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ESA (EXERCISE AND SELF-AFFIRMATION) ON IMPROVING FUNCTIONAL STATUS OF HEMODIALYSIS PATIENTS

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ABSTRACT

The hemodialysis process is essential for patients with chronic kidney disease to maintain their lives. However, this routine and continuous process can cause complications in the body. Patients undergoing hemodialysis experience changes in functional status across physical, psychological, social, and environmental health domains. This study was carried out to determine the effect ESA (Exercise and Self-Affirmation) intervention on the functional status of patients with chronic kidney disease. Previous studies show that physical exercise combined with self-affirmation interventions can improve mood and cognitive function. Self-affirmation has been shown to reduce depression levels, improve sleep quality, enhance social participation, and ultimately improve the quality of life. This study used a quasi-experimental design with a pretest-posttest control group, involving thirty- nine patients in the control group and thirty-nine patients in the intervention group at the hemodialysis unit of PKU Muhammadiyah Yogyakarta. Functional status was assessed using the SF-36 questionnaire and analyzed using paired t-tests for paired groups and independent t-tests for unpaired groups. The average SF-36 score before the ESA intervention was 44.53, and the average score after the intervention was 69.37. The t-test results showed a significance value of 0.000 (p<0.05). These results show a significant difference between the pretest and posttest results in the intervention group after the ESA intervention. In conclusion, the ESA intervention can improve the functional status of hemodialysis patients, so that their physical and mental function is better. The ESA intervention positively affects the functional status of patients with chronic kidney disease undergoing hemodialysis.

Keywords: Intradialytic Exercise, Self-Affirmation, Hemodialysis

1. INTRODUCTION

Chronic kidney disease is a condition in which kidney function decreases to the point where it can no longer filter waste from the body's metabolism or maintain the balance of electrolyte fluids such as sodium and potassium in the blood or urine. This disease continues to progress slowly until the kidneys eventually lose their function (Smeltzer, S.C., Bare, B.G., Hinkle, J.L., Cheever, 2010).

Data from the Indonesian Ministry of Health (KEMENKES RI) in 2018 shows that chronic kidney disease has increased and become a serious publichealth problem in the population. In Indonesia, 2% of the population, or approximately 499,800 people, suffer from chronic kidney disease. The highest prevalence of chronic kidney disease is inCentral Sulawesi Province, with a percentage of 0.5%. Risk factors for chronic kidney disease in Indonesia include hypertension at 25.8%, with the highest prevalence at 30.9% and the lowest at 16.8%; obesity at 15.4%, with the highest prevalence at 33.2% and the lowest at 10.2%; diabetes mellitus at 2.3%, with the highest prevalence at 3.7% and the lowest at 0.8%. In Bangka Belitung, the incidence of chronic kidney disease continues to increase year by year (*Riskesdas Kepulauan Bangka Belitung 2018*, n.d.).

Based on interviews and the SF-36 questionnaire, 17 out of 20 patients undergoing hemodialysis reported problems in functional status, especially in physical health conditions. Complications experienced by hemodialysis patients

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often have uncomfortable effects on their physical condition and affect their mental and psychological well-being. During hemodialysis, most patients engage in activities such as lying down, chatting with other patients, eating, and drinking.

Based on a preliminary study, 65% of patients feel bored with the therapy they are undergoing, which triggers stress and ultimately affects their psychological condition.

Various problems and complications can occur in patients undergoing hemodialysis, which can affect their functional status. Studies show that patients undergoing hemodialysis experience changes in their functional status (Deoreo, 1997). Functional status is the ability to carry out daily tasks, including work, self-care, and maintaining family or social roles (Melia, Putrayasa, 2008). It encompasses various areas such as physical health, quality of self-care, quality of role activities, intellectual status, social activities, attitudes towards the world and oneself, and emotional status (Doran, 2011).

Exercise is defined as planned, structured movements carried out to improve or maintain one or more aspects of physical fitness (Orti, 2010). (LK, 2012). Regular physical exercise during intra-hemodialysis can increase blood flow to the muscles, the number of capillaries, and the area and surface of the capillaries. This increases the transfer of urea and toxins from the tissue to the vasculature, which is then transferred to the dialyzer or HD machine (Rumentalia Sulistini, Krisna Yetti, 2012). Regular physical exercise can help improve body fitness, physiological function, and dexterity, reduce fatigue levels, and increase muscle strength (Takhreem, 2008).

Self-affirmation involves reinforcing oneself through positive statements about desired outcomes or changes in life. Affirmation techniques can increase enthusiasm, fill the mind and body with energy and inner strength, relieve stress, strengthen motivation, promote a positive attitude, guide the immune system, and accelerate the self-healing process.

Studies show that combining physical exercise with self-affirmation interventions can improve mood and cognitive function. Self-affirmation has been shown to reduce depression levels, improve sleep quality, enhance social participation, and ultimately improve the quality of life. Studies have shown that this combination of interventions improves performance in activities (Legault et al., 2012). Furthermore, several studies on rehabilitation patients and combined medical therapy interventions with exercise and self- affirmation have shown improvements in mood and reductions in feelings of depression regarding the therapy being undertaken (Shan et al., 2014). Therefore, a quantitative study on combining intradialytic exercise and self-affirmation interventions in hemodialysis patients is necessary to determine their effect on the functional status of patients with chronic kidney disease. The importance of intervention in patients undergoing hemodialysis in order to improve functional status.

2. RESEARCH METHODS

This study used a quasi-experimental design with a pretest-posttest control group. Participants consisted of thirty-nine patients in the control group and thirty-nine patients in the intervention group at the hemodialysis unit of PKU Muhammadiyah Yogyakarta. The inclusion criteria are patients who undergo hemodialysis routinely twice a week, have undergone hemodialysis for one year or more, do not experience musculoskeletal system disorders, do not have nervous system diseases, do not experience hemodialysis complications such as cramps, hypotension, headache/dizziness, do not have femoral access installed, have Hb > 9 g/dL, are permitted by the doctor to exercise during hemodialysis, and do not experience depression as assessed by the

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Hamilton Depression Rating Scale questionnaire.

Data collection instrument in this study included the SF-36 questionnaire, patient vital signs observation sheet, flipchart, and ESA (exercise and self- affirmation) intervention guide leaflet. Before any intervention was carried out, the patient's functional status was first assessed using the SF-36 questionnaire (pretest). The intervention was carried outtwice a week for each patient for fiveweeks, with the patient's vital signs beingmonitored. Functional status was reassessed (posttest) at the end of the fifthweek.

The validity and reliability of the SF-36 questionnaire have been tested in patients with chronic kidney disease in a previous study. The content validity of theSF-36 questionnaire has been compared to other general health measuring instruments. The validity of the SF-36 questionnaire showed that all question items have a correlation coefficient of more than 0.3, concluding that all items are valid. The reliability of the SF-36 questionnaire, measured using internal consistency and test-retest methods,showed a Cronbach's α value of more than 0.898, indicating good reliability (To evaluate the reliability of the questionnaire, intraclass coefficient and internal consistency reliability test were conducted using alpha Cronbach (Andika et al., n.d.).

The data in this study were analyzed using univariate and bivariate analysis. Univariate analysis describes the characteristics of respondents, such as age, gender, education, occupation, and years with HD. Bivariate analysis was carried out to test the hypothesis, starting with a normality test. The Shapiro-Wilk test was used for the normality test because the sample size in each group wasless than 50. The total data from the assessment of functional status and PCS domains were normally distributed, so the paired t-test was used for paired groups and the independent t-test for unpaired groups. The data were not normally distributed in the 8 assessment dimensionsand MCS domains, so the Wilcoxon test was used for paired groups and the Mann-Whitney test for unpaired groups.

3. RESULT

Table 1. Level of Functional Status according to the SF-36 questionnaire in the Control Group

SF-36 Dimensions	Control (Pre)		Control (Post)		*P*
	Mean	SD	Mean	SD	
PF	52.43	8.8	52.05	7.74	0,546**
RP	31.41	1.05	30.77	9.72	0,317**
BP	47.88	6.57	47.63	6.01	0,862**
GH	37.82	7.8	37.80	8.78	0,833**
VT	40.12	7.82	38.98	7.99	0,038**
SF	50.32	6.07	50.64	6.07	0,317**
RE	36.74	0.24	36.75	9.00	0,051**
MH	49.43	8.76	49.13	8.94	0,875**
PCS	49.94	4.17	43.57	4.67	0,000*
MCS	49.43	8.76	49.13	8.94	0,875**
SF-36	44.91	3.89	44.53	4.47	0,000*

* Paired t-test ** Wilcoxon test

Table 1 shows that the level of FunctionalStatus during the pretest was 44.91, whileduring the posttest—it was 44.53. The significance value was 0.000 ($p<0.05$). These results show a significant differencebetween the pretest and posttest results inthe control group of patients with chronickidney disease.

Table 2. Level of Functional Status according to the SF-36 questionnaire in the Intervention Group

SF-36 Dimensions	Intervention (Pre)		Intervention (Post)		P
	Mean	SD	Mean	SD	
PF	50.13	7.74	75.76	5.91	0,000**
RP	29.49	9.72	58.97	12.15	0,000**
BP	47.95	6.01	68.78	3.39	0,000**
GH	36.22	8.78	62.71	4.28	0,000**
VT	39.23	7.99	67.17	4.70	0,000**
SF	49.67	6.07	72.11	5.33	0,000**
RE	35.89	9.00	66.67	0.09	0,000**
MH	49.08	8.94	71.79	4.39	0,000**
PCS	42.50	4.67	68.73	4.12	0,000**
MCS	49.08	8.94	71.79	4.40	0,000**
SF-36	43.64	4.47	69.37	3.48	0,000*

* Paired t-test ** Wilcoxon test

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Table 2 shows that the level of FunctionalStatus during the pretest was 43.64, whileduring the posttest—it was 69.37. The significance value was 0.000 (p<0.05). These results show a significant difference between the pretest and posttest results in the intervention group after ESA (exerciseand self-affirmation) was carried out on the functional status of patients with chronic kidney disease.

Table 3. Analysis Results of Level of Functional Status Posttest in the Control and Intervention Groups

SF-36 Dimensions	Control (Post)		Intervensi (Post)		P
	Mean	SD	Mean	SD	
PF	52.05	7.84	75.76	5.91	0,000**
RP	30.77	10.67	58.97	12.15	0,000**
BP	47.63	6.48	68.78	3.39	0,000**
GH	37.80	6.60	62.71	4.28	0,000**
VT	38.98	7.88	67.17	4.70	0,000**
SF	50.64	6.38	72.11	5.33	0,000**
RE	36.75	10.25	66.67	0.09	0,000**
MH	49.13	8.59	71.79	4.39	0,000**
PCS	43.57	3.74	68.73	4.12	0,000**
MCS	49.13	8.59	71.79	4.40	0,000**
SF-36	44.53	3.39	69.37	3.48	0,000*

* Independent t-test ** Mann-Whitney test

Table 3 shows that before being given intervention, the mean value for the control group was 44.53 and the meanvalue for the intervention group was 69.37. The results of the independent t-test for the control and intervention groupsshow a significant value of 0.000 (p<0.05). These results show that there is an effect of ESA (exercise and self- affirmation) on the functional status ofpatients with chronic kidney disease in both the control and intervention groups. The independent t-test results for the control and intervention groups also showa significant value of 0.000 (p<0.05). These results further confirm that there is an effect of ESA (exercise and self- affirmation) on functional status. There are different levels of change in functionalstatus between the pretest and posttest in the intervention and control groups. The intervention group showed a significant increase in functional status compared to the control group, which experienced a decrease in their level of functional status.

4. DISCUSSION

The assessment of functional status was carried out using the SF-36 questionnaire, which consists of 8 assessment dimensions. In this study, assessments of functional status were carried out twice: at the beginning of the first week (pretest) and at the end of the fifth week (posttest) for both the control and intervention groups. Tables 2 and 3 show the average scoring values that assess 8 health criteria (dimensions) as follows: Physical Function (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Function (SF), Role Emotional (RE), and Mental Health (MH). The Physical Components Scale (PCS), which consists of the PF, RP, BP, GH, VT, and SF domains, represents physical function, while the Mental Components Scale (MCS), which consists of RE and MH domains, represents mental function.

The results of the analysis in the intervention group showed that the highest increase after the ESA intervention occurred in the Physical Components Scale (PCS) dimensions. The highest increase was in the Role Physical (RP) domain, with a value of 29.48. Items ratedin terms of the Physical Components Scale (PCS) include the ability or limitations of daily activities, such as climbing several stairs, walking, carrying loads such as groceries, passing through several aisles, and light daily activities, as well as how physical problems can limit daily activities.

The significant increase in the Physical Components Scale (PCS) dimensions is in line with previous studies, showing that intradialytic exercise improves physical function as assessed by the SF-36 questionnaire (Ouzouni et al., 2009). Additionally,

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previous studies have shown that intradialytic exercise reduces fatigue levels and increases the strength ofleg and arm muscles (Nuraini, 2015) Regular intradialytic exercise stimulates the growth of small blood vessels (capillaries)in the muscles. This helps the body maximize its performance by delivering oxygen to the muscles, improving overallcirculation, lowering blood pressure, and removing irritating metabolic waste products such as lactic acid from the muscles (Takhreem, 2008). With increased muscle strength and reduced fatigue levels, this will impact the patient'sdaily physical activity, which is included in the functional status assessment using the SF-36 questionnaire in the PCS dimension.

The paired t-test obtained a significance value of 0.000 ($p<0.05$) in theintervention group. These results prove that there is a significant difference in thepretest and posttest results after the ESA (Exercise and Self-Affirmation) intervention. The level of functional status assessed using the SF-36 questionnaire was 43.64 at the pretest and 69.37 at the posttest, showing an increase of 25.74, encompassing both physical and mental health dimensions of the SF-36 questionnaire.

In line with previous studies, regular physical exercise can improve body fitness, physiological function, and dexterity (Takhreem, 2008). Essentially, exercise involves planned, structured, and repetitive physical movements aimed at improving mental and physical function and overall quality of life. By improving the body's physical and physiological functions, daily activities can be performed more effectively. Previous studies found that an exercise program forhemodialysis patients significantly increased activity scores, social interaction, and sleep quality (Bayoumi et al., 2015). This improvement in physical health is one of the domains assessed using the SF-36 questionnaire, specifically in the Physical Components Scale (PCS) dimension.

Additionally, a common issue among hemodialysis patients is a decline in motivation and enthusiasm for life so that the patient's mental health level decreases. In this study, the ESA intervention combined intradialytic exercise with self-affirmation. The increase in the Mental Components Scale (MCS), which includes the RE and MH domains, was 22.66. Affirmations are used to reprogram the mind and discard erroneous beliefs in subconscious thought(Musyarofah, 2013). Affirmation techniques can increase enthusiasm, fill the mind and body with energy and inner strength, relieve stress, strengthen motivation, promote a positive attitude, guide the immune system, and accelerate the self-healing process. Previous studies on affirmations showed that these techniques can help patients evaluate things more positively, improving their mood and self-perception so as to achievehigher life satisfaction (Shan et al.,2014).

The t-test in the control group obtained a significance value of 0.000 ($p<0.05$). These results also prove that there are differences in pretest and posttest results in the control group in patients with chronic kidney disease. However, the control group showed a decrease in functional status. The total SF-36 questionnaire scores for the control group were 44.91 (pretest) and 44.53 (posttest). Among the thirty-nine patient respondentsin the control group, without the ESA intervention, 21% showed an increase in functional status (albeit small), 41% remained the same, and 38% showed a decrease.

For the control group, the activitiesperformed were routine actions during hemodialysis, such as eating, drinking, talking, sleeping, or making small independent movements without the ESA intervention. The variation in functional status results in the control group, without the ESA intervention, could be caused by psychological and physical factors experienced by the patients when they were home. The results of this study clearly show how

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ESA (exercise and self-affirmation) affects the physical and mental health of patients undergoing hemodialysis. These results can be utilized as part of therapy and rehabilitation. Additionally, these results can serve as a basis for developing nursing interventions and as a foundation for further studies to improve the quality of nursing care for patients with chronic kidney disease undergoing hemodialysis.

5. CONSLUSION

1. There is a significant difference in the pretest and posttest results in thecontrol group before the ESA (exercise and self-affirmation) intervention on the functional status of patients with chronic kidney disease, with a significance value of 0.000 ($p < 0.05$).
2. There is a significant difference in the pretest and posttest results in theintervention group after the ESA (exercise and self-affirmation) intervention on the functional status of patients with chronic kidney disease. The level of functional status assessed using the SF-36 questionnaire was 43.64 at the pretest and 69.37 at the posttest, with a significance value of 0.000 ($p < 0.05$).
3. There is an effect of ESA (exercise andself-affirmation) on the functional status of patients with chronic kidney disease. Before the treatment, the meanvalue for the control group was 44.53 and the mean value for the intervention group was 69.37. The independent t- test results for the control and intervention groups showed a significant value of 0.000 ($p < 0.05$).
4. Developing the ESA intervention during hemodialysis as part of an integrated therapy and rehabilitationprogram in nursing care for patients with chronic kidney disease undergoing hemodialysis is recommended.

6. REFRENSI

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