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EFFECT OF HEMODIALYSIS ADEQUACY ON QUALITY OF LIFE IN OLDER ADULTS WITH CHRONIC KIDNEY DISEASE

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ABSTRACT

Introduction: Assessment of hemodialysis adequacy is an important indicator to assess the effectiveness of hemodialysis measures that can affect the patient's quality of life with chronic kidney disease. This study aims to determine the relationship between adequate hemodialysis and the quality of life of patients with chronic kidney disease undergoing hemodialysis therapy.

Method: This type of research is a correlational study with a cross sectional approach. The population in this study were 86 elderly patients who underwent hemodialysis at the Muhammadiyah Lamongan Hospital. In this study, the independent variables were adequate hemodialysis and quality of life as the dependent variable. Measurement of hemodialysis adequacy was carried out using the URR formula, and the assessment of quality of life using the SF 36 questionnaire. Data analysis methods used the Spearman test using SPSS Ver. 16

Result: The results of measurement of adequacy of 86 respondents, namely 13.9% achieved adequate and 86% did not achieve adequacy. The results of the quality of life assessment showed that 17.4% had a good quality of life and 82.5% had a poor quality of life. The results of statistical tests showed that there was a significant relationship between adequate hemodialysis and quality of life (p value = 0.000).

Conclusion: The role of nurses is very important in improving the quality of care in achieving adequate adequacy so that it will improve the quality of life in patients with chronic kidney disease undergoing hemodialysis therapy.

Keywords

chronic kidney disease; hemodialysis adequacy; quality of life

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INTRODUCTION

Chronic kidney disease (CKD) is a chronic and irreversible disease which is also a clinical condition, in which the kidneys have decreased function that may or may not be accompanied by structural disturbances and occurs within 3 months or more (NANDA, 2015). The Kidney Disease Outcome Quality Initiative (KDOQI), defines CKD as damage to the renal parenchyma with a decrease in Glomerular Filtration Rate (GFR) of less than 60 mL / min / 1.73 m2 for or more than 3 months and generally ends with an End Stage Renal Disease (ESRD) (Teitelbaum et al., 2020).

The older adults have many problems related their health, this health problem can affect the ability to do activities and fulfillment of needs, thus worsening their quality of life (Vanleerberghe, P., De Witte, N., Claes, C., Schalock, R. L., & Verté, 2017). The prevalence of CKD sufferers tends to continue to increase. According to research on Global Burden of Disease (2013), CKD accounted for 956,200 deaths

worldwide, an increase of 134% from 1990 (Naghavi M, Wang H, Lozano R, 2015). Indonesia is a country with a high rate of CKD sufferers, the Indonesian Nephrology Association (PERNEFRI) estimates that there are 70,000 people with CKD in Indonesia. This number will continue to increase by about 10% every year (PERNEFRI, 2013). Data from Riskesdas in 2018, the prevalence of chronic kidney failure in Indonesia was 0.38% of total diagnoses and the proportion of hemodialysis was 19.33% of diagnoses (Riskesdas, 2018). Whereas in East Java, the prevalence of chronic kidney failure in people aged ≥ 15 years was 0.29% and the proportion of hemodialysis in people aged ≥ 15 years was 23.14% (Riskesdas, 2018). Based on a preliminary survey conducted at the Hemodialysis Unit at the Muhammadiyah Hospital in Lamongan, it showed that the visits of chronic kidney disease patients who underwent kidney replacement therapy with hemodialysis in 2017 were 5778 people and in 2018 it reached 7226 people. These data indicate that the number of CKD patients undergoing hemodialysis has increased by 45% annually. The high prevalence of chronic kidney failure and hemodialysis in East Java and Lamongan District needs serious attention so that the number does not continue to increase.

Chronic kidney disease requires treatment to replace kidney function with hemodialysis as a kidney replacement therapy which is performed 2-3 times a week for a duration of 4-5 hours, which aims to remove the waste products of protein metabolism and correct fluid and electrolyte balance disorders (Hsu et al., 2019). Hemodialysis is a burdensome and complex therapy that can affect the patient's quality of life (Gilbertson et al., 2019). Hemodialysis can reduce the patient's energy level and affect the patient's ability to work and carry out daily activities that interfere with the normal life of the patient and his family (Abbasi A, Rahmani H, Shariati A, Asayesh H, Ashrafrezaee N, Mollaei E, 2012). According to the Clinical Practice Guideline on Adequacy of Hemodialysis, the adequacy of the hemodialysis dose given is measured in terms of hemodialysis adequacy, which is the recommended dose to obtain adequate results as a benefit of the hemodialysis process carried out by patients with chronic kidney disease (KDIGO, 2018).

Chan, et al. Stated that the inadequacy of hemodialysis which can be assessed from inadequate urea clearance will result in an increase in the progression of renal function damage, so that the morbidity and mortality of patients with renal failure will increase. Inadequate hemodialysis can also result in material loss and decreased productivity of hemodialysis patients. Therefore, before hemodialysis is performed, a prescription should be made to plan the hemodialysis dose, and then compare it with the results of hemodialysis that have been performed to assess its adequacy (Chan et al., 2019).

Chronic Kidney Disease greatly affects all aspects of life. The patient will experience physiological, psychological and socio-economic disorders which will also affect the family and society. Adequacy of hemodialysis that is not optimal will cause emotional problems such as stress related to diet and fluid restrictions, physical limitations, comorbidities, and side effects of drugs, and dependence on hemodialysis measures. This will have an impact on reducing the patient's quality of life. In particular, patients will experience physical suffering and limitations in their daily activities. In general, CKD patients suffer from cognitive disorders, such as memory loss, low concentration, physical, mental, and social disorders that later interfere with daily activities (Gelfand et al., 2020).

In the management of hemodialysis patients, assessment of the quality of life of hemodialysis patients is an important factor in addition to assessing the adequacy of hemodialysis. Quality of life is associated with the morbidity and mortality of patients with chronic kidney disease, suggesting that hemodialysis patients with low quality of life are at increased risk of mortality (Hoffman et al., 2017). An assessment of quality of life is an important indicator to assess the effectiveness of a given hemodialysis procedure. Quality of life is also the ultimate goal in the management of end-stage chronic kidney disease. A systematic review study has found that the quality of life of patients and families with hemodialysis is worse than the general population and comparable to other chronic diseases. Furthermore, the quality of life for hemodialysis patients is comparable to that of peritoneal dialysis patients. Meanwhile, the quality of life for patients and their families with kidney transplants is better than those of dialysis patients (Gilbertson et al., 2019).

Hemodialysis nurses have an important role as advocacy care providers, consultants and educators to help chronic kidney disease patients undergoing hemodialysis to achieve optimal hemodialysis adequacy. Hemodialysis nurses must have professional skills in preparing patients before hemodialysis, monitoring the patient's condition during hemodialysis and collaborating in evaluating adequate attainment so as to improve the quality of life for hemodialysis patients (Bansal & Schell, 2018).

Muhammadiyah Hospital Lamongan enforces a policy that all patients undergo hemodialysis at a frequency of 2 times / week for a duration of 4.5 hours, so the hemodialysis dose received is 9 hours per week. According to the 2006 Pernefri Consensus to achieve adequate hemodialysis a dose of 10-12 hours per week is required which can be achieved with a frequency of hemodialysis 2 times / week for a duration of 5 hours or 3 times / week for a duration of 4 hours (PERNEFRI, 2013). Lack of a long dose of total hemodialysis time may cause adequate hemodialysis is not achieved so that the urea clearance in the patient's body is not optimal. This causes hemodialysis patients sometimes have to be hospitalized in the room because of the deteriorating condition due to uremia syndrome.

Based on this phenomenon, researchers saw a problem in the quality of life of hemodialysis patients which may be related to the adequacy of hemodialysis and the program being undertaken. Therefore, the aim of this study was to determine the relationship between adequate hemodialysis and quality of life in CKD patients in the Hemodialysis Unit of Muhammadiyah Hospital in Lamongan. The benefit of this research is that health workers, especially nurses, can provide a support system for CKD patients undergoing hemodialysis in optimizing their quality of life.

METHOD

This type of research is a correlational study with a cross sectional approach (Nursalam, 2015). The study was conducted at the Hemodialysis Unit of the Muhammadiyah Lamongan Hospital in 2020. The population in this study were 86 patients who underwent hemodialysis at the Muhammadiyah Lamongan Hospital, whose samples were taken using the total sampling method (Nursalam, 2015). In this study, the independent variables were adequate hemodialysis and quality of life as the dependent variable. Measurement of hemodialysis adequacy was carried out using the URR formula, and the assessment of quality of life using the SF 36 questionnaire. Methods of data analysis used the Spearman test using SPSS Ver. 16 (Nursalam, 2015). This research has been declared ethical by the Muhammadiyah Hospital in Lamongan.

RESULTS

Based on table 1, it shows that the majority of respondents aged 60 -65 years, namely as many as 59 people (68.6%); 50 people (58.1%) was woman; working as farmers as many as 41 people (47.6%); with the most recent high school / MA graduates as many as 66 people (76.7%), as many as 84 people (97.6%) were married, and 81 people with HD > 2 years old (94.1%).

Table 1 also show that most of the respondents had not achieved adequate hemodialysis, namely as many as 74 people (86.0%) and had a poor quality of life, namely as many as 71 people (82.5%). The Dialysis Consensus (2016) states that adequate hemodialysis can be achieved with a dosage of 10-15 hours per week. Patients who undergo hemodialysis 3 times / week are done within 4-5 hours of each session, and 5-6 hours if they undergo hemodialysis 2 times / week. Respondents in this study underwent hemodialysis at a frequency of 2 times / week within 4.5 hours so that the hemodialysis dose given was only 9 hours / week, not in accordance with that determined by PERNEFRI. The BPJS policy that only covers hemodialysis with a frequency of 2 times / week needs to be balanced with the service institution's policy to carry out hemodialysis for 5-6 hours. This is done so that the achievement of adequacy can be more optimal, so that it is hoped that the quality of life of the respondents will increase.

Tabel 1. Distribution of respondents based on respondent characteristics and hemodialysis adequacy and quality of life

Category	n	%
Age		
60-65	59	68.6
66-70	27	31.4
Gender		
Men	35	40.6
Woman	50	58.1
Profession		
Housewife	9	10.4
Farmer	41	47.6
Government employees	8	9.3
Others	28	32.5
Education		
Junior High	17	19.7
Senior High	66	76.7
Bachelor	3	3.4
Marital Status		
Married	84	97.6
Not married	2	2.3
Duration of HD		
< 2 years	5	5.8
>2 years	81	94.1
Adequacy of Haemodialysis		
Adequate	12	13.9
Inadequate	74	86.0
Quality of Life		
Good ≥ 60	15	17.4
Not Good <60	71	82.5

Based on the results of data analysis using the Spearman test with the help of SPSS version 16.0, the value of $\alpha = 0.05$ was obtained where $rs = 0.699$ and $p = 0.000$. This shows that the correlation is very strong. From the results of the p value it can be concluded that H1 is accepted, meaning that there is a relationship between adequate hemodialysis and quality of life in patients with chronic kidney disease in the Hemodialysis Unit of the Muhammadiyah Hospital in Lamongan.

DISCUSSION

KDIGO in 2019 recommends initiating dialysis in Chronic Kidney Disease (CKD) if there are one or more signs or symptoms of kidney failure such as serositis, electrolyte or acid-base abnormalities, priuritus, inability to control body volume status or blood pressure, progressive deterioration of nutritional status. which in refractory to diet interventions, impaired cognition. This condition often occurs in GFR ranging from 5-10ml / mn / 1.73m2 (Chan et al., 2019). Adequacy Hemodialysis is the adequacy of the hemodialysis dose given to patients with the aim of controlling uremic syndrome symptoms, blood pressure, biochemical markers, providing comfort and the patient has a good nutritional status. This means that adequate hemodialysis is achieved when the patient's quality of life improves (KDIGO, 2018). Achievement of adequate hemodialysis is needed to assess the

effectiveness of the hemodialysis procedure performed. Adequate hemodialysis will provide great benefits and allow CKD patients to continue their activities as usual. There is a strong relationship between adequate hemodialysis and morbidity and mortality in patients with renal failure.

Hemodialysis was considered adequate if it achieved the results according to the planned dose. Therefore, before hemodialysis is carried out, a prescription should be made to plan the hemodialysis dose, and then compare it with the results of hemodialysis that have been performed to assess its adequacy. Hemodialysis adequacy was measured quantitatively by calculating Kt / V which is the ratio of urea clearance and hemodialysis time to the volume of distribution of urea in the patient's body fluids (Wolters Kluwer Health, 2013). The Pernefri Dialysis Consensus states that in Indonesia adequate hemodialysis can be achieved with a total hemodialysis dose of 10-15 hours per week. The Pernefri Dialysis Consensus states that the achievement of the URR target of patients undergoing hemodialysis 2 times / week is 80%, the results of this study indicate that only 17.4% have achieved adequate hemodialysis so that they have not been able to achieve the target set by Pernefri (PERNEFRI, 2013). Adequacy of hemodialysis that has not been maximal can be due to the fact that the hemodialysis that is carried out does not meet the requirements for the attainment of adequate that adequate hemodialysis doses can be achieved by 10-15 hours per week (21). Respondents in this study underwent hemodialysis with a frequency of 2 times / week within 4 hours and 4.5 hours so that the dose given was only 8-9 hours / week.

In the Hemodialysis unit of the Muhammadiyah Hospital in Lamongan, patients with inadequate hemodialysis were very high, namely 74 people (86%). This could be due to suboptimal urea clearance, insufficient dialysis time, vascular access related to blood speed / quick blood (QB) which was not optimal, dialyzer urea clearance and dialysis time at Muhammadiyah Hospital in Lamongan are 4 hours and some are 4.5 hours in one hemodialysis twice a week, whereas the length of hemodialysis time is very important in the effort to achieve adequate hemodialysis. This is also inseparable from the government's policy in this case that the BPJS is only able to bear the cost of hemodialysis twice a week.

Quality of life is a broad multidimensional concept that usually includes subjective evaluation of both positive and negative aspects. The health aspect is one of the important domains in the overall quality of life. Other supporting domains include work, education, environment, culture, values and spirituality (Hack et al., 2018). Quality of life in this study was measured using the Short From-36 (SF-36) measuring instrument. The SF-36 is a health survey questionnaire to assess quality of life, consisting of 36 questions. This questionnaire produces 8 functional scales of health profiles and well-being scores based on psychometric and physical health, and is a collection of measures and index-based health preferences. Therefore, SF-36 has been shown to be useful in general and population-specific surveys, comparing the relative burden of disease as well as in differentiating the health benefits generated by different interventions (Chae et al., 2019).

Quality of life becomes an important aspect after patients undergo hemodialysis therapy. Some patients have a better quality of life and some have a lower quality of life than before undergoing hemodialysis, because in addition to facing problems related to their disease, they are also related to the therapy they have lived for a lifetime. The impact of hemodialysis will have an impact on the patient's response. This is influenced by several factors, including individual characteristics, previous experience, and coping mechanisms. Each dimension has its own influence on the quality of life.

Based on the research results and the theory above, it can be interpreted that adequate hemodialysis can affect a person's quality of life. Good hemodialysis adequacy will be able to affect high quality of life and vice versa. Increased adequate hemodialysis is associated with positive attitudes and decision-making. Examples include increasing adherence to medication, behaviors that are thought to improve health and reduce physical and psychological symptoms, doing things you like to reduce stress, and believing that he can take all kinds of actions and help others according to his ability (Chae et al., 2019).

CONCLUSION

The conclusion of this study is that most chronic kidney disease patients undergoing hemodialysis have inadequate hemodialysis adequacy and have a poor quality of life. There is a relationship between adequate hemodialysis and the quality of life of patients with chronic kidney disease in the Hemodialysis Unit of the Muhammadiyah Hospital in Lamongan.

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