogyakarta".

METHOD

Study design

The type of research was quasi experiment using pre-test and post-test design with control group. This research was conducted on December 2021 – January 2022.

Respondents

The population of this research were all patients with CKD who undergoing hemodialysis at PKU Muhammadiyah Hospital in Yogyakarta. The study involved 54 respondents that divided into intervention group (27 respondents) and control group (27 respondents) which calculated using Lemeshow formula. Sample was selected using a convenience method. The inclusion criteria were patients with CKD who undergoing hemodialysis with a dialysis duration <2 years, dialysis frequency was twice a week, had mild anxiety to panic anxiety level, had mild to severe insomnia level.

Instruments

The instrument applied in this study to measure the anxiety of hemodialysis patients was , the Zung Self Rating Anxiety questionnaires that had been modified and translated by Nasution et al., (2013) while to assess the insomnia of HD patients using Insomnia Severity Index questionnaires that had been modified and translated by Putri et al., (2017) before and after intervention in both groups.

Data collection

Before conducting the research, the researcher first distributed informed consent to the respondents, then pre-tested the intervention group and the control group. In the intervention group, psychoeducation was delivered with booklets, while there is no intervention to control group. However, control group were provided booklet after had posttest. Psychoeducation was carried out for 3 weeks using booklets for 5 sessions.

Data analysis

Bivariate analysis applied to examine the differences of anxiety and insomnia pre and posttest was paired t-test. Independent t test used to analyze the differences of pre-test and post-test anxiety and insomnia scores between intervention and control groups. Multivariate analysis used liner regression to figure out the external variables affecting psychoeducation on anxiety and insomnia. The significance value in this study was $p < 0.05$

Ethical consideration

This research had been approved by the Ethics Commission of the Faculty of Medicine, Public Health and Nursing of Universitas Gadjah Mada (The Medical Research Ethic Committee, MHREC) Ref number: KE/FK/0959/EC/2021 and the approval of the ethics committee of PKU Muhammadiyah Hospital Yogyakarta with No. 00237/KT.7.4/XII/2021.

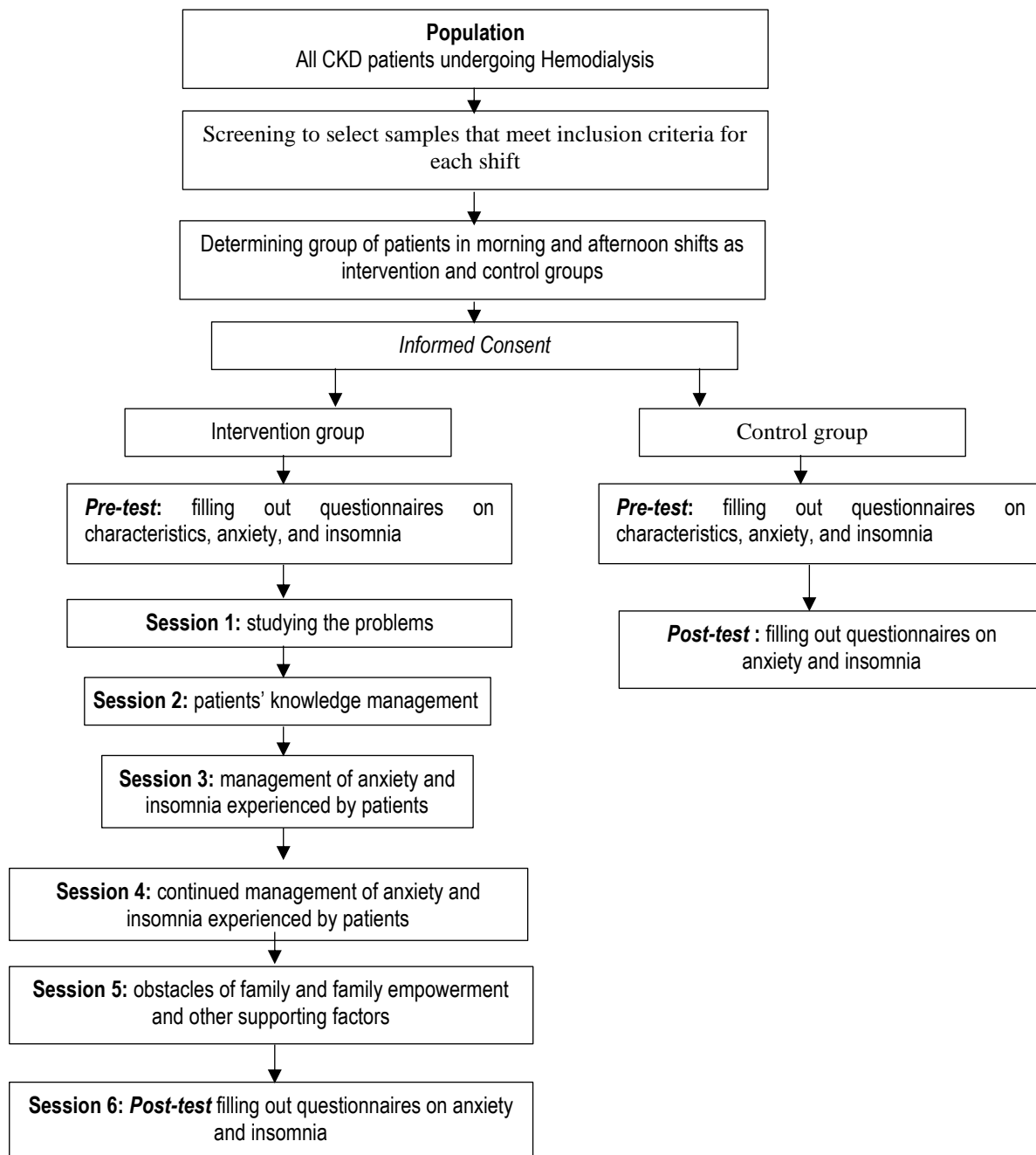


Figure 1. Flowchart of study

RESULTS

Based on the respondents' characteristic in both groups, the characteristics of sex, HD duration, educational background, work status, marital status, and comorbidity in both groups

show *p* value > 0.05, so there is no significant difference (homogeneous) between both groups. However, in the age variable there is a difference in age characteristics in both groups (*p* < 0.05). (See Table 1).

Table 1. Frequency Distribution of Respondents Characteristic at PKU Muhammadiyah Yogyakarta Hospital in December 2021-January 2022 (n=54)

| Variables | Group | | | | p-value | |
|-----------|-----------------|----|---------|----|---------|--------|
| | Intervention | | Control | | | |
| | f | % | f | % | | |
| Age | 18-25 years old | 4 | 14.8 | 1 | 3.7 | 0.003* |
| | 26-35 years old | 5 | 18.5 | 0 | 0 | |
| | 36-45 years old | 5 | 18.5 | 3 | 11.1 | |
| | 46-55 years old | 6 | 22.2 | 8 | 29.6 | |
| | 56-65 years old | 7 | 25.9 | 15 | 55.6 | |
| Sex | Male | 13 | 48.1 | 16 | 59.3 | 0.586 |
| | Female | 14 | 51.9 | 11 | 40.7 | |

| | Variables | Group | | | | p-value |
|-------------------|--|--------------|------|---------|------|---------|
| | | Intervention | | Control | | |
| | | f | % | f | % | |
| Dialysis Duration | 1-12 Months | 13 | 48.1 | 12 | 44.4 | 1.000 |
| | 13-24 months | 14 | 51.9 | 15 | 55.6 | |
| Education | No formal education | 2 | 7.4 | 0 | 0 | 0.741 |
| | Elementary, junior high school or equivalent | 7 | 25.9 | 9 | 33.3 | |
| | High school or equivalent | 13 | 48.1 | 12 | 44.4 | |
| | College | 5 | 18.5 | 6 | 22.2 | |
| Occupation | Unemployed | 15 | 55.6 | 18 | 66.7 | 0.278 |
| | Labor | 3 | 11.1 | 4 | 14.8 | |
| | Farmer | 2 | 7.4 | 2 | 7.4 | |
| | Merchant | 0 | 0 | 1 | 3.7 | |
| | Private employee | 4 | 14.8 | 0 | 0 | |
| | Civil servants | 2 | 7.4 | 2 | 7.4 | |
| | Retiree | 1 | 3.7 | 0 | 0 | |
| Marital Status | Married | 20 | 74.1 | 24 | 88.9 | 0.204 |
| | Unmarried | 5 | 18.5 | 1 | 3.7 | |
| | Widow/widower | 2 | 7.4 | 2 | 7.4 | |
| Comorbidity | DM | 2 | 7.4 | 1 | 3.7 | 0.100 |
| | DM, Hypertension | 7 | 25.9 | 4 | 14.8 | |
| | Hypertension | 12 | 44.4 | 10 | 37.0 | |
| | Hypertension and others | 2 | 7.4 | 3 | 11.1 | |
| | DM, Hypertension, + others | 1 | 3.7 | 4 | 14.8 | |
| | Heart disease | 0 | 0 | 1 | 3.7 | |
| | Uric acid | 0 | 0 | 2 | 7.4 | |
| None | 3 | 11.1 | 2 | 7.4 | | |

The difference in anxiety score of patients with CKD in both groups was shown in Table 2. The results showed that in the intervention group, the mean score of anxiety before intervention was 38.37 (moderate anxiety level) and post-test mean score of anxiety was 32.67 (mild anxiety level). While, in the control group with, pre-test average score of anxiety was 34.30 (mild anxiety) and post-test score was 35.59 (mild anxiety). In within group, there was significant difference between pretest and post-test score of anxiety in intervention group ($p=0.000$) and in control group ($p=0.022$). It could be interpreted that there are significant differences in anxiety in the before and after psychoeducation within intervention group and the control group.

Table 2. Differences in anxiety of patients with CKD before and after the intervention in the intervention and control groups

| Groups | Pre-test | Post-test | p-value |
|--------------|-------------------|-------------------|---------|
| | Mean \pm SD | Mean \pm SD | |
| Intervention | 38.37 \pm 7.088 | 32.67 \pm 6.493 | 0.000 |
| Control | 34.30 \pm 6.250 | 35.59 \pm 6.553 | 0.022 |

This study displayed the differences in insomnia of patients with CKD. It showed that in the intervention group, the mean score of pre-test insomnia was 12.22 (mild insomnia level) and post-test average score was 7.93 (no insomnia). In the control group, pre-test average score was 10.81 (mild insomnia level) and post-test mean score was 11.52 (mild insomnia level). Within the group, there was significance difference insomnia score before and after psychoeducation\ the intervention group ($p=0.000$) and control group ($p=0.029$) (see Table 3)

Table 3. Differences in insomnia of patients with CKD before and after the psychoeducation within the intervention and control groups

| Groups | Pre-test | Post-test | p-value |
|--------------|-------------------|-------------------|---------|
| | Mean \pm SD | Mean \pm SD | |
| Intervention | 3.455 \pm 0.544 | 2.731 \pm 0.694 | 0.000 |
| Control | 3.256 \pm 0.474 | 3.37 \pm 0.415 | 0.029 |

In addition, there is a significant difference mean score f ($p=0.000$) between the intervention and control group. This study found that psychoeducation also had large effect on on reducing anxiety ($ES=2.879$) and insomnia ($ES=3.013$) after 1 week of intervention. (See Table 4)

Table 4. Difference in mean value of anxiety and insomnia of hemodialysis patients before and after the intervention between the intervention and control groups (n= 54)

| Variables | Group | | Effect Size | p-value |
|--|---------------------|-------------------|-------------|---------|
| | Intervention (n=27) | Control (n=27) | | |
| | Mean \pm SD | Mean \pm SD | | |
| Difference in anxiety score (pre-post test) | 5.70 \pm 2.035 | -1.30 \pm 2.771 | 2.879 | 0.000 |
| Difference in insomnia score (pre-post test) | 4.30 \pm 1.564 | -0.70 \pm 1.750 | 3.013 | 0.000 |

This study also assessed the external variables related to anxiety including age, marital status, and comorbidity

($p<0.25$), while the external variables related to insomnia were age, sex, and education ($p<0.25$).

Table 5. Results of bivariate test of the relationship between external variables and anxiety and insomnia

| Variables | | Anxiety | Insomnia |
|----------------|---|---------|----------|
| | | p-value | p-value |
| Age | | 0.006* | 0.096 |
| Sex | Male Female | 0.575 | 0.239 |
| HD Length | | 0.945 | 0.764 |
| Education | No formal education Elementary, junior high school or equivalent High school or equivalent College | 0.572 | 0.231 |
| Occupation | Unemployed Labor Farmer Merchant Private employee Civil servants Retiree | 0.290 | 0.443 |
| Marital Status | Married Unmarried Widow/widower | 0.086 | 0.277 |
| Comorbidity | DM DM, Hypertension Hypertension Hypertension and others DM, Hypertension, + others Heart disease Uric acid None | 0.122 | 0.641 |

Multivariate analysis using the linear regression with backward method was conducted to determine external variables that affected the change in anxiety and insomnia scores.

Table 6. Results of Linear Regression Test of the relationship of external variables to anxiety

| Variables | Anxiety | | |
|-----------------|---------|----------|-----------------|
| | B | p-value | 95% CI |
| Model I | | | |
| Age | -0.120 | 0.013* | -0.214-(-0.026) |
| Marital Status | -0.529 | 0.715 | -3.249-2.370 |
| Comorbidity | -0.680 | 0.019* | -1.245-(-0.114) |
| Constant | 11.616 | <0.001* | 5.862-17.371 |
| R ² | | 0.228 | |
| Model II | | | |
| Age | -0.129 | 0.002* | -0.209-(-0.50) |
| Comorbidity | -0.683 | 0.018* | -1.243-(-0.123) |
| Constant | 11..033 | <0..001* | 6..292-15..773 |
| R ² | | 0..226 | |

The results found that there were two external variables that were significantly related to anxiety. which were age (B= 0.129. p = 0.002)and comorbidity (B = 0.683, p = 0.018).

However.. the results of the multivariate test found that there was no significant external variable related to insomnia.

Table 7. Results of Linear Regression test on the relationship of external variables to insomnia

| Variable | Insomnia | | |
|-----------------|----------|---------|---------------|
| | B | p-value | CI 95% |
| Model I | | | |
| Age | -0.055 | 0.080 | -0.117-0.007 |
| Sex | 0.813 | 0.341 | -0.884-2.511 |
| Education | -0.275 | 0.617 | -1.370-0.821 |
| Constant | 4.097 | 0.173 | -1.860-10.055 |
| R ² | | 0.085 | |
| Model II | | | |
| Age | -0.052 | 0.090 | -0.112-0.008 |
| Sex | 0.935 | 0.250 | -.679-2.549 |
| Constant | 2.979 | 0.133 | -.942-6.901 |

| Variable | Insomnia | | |
|------------------|----------|---------|-------------|
| | B | p-value | CI 95% |
| R ² | | 0.081 | |
| Model III | | | |
| Age | -0.053 | 0.084 | -0.13-0.007 |
| Constant | 4.397 | 0.006* | 1.323-7.471 |
| R ² | | 0.056 | |

DISCUSSION.

The results showed findings the significant differences in the anxiety score of the intervention group compared to control group after psychoeducation. Although in the control group there were also significant results, from the different test results, the difference in anxiety scores from the two groups obtained large effect size of 2.879. These results showed that psychoeducation with booklet provided in the intervention group is more effective in significantly reducing anxiety. The finding was in line with Wowor *et al.*, (2019) that reported a significant effect for psychoeducational interventions on the anxiety of hemodialysis patients. Ozturk *et al.*, (2015) also that the administration of psychoeducation has a positive effect and was a good choice in reducing anxiety and pain.

In this study, most of the respondents said that when they noticed that they had to receive hemodialysis therapy, they had concerns, fear, anxiety, sleeping difficulty due to lack of knowledge about hemodialysis and would do during dialysis. However, they still adhere to dialysis therapy in accordance with the physician recommendations. Based on this finding, basically humans respond to all stimuli either positive or negative. In this case, respondents who experienced psychological problems (anxiety and sleeping difficulty) when undergoing hemodialysis therapy could respond appropriately or less appropriately, for example, patients desperate with their condition.

The provision of psychoeducation is by using booklet media containing information about chronic kidney failure, the definition of anxiety and insomnia, anxiety management consisting of deep breath relaxation and affirmative relaxation, and insomnia management. Providing material psychoeducation about CKD could increase the knowledge of patients and families. This was in line with previous study by Setyowibowo *et al.*, (2022) that psychoeducation can reduce anxiety with patients who felt isolated, so that the patients receive social support and increase their knowledge of coping strategies, and learn about stress management (breathing and relaxation exercises).

Education also can decrease the anxiety of hemodialysis patients. The media and methods used when providing health education is one of the factors that increase respondents' knowledge. Individual discussion method with storytelling approach could be applied, so respondents develop and feel comfortable when asking questions or conveying perceived concerns. Previous study by Manalu *et al.*, (2021) stated that the provision of health education can reduce the level of anxiety in patients with CKD during hemodialysis. The increase in respondents' knowledge has an impact on their ability to control their anxiety as before gaining knowledge about the disease and therapy.

In this study, psychoeducation implemented into two techniques to cope with anxiety, such as deep breathing relaxation and affirmative relaxation. First, respondents were taught deep breathing relaxation to be implemented when anxiety occurs. Relaxation is an effective nursing intervention, which has been introduced as a non-pharmacological method that is beneficial for reducing stress

on its effect on mental, physical condition, depression, anxiety, improving sleep quality, and improving the quality of life of hemodialysis patients (Elsayed *et al.*, 2019). Darmawati *et al.*, (2021) stated that there were differences or changes in anxiety levels before and after psychoeducation because psychoeducation involved anxiety management. In this anxiety management, the researchers carried out intervention with the aim that patients can express their anxiety by using deep breath relaxation techniques. This is in line with Carson's theory (2012) explained that psychoeducation is a strategy to reduce risk factors associated with behavioral symptoms such as anxiety.

Respondents were also taught affirmation relaxation during the deep breathing relaxation technique. Positive affirmations as psychological therapy aims to cope with anxiety or to alter maladaptive coping to adaptive coping of patients undergoing hemodialysis. Teaching positive affirmations foster patients' intrinsic motivation to undergo hemodialysis, help patient to think positively about their illness, and make conscious behavioral changes to patients in responding to hemodialysis therapy on a regular basis (Kusumastuti *et al.*, 2017; Wijaya & Rahayu, 2019). After implementing deep breathing relaxation and affirmative relaxation, patients gain to relieve their anxiety.

To evaluate the process, the researchers conducted observations during psychoeducation by observing the smooth-running of psychoeducation. It consists of several aspects such as, the active participation in asking question from the respondents or their families,, sharing, and discussing about their feedbacks to the psychoeducation that has been delivered at each meeting, punctuation, asking the unclear matters, , and expressing satisfaction with psychoeducation material.

The results of the multivariate test show that there are only two external variables that are significantly related to anxiety, which were age and comorbidities. It could be concluded that the factors that affect anxiety in this study are age and disease. This study is in line with Manalu *et al.*, (2021) found that age affects anxiety in patients with hemodialysis. Patients aged 60 years-old and above have lower levels of anxiety compared to younger patients (Semaan *et al.*, 2018). In this study, comorbidities also affect anxiety in patients with hemodialysis. Anxiety is a common problem faced by most people, especially those with chronic diseases. This study in line with Dziubek *et al.*, (2021) result which found that comorbidities affect anxiety in patients with chronic kidney disease.

This study found that there were significant differences in the insomnia level in intervention group compare with control group at pre-test and post-test. Although in the control group there are also significant results, from the different test results, the difference in insomnia scores from both groups obtained a large effect size of 3.013. These results indicate that psychoeducation given to the intervention group with booklet administration can significantly reduce anxiety.

Several previous studies showed that psychoeducation able to reduce patients' psychological problems (Liza, 2015; Mahayanti, 2015; Nisa, 2018; Rachmaniah, 2012). Previous study conducted by Ridhoni (2013) using an observation method and interview with 3 sessions showed that psychoeducation can provide insight (understanding) about the problems (insomnia) experienced by the clients and they become aware of how to overcome sleep disorders experienced by the client.

In this study, psychoeducation used to reduce insomnia in hemodialysis patients were direct interaction, gave respondents opportunity to convey the cause of insomnia during hemodialysis, provided explanations related to insomnia management, being involved to create a comfortable environment, do exercise, avoid caffeine-containing drinks, avoid stress, avoid sleeping pills, and practice relaxation when experiencing insomnia. Communication between patients and health workers is an important factor in influencing the success of patient self-care undergoing dialysis because through communication with health workers. It can provide information, health tips, and provide problem solving related to the obstacles experienced during the self-care process (Curtin et al., 2008; Wasalamah et al., 2018). More information lead hemodialysis patients feel competent and are able to reduce their anxiety and insomnia.

Sleep disorders, especially insomnia, are widely complained by hemodialysis patients and lead to poor sleep quality. Treatment for all patients must begin with basic sleep hygiene. Sleep hygiene is very crucial to have a healthy physical and mental life as well as the treatment of some sleep disorders (Aini & Maliya, 2020). The psychoeducation booklet provides sleep education including create a comfortable environment, exercise, avoid drinks containing caffeine, pray or read books, avoid taking sleeping pills, and practice relaxation techniques. Borzou et al., (2019) and Soleimani et al., (2016) proposed that sleep education has a positive impact to improve sleep quality among hemodialysis patients and determining the state of fatigue.

Practicing sleep hygiene combined with deep breathing relaxation can achieve REM (Rapid Eye Movement) sleep, promote muscle relaxation, stimulate cerebral activity (oxygen consumption, blood flow, and nerve stimulation), and help patients feel more relaxed and comfortable in their sleep. Practicing deep breathing while praying based on their respective beliefs will lead to stronger relaxation responses (Hasina et al., 2019; Wijayanti 2017). This study also found that respondents need to do physical exercise based on their capability, such as walking, resistance training, and aerobic. Physical exercise in hemodialysis patients is considered safe and feasible, and it can improve physical and psychological functions (Chung et al., 2017; Ma et al., 2012). Sheshadri et al., (2019) stated that HD patients who are more active in physical activity rarely experience insomnia.

The results of the multivariate test showed that there was no significant external variable in insomnia. Lufiyani et al., (2019) and Rehman et al., (2020) found there was no significant association between age and insomnia. The incidence of insomnia generally occurs in early adulthood or in the 30-50 years old. Patients had difficulties to initiate sleep and waking up earlier than usual. In contrast, several studies revealed that patients more than 60 years-old had significantly higher levels of insomnia than younger patients (Cabrera et al., 2017; Frengki et al., 2019; Reynaga-Ornelas, 2019; Xhulia et al., 2015). Sleep problems in elderly people undergoing hemodialysis were mostly caused by anxiety disorders,

depression, and accompanying diseases that caused physical, cognitive, and emotional decline.

This study revealed that gender was not associated with insomnia. This study result was in line with Borzou et al., (2019); Lufiyani et al., (2019) and Rai et al., (2011) studies which found that gender was not associated significantly with insomnia. Insomnia experienced more often by female patients than male HD patients with hemodialysis. This might be due to women are more likely to bear the heaviest burden of their family problems so that they have to deal with insomnia and anxiety. The education level also does not affect insomnia among HD patient significantly. Previous study also found that education level did not affect the high incidence of insomnia in patients undergoing hemodialysis therapy (Frengki et al., 2019).

The limitation of this study is that the control group received a booklet at the end of the meeting after the post-test. However, during the intervention process, the respondents in the control group could access information through leaflets provided in the HD unit. During the pre-test and post-test, some respondents had their questionnaires filled out by their families because their conditions made it impossible for them to fill out it. However, the researchers had explained to the family that the questionnaire must be completed by the patients and ensured that the patient and their family understand about this.

CONCLUSION AND RECOMMENDATION

The psychoeducational using booklet was effective to reduce anxiety and insomnia among CKD patients undergoing hemodialysis. Occupation is an external variable which had a significant relationship with anxiety. Future studies are suggested to explore more the psychological impacts of CKD for patients undergoing hemodialysis and their families by developing psychoeducational interventions for patients and caregivers. In addition, future studies also may involve larger number of respondents.

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