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ORIGINAL RESEARCH

THE INFLUENCE OF PROGRESSIVE MUSCLE RELAXATION TECHNIQUES ON DEPRESSION LEVEL OF CHRONIC KIDNEY DISEASE PATIENT UNDERGOING HEMODIALYSIS THERAPY

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ABSTRACT	Keywords
<p>Hemodialysis is a renal replacement therapy for patients with the chronic renal disease who are a decline in renal function. The complex therapy and physical condition of chronic kidney disease and hemodialysis patient involve a severe stressor that leads to depression. Progressive muscle relaxation technique is one of the nonpharmacological therapies that treat depression. This research aimed to prove the influence of progressive muscle relaxation technique to changes in depression level in chronic kidney disease with hemodialysis in Dr. Wahidin Sudiro Husodo Mojokerto hospital. In this research design used is a Quasy experiment with pre-test post-test control group design. A sample of 30 people was taken by simple random sampling. 15 people from the experimental group were given routine progressive muscle relaxation technique in 2 times a day of the week, and 15 people from the control group were given not routine progressive muscle relaxation techniques in 2 days one time in a week. The research instrument was Beck Depression Inventory. Wilcoxon Signed Rank Test shows that $p\text{-value} (0.001) < \alpha (0.05)$, so it is accepted that there is an effect of progressive muscle relaxation on the depression level of chronic kidney disease patient undergoing hemodialysis. To test the U-Mann Whitney shows that $p\text{-value} (0.005) < \alpha (0.05)$ so that H_0 is rejected it means there is different of the change depression level between experiment group and the control group. This therapy can increase the production of melatonin and serotonin, reduce stress hormone cortisol. PMR also, lowering the muscle tension, do do the positive thinking so, though that is an influence to decrease in depression level. Routine muscle relaxation distracts the stressor every day during training.</p>	<p>Depression, Hemodialysis, Progressive muscle relaxation.</p>

PRELIMINARY

Chronic renal failure results from a decline in kidney function that is chronic and irreversible. The Decreased kidney function will cause fluid imbalance, electrolytes and metabolic disorders in the body (Suhartono, 2009). Thus, renal replacement therapy is needed to deal with the progressive decline in renal function. Hemodialysis therapy is necessary for patients with chronic renal failure in the long term or permanently (Suhartono, 2009). Hemodialysis is made a variety of psychological problems in patients with chronic kidney disease (CKD). Depression is a common psychosocial problem in patients undergoing hemodialysis (Amalia, 2015).

Depression is often characterized by melancholy, sadness, lethargy, loss of passion, no spirit, feeling helpless, guilt, uselessness, and despair (Joseph, 2011). Factors that affect depression include loss of object/person, genetic factor, the cognitive tendency to pessimism, lack of positive reinforcement, hormonal factors and personality (Stuart, Gail, 2016).

The number of patients with chronic renal failure also continues to increase in Indonesia. Data in 2013 of new patients who will undergo hemodialysis amounted to 15,128 and patients who are actively undergoing hemodialysis 9.396 people whereas In 2014 there was an increase in the number of new patients by 17,193 and active patients of 11,689 people. East Java province became the second largest contributor of hemodialysis patients in Indonesia after West Java (7th Report Of Indonesian Renal Registry, 2014).

Symptoms of depression occur in hemodialysis clients may worsen over time (Bossola et al., 2012; Asti, 2014). A study

from the faculty of medicine of the University of Indonesia found that the prevalence of depression in patients with renal failure who is undergoing hemodialysis reached 31.1% (Wijaya, 2005; EkaNurul, 2014). Then Dr. Andri, Sp.KJ from Psychosomatic Clinic Omni Hospital, Tangerang (Kompasiana, 2012) states that the prevalence of depression that occurs in hemodialysis patients today is about 20% - 30% and even higher up to 47% (Azahra, 2013).

The incidence of depression is common in all inpatient clients with physical illness. The highest intensity and frequency occurs in clients with severe pain, and end-stage renal disease is often associated with this depressed condition (Stuart, Gail, 2016). The onset of psychological symptoms, especially depression experienced by many patients with CKD, originated from the physical stress they experienced, which in turn affected psychological and psychological stress. Problems of depression are also arising due to role disorders experienced by patients with CKD. This can be a concern for the relationship with a partner, lifestyle changes due to dietary restrictions and complex therapy and the presence of feelings of isolation (Armiyati, 2014).

The onset of depression is also a response to future uncertainty and fear of death (Sadock, 2010). Symptoms of depression depicted in patients with chronic renal failure who is undergoing hemodialysis are associated with increased mortality due to increased disease complications and side effects of dialysis machines and the deterioration of the quality of life of patients undergoing hemodialysis (Amalia, 2015).

Pharmacologic therapy of depression is rarely given that chronic kidney disease

affects both pharmacokinetic and pharmacodynamic effects of drug therapy, the use of other non-pharmacologic therapy would be better used to treat depression (Le Mone, 2015). Psychological conditions, especially depression can be reduced with an-pharmacology therapy one of them by performing progressive muscle relaxation techniques (Sholihah, 2015).

The progressive muscle relaxation technique is a therapy by focusing on a muscle activity by identifying the tense muscles and then slowing down the muscle tension slowly to get the feeling of relaxation (Herod, 2010; Setyoadi, 2011). Implementation of progressive muscle relaxation techniques makes the muscles will get a stretch first and then stop the tension and feel the loss of muscle tension in a relaxed manner. Benefits or advance derived from PMR in the form of relaxation and positive mind reinforcement make PMR technique one of the effective non-pharmacologic therapy is applied to reduce depression

RESEARCH METHOD

In this research design used is a Quasy experiment with pre-test post-test control group design. The number of population taken by criteria of researchers amounted to 55 people. Sampling using probability sampling technique that is simple random sampling. The minimum sample size in the type of experimental research is 15 subjects per group (Kasjono H, 2009). 15 subjects for the experimental group and 15 subjects for the control group. The study was conducted on March 11 - April 18, 2017. The instrument in this research uses a BDI Questionnaire (Beck Depression Inventory) which consists of 21 questions. In the experimental group: treatment was given progressive muscle relaxation (2 times per week) routine while control group: given

progressive muscle relaxation technique (once per 2 days a week) was not routine.

The statistical test in this study using Wilcoxon Signed Rank Test is to know the change of depression level before and after giving treatment to experiment group and control. H_0 is rejected, if $p\text{-value} < \alpha (0,05)$. Meanwhile, to know the difference between the change of depression level in the experimental group with the control group in the patients with chronic renal failure who is undergoing hemodialysis used the U-Mann Whitney statistical test. H_0 is rejected $p\text{-value} < \alpha (0,05)$. Analyze this data using SPSS 20.0 software program.

RESEARCH RESULT

Table 4.1 The frequency Distribution of frequency of respondents by age.

No	Age	F	%
1.	19-27 years	3	10,0
2.	28-36 years	1	3,3
3.	37-45 years	10	33,3
4.	46-54 years	9	30
5.	55-63 years	5	16,7
6.	64-72 years	2	6,7
Total		30	100

Based on table 4.1 overall respondents taken mostly aged 37-45 years is ten respondents (33.3%).

Table 4.2 The frequency distribution of respondents by gender.

No	Gender	Total	
		(F)	(%)
1.	Male	17	56,6
2.	Female	13	43,4
Total		30	100

Based on table 4.2 Majority respondents are male some 17 respondents (56.6%).

Tabel 4.3 The frequency distribution of respondents by occupation

No	Occupation	F	%
1.	Unemployment	16	53,3
2.	Student	1	3,3
3.	Private	4	13,3
4.	Entrepreneur	8	26,7
5.	Farmer	0	0
6.	Retired	1	3,3
Total		30	100

Based on Table 4.3 it is known that the majority of respondents did not work (unemployment) as many as 16 respondents (53.3%).

Tabel 4.4 The frequency distribution of respondents based on long-term hemodialysis.

No	Long-term HD	Total	
		F	%
1.	1-7 months	12	40,0
2.	8-14 months	9	30,0
3.	15-21 months	1	3,3
4.	22-28 months	5	16,7
5.	29-35 months	2	6,7
6.	36-42 months	1	3,3
Total		30	100

Based on Table 4.4 it is known that majority respondents Hemodialysis for 1-7 months as many as 12 respondents (40%).

Tabel 4.5 The Frequency distribution of respondents based on prior history of the disease.

No	History Illness	Total	
		F	%
1.	Hipertension	17	56,7
2.	Diabetes Mellitus	6	20,0
3.	Lifestyle	5	16,7
4.	Urinary Disease, Obstruction / Infections	2	6,7
Total		30	100

Based on table 4.5 it is known that the majority of respondents have a history of disease first hypertension is 17 respondents (56.7%).

Tabel 4.6 The frequency distribution of depressive levels before treatment in the experimental and control group

Depression Level	Experiment		control		
	F	%	F	%	
1 Mild	6	40,0	5	33,3	
2 Limit	3	20,0	5	33,3	
3 Moderate	4	26,7	4	26,7	
4 Severe	2	13,3	1	6,7	
Total		15	100	15	100

Based on table 4.6 it is known that in the experimental group most of the respondents had mild depression that is as much as six respondents (40,0%) while in the control group mostly had mild depression and depression limit was five respondents respectively (33,3%).

Tabel 4.7 Distribution of the frequency of depression levels after treatment in the experimental group and control group.

Depression Level	Experiment		Control		
	F	%	F	%	
1. Normal	6	40,0	0	0	
2. Mild	4	26,7	7	46,7	
3. Limit	3	20,0	5	33,3	
4. Moderate	2	13,3	3	20,0	
5. Severe	0	0	0	0	
Total		15	100	15	100

Based on Table 4.10 it is known that in the experimental group most of the respondents did not experience depression (normal) that is as much as six respondents (40.0%) while in the control group mostly experience mild depression as many as seven respondents (46.7%).

Tabel 4.8 Analysis of changes in depressive levels before and after experimental group treatment in patients with CKD undergoing HD.

	Depression Level in Experimental Group	Pre-Test		Post-Test	
		F	%	F	%
1	Normal	0	0	6	40,0
2	Mild	6	40,0	4	26,7
3	Limit	3	20,0	3	20,0
4	Moderate	4	26,7	2	13,3
5	Severe	2	13,3	0	0
Total		15	100	15	100

p value= 0,001

Based on Table 4.8 The results of statistical test Wilcoxon Signed Ranks Test using SPSS version 20.0 is known that the p-value (0.001) $< \alpha$ (0.05), it means H_0 rejected, so, there is the effect of progressive muscle relaxation techniques 2 times a day a week) TO CKD patients undergoing HD at Dr. WahidinSudiroHusodoMojokerto Hospital.

Tabel 4.9 Analysis of changes in depression levels before and after control group treatment in patients with CKD who is undergoing HD

	Depression Level in Control Group	Pre-Test		Post-Test	
		F	%	F	%
1	Normal	0	0	0	0
2	Mild	5	33,3	7	46,7
3	Limit	5	33,3	5	33,3
4	Moderate	4	26,7	3	20,0
5	Severe	1	6,7	0	0
Total		15	100	15	100

p value= 0,025

Based on table 4.9 it is known that, Wilcoxon Signed Ranks Test statistic test results using SPSS version 20.0 is known that the value of p-value (0.025) $< \alpha$ (0.05), meaning that H_0 is rejected, so there is influence of progressive muscle relaxation technique 1 times per 2 Day (not routine) control group of CKD patients undergoing

HD in Dr. WahidinSudiroHusodoMojokerto Hospital.

Tabel 4.10 The difference between changes in depressive levels before and after treatment in the group in the experimental group and the control group in patients with CKD undergoing HD.

	Depression Level	N	p-Value
1	Experimental Group	15	0,005
2	Control Group	15	

Based on Table 4.10 it is known that the test results Mann-Whitney test using SPSS version 20.0 is known that the value of p-value (0.005) $< \alpha$ (0.05), meaning H_0 is rejected, H_1 accepted. Thus, there was a difference in depression levels before and after the progressive muscle relaxation technique two times a week (routine) in the experimental group with changes in depression levels before and after the technique of progressive muscle relaxation technique once per 2 days (not routine) in the control group.

DISCUSSION

1. Levels of depression before treatment in the experimental group and before treatment in the control group in patients with CKD who is undergoing HD.

Based on Table 4.6 it is known that in the experimental group most of the respondents had mild depression that is as much as six respondents (40,0%) while in the control group mostly had mild depression and depression limit was five respondents respectively (33,3%).

The onset of depressive symptoms experienced by many GGK patients originates from the physical stress it undergoes, which ultimately affects psychiatry and psychological stress. Depression conditions are influenced by predisposing and precipitation factors that result in a person's assessment of the stressor being negative. The predisposing factors of depression consist of genetic factors, self-transferred anger (aggression), loss, personality, cognitive, learning models, behavioral models, and biochemical factors (Sadock, 2010). The precipitating factors of depression include loss of affection, life events, role tension, stressor assessment, and physiological changes (Stuart G, 2016).

Physiological factors become the main factor of depression in GGK patients undergoing hemodialysis. Some physiological factors that become the beginning of the occurrence of depression include shortness of breath, fatigue, edema, cramps, hyperthermia, pain, anemia to pruritus, etc. Some of these physical conditions that many effects and affect daily activities, such as work, sleep, and social.

The role loss factor cannot be ignored either. The loss factor is the predisposition of depression (Sadock, 2010) The theory of loss associated with developmental factors (e.g., loss of objects/people) and individuals are powerless to overcome loss (Puwaningsih, 2010). In this case, a man will feel the loss of a role as a breadwinner due to the illness he suffered.

Losing roles as a breadwinner causes the economy to be hampered. This is a separate stressor for respondents. Where the majority of patients are still in productive age. A physical condition that decreases the inability to perform daily activities is the

cause of their job losses and roles. So it is not impossible because the loss of this role to be a predisposing factor (cause) affective disorder/mood depression.

Kidney failure is a disease terminal illness. Thus, a family system is needed for positive reinforcement. The ultimate goal of this is that patients are more often think positive so that the psychic condition does not worsen his physical condition.

Physical condition, loss of role, inadequate support is the dominance of factors affecting depression in patients with chronic renal failure who is undergoing depression. And several other factors also affect the condition of depression. Different personalities, Experiences, defense systems and supporters in each patient also affect the depressive level of the patient. So the depression response to each pain is different.

2. Analysis of changes in depressive levels before and after treatment in the experimental group and analysis of changes in depressive levels before and after control group treatment.

The result of statistical test Wilcoxon Signed Ranks Test using SPSS version 20.0 in Table 4.11 note that p-value (0.001) $< \alpha$ (0,05), it means H_0 is rejected, so, there is influence of progressive muscle relaxation technique 2 times a week (routine) Of GGK patients undergoing HD at Dr. Wahidin Sudiro Husodo Mojokerto Hospital.

Influence of progressive muscle relaxation technique significantly to the change of depression level in patients with chronic renal failure who is undergoing hemodialysis in Dr. Wahidin Sudiro Husodo Hospital. This can happen because an assessment of stressors results in the stress

of the muscles sending the stimulus to the brain and creating a feedback path. PMR relaxation blocks the pathway by activating the neuro-sympathetic workings of the nervous system and by manipulating the hypothalamus through concentration of mind to reinforce positive attitudes so that the stress stimulus to the hypothalamus is reduced and depression can be descended (Praise A, 2014).

The results of this study support previous research from Sholihah that progressive muscle technique is effective to reduce the level of elderly depression in turigede village-like. Kepohbaru kab. Bojonegororasa with $p\text{-value} (0,000) < \alpha (0,05)$ (Sholihah, 2015).

PMR therapy can increase the production of melatonin and serotonin and lower stress hormone cortisol. The effect of serotonin is related to mood, sexual desire, sleep, memory, temperature regulation and social properties. Breathing deeply and slowly and tensing some muscles for a few minutes each day can decrease cortisol production by up to 50%. Cortisol (cortisol) is a stress hormone that, when present in excessive amounts, interferes with the functioning of almost every cell in the body. Relaxing and doing PMR can help the body cope with stress and restore the ability of the immune system (Alam & Hadibroto, 2007; N.E.Alfiyanti, 2014).

The PMR technique in the experimental group has full and appropriate components of existing program with frequent and routine frequency. Respondents who perform progressive muscle relaxation techniques, individuals will be aware of the tension in the muscles of the body and achieve total muscle relaxation. Thus, it will

affect changes in depressed levels of GGK patients undergoing hemodialysis.

Based on table 4.12 it is known that, Wilcoxon Signed Ranks Test statistic test results using SPSS version 20.0 is known that the value of $p\text{-value} (0.025) < \alpha (0.05)$, meaning that H_0 is rejected, so there is influence of progressive muscle relaxation technique 1 times per 2 Day (not routine) control group of patients who are undergoing CKD despite the control group given progressive muscle relaxation treatment with the same movement. However, the frequency is not the same, i.e. two days once morning and evening. And in this study, the treatment made changes in depression levels, although not as great as in the experimental group.

3. Analyze the difference between changes in the depression level before and after treatment in the experimental group with pre- and post-control group treatment in patients with CKD who is undergoing HD in WahidinSudiro Husodo Mojokerto Hospital.

Based on table 4.10 Mann-Whitney test results using SPSS version 20.0 is known that the value of $p\text{-value} (0.005) < \alpha (0.05)$, meaning H_0 is rejected, H_1 accepted. Thus, there was a difference in the rate of depression before and after the administration of progressive muscle relaxation two times a week (routine) in the experimental group with changes in depression levels before and after the technique of progressive muscle relaxation once per 2 days (not routine) in the control group.

Implementation of progressive muscle relaxation techniques makes the muscles

will get a stretch first and then stop the tension and feel the loss of muscle tension in a relaxed manner. For maximum results, it is recommended to perform progressive muscle relaxation techniques as much as two times a day for a week with a time of 20-30 minutes (Davis, 2005; Nasution, 2016). PMR can be performed by the patient in a sitting position or a supine position (Kozier, Erb, Berman & Snyder, 2011; N.E.Alfiyanti, 2014).

The treatment in this study was conducted the same by the researchers, i.e., 15 movements that are regularly treated and the same procedure. Both groups also passed this PMR technique two times a day, i.e., morning and evening, but at different frequencies. Researchers only reduced the frequency of therapy. In the experimental group conducted routinely every day for one week while in the control group performed not routine that is one time per 2 days a week. And in the experimental group, one respondent performed 14 treatments in one full week while in the control group was given only six treatment times in one week.

This frequency difference in therapy can make a difference in the rate of depression in the control group and the experimental group. This is seen from the difference between the *p-value* of the two groups; it is clear that there is a difference in the meaning value of the change of depression level between the two groups. From the previous data it is known that *p-value* in experimental group is $(0.001) < \alpha (0,05)$ whereas at *p-value* of control group is *p-value* $(0,025) < \alpha (0,05)$, so when compared with progressive muscle relaxation technique Performed routinely, progressive muscle relaxation techniques performed regularly and routinely more effective effect

of decreased depression level on respondents

Differences change in depression rate occurs because the experimental treatment carried out according to existing program. With the same frequency as the previous reference, it gives a better effect than the control group. While in the control group some of the components that need to be met by the respondents to create maximum results are not met, if some components are less or not met during the implementation of progressive muscle relaxation techniques, then the results achieved from the implementation of the technique it will not be maximized.

There are several things analyzed by researchers that relaxation techniques are more effective routinely affect changes in depression rate progressive muscle relaxation performed regularly, frequently, and routine will provide relaxed and positive conditions so that that respondent stressors can be distracted every day. PMR will give maximum effect if done in a conducive atmosphere (not crowded, quiet). In this study, the PMR is done by each house so it can better control the noise and focus the therapy for maximum effect.

From the results of observations of researchers giving therapy techniques progressive muscle relaxation with frequent and frequent frequencies, was more likely to affect changes in depression in patients. Where patients will be more relaxed each day, strengthen positive thoughts every day and patients will feel more trained to feel muscle relaxation more often than the control group. While in the control group the execution of therapy is not routine will be more likely to ignore the sense of relaxation that will be obtained. In fact, in

the control group, it is more likely not to do therapy because therapy is not routine. So it can be concluded although both can lower the level of depression. There is a difference in the rate of depression in the experimental and control groups. Techniques progressive muscle relaxation is more effective if done according to program on a regular frequency.

CONCLUSIONS AND SUGGESTIONS

Conclusion

1. There is a significant influence on the progressive muscle relaxation technique 2 times a week (routine) in the experimental group on the change of depression level in patients with CKD who is undergoing HD at Dr. Wahidin Sudiro Husodo Hospital- Mojokerto with PMR Therapy can increase the production of melatonin and serotonin and decrease the stress hormone cortisol that affects the mood of a person. PMR is also able to create a relaxed state, decrease muscle tension, create a positive mental/mind to affect the decrease in depression level.
2. There is a significant difference in the rate of depression before and after the administration of routine PMR techniques in the experimental group with the non-routine PMR technique in the group. This is because in the experimental group the progressive muscle relaxation technique is regular, frequent and routine will provide more relaxed and positive conditions So that the respondent's stressor can be distracted daily compared to non-routine execution. Techniques progressive muscle relaxation is more effective if done according to the procedure on a regular frequency

Suggestions

1. Effective PMR implementation on a daily basis will be better if the hemodialysis unit provides a separate relaxation room or the provision of certain psychological counseling services in a special room to help improve the psychological aspects.
2. Due to this research, the monitoring of progressive muscle relaxation technique is only done on pre-post test only and using observation sheet and via phone is expected to further find alternative way to supervise the respondent every day in carrying out progressive muscle relaxation so that the respondent can carry out This technique is in accordance with existing procedures.

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