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Original Article

Optimizing Nutritional Status and Improving Quality of Life: Comprehensive Study of Chronic Kidney Failure Patients Undergoing Hemodialysis at Luwuk Regional Hospital

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ABSTRACT

Chronic kidney disease (CKD) is a progressive disorder that affects kidney function, often requiring interventions like hemodialysis to maintain patient stability. In addition to medical care, it is crucial to consider patients' nutritional status and quality of life. This cross-sectional study aimed to determine the nutritional status and quality of life of CKD patients undergoing hemodialysis at Luwuk Regional Hospital. The study included 77 subjects, and nutritional status was assessed using the Dialysis Malnutrition Score (DMS), while quality of life was measured using the Kidney Disease Quality of Life Short Form (KDQoL-SF). The results showed that 72.7% of subjects had normal/good nutritional status, and 27.3% had mild-moderate malnutrition. Furthermore, 51.9% of subjects reported poor quality of life, while 48.1% had good quality of life. Among subjects with good nutritional status, 39.7% had good quality of life, and 60.7% had poor quality of life. Statistical analysis revealed no significant relationship between nutritional status based on DMS and quality of life in hemodialysis patients ($p>0.05$). Quality of life is a complex phenomenon influenced by various factors, and good nutritional status alone may not be sufficient to improve quality of life if other factors, such as psychological stress or pain, are not properly managed. The findings emphasize the importance of a holistic, multidimensional, and personalized clinical approach to enhance the quality of life in hemodialysis patients. Interventions should not only focus on improving nutritional status but also consider patients' overall psychological, social, and physical well-being.

INTRODUCTION

Chronic kidney failure (CKD) is a disorder of the kidney organs characterized by a progressive and irreversible decline in kidney function.[1] This disease is caused by one or more kidney damage, namely kidney structure, histology, albuminuria, abnormalities in urine sediment, electrolytes, or a history of kidney transplantation, also accompanied by a decrease in glomerular filtration rate (GFR).[2] CKD can progress to end-stage kidney disease, where the kidneys stop working and can be life-threatening. Almost all patients with chronic kidney disease require hemodialysis.[3] Hemodialysis is the most frequently used kidney function replacement therapy by CKD patients throughout the world, but hemodialysis cannot

completely replace kidney function.[4]

Hemodialysis therapy can cause physical stress such as fatigue, headaches and cold sweat caused by decreased blood pressure even though the patient receives hemodialysis regularly. CKD patients who undergo hemodialysis routinely are at risk of experiencing a decline in nutritional status which will result in malnutrition.[5,6]

Quality of life is a condition where a person gets satisfaction or enjoyment in everyday life. The quality of life of chronic kidney failure patients who undergo hemodialysis will reduce the symptoms of chronic kidney failure, extend life expectancy and reduce the burden of treatment costs. The quality of life perceived by patients suffering from chronic renal failure is an important measure for assessing the outcome of Continuous Ambulatory Peritoneal Dialysis (CAPD) kidney replacement therapy.[7–9]

The aim of this study was to identify nutritional status, measure quality of life and analyze the relationship between nutritional status and quality of life in chronic kidney failure patients undergoing hemodialysis. It is hoped that the results of the research can be used as recommendations in the management of chronic renal failure patients undergoing hemodialysis, so that they do not experience a decrease in quality of life where patients undergoing hemodialysis often experience various physical, psychological and social obstacles.

METHODS

This research is a quantitative research with a Cross Sectional Study design where dependent and independent data collection is carried out at the same time [(10)]. The research was carried out in March – June 2024 at the hemodialysis installation at Luwuk Regional Hospital, Banggai district.

The population in this study was CKD patients who underwent hemodialysis in the period January - March 2024, totaling 80 respondents. The sampling technique used in this research was accidental sampling. Inclusion criteria were patients diagnosed with chronic renal failure, undergoing hemodialysis therapy. Exclusion criteria were patients who refused to be respondents, patients with decreased consciousness. Data collection was carried out using the DMS formula and form (KDQoL-SF). [10] Subjects whose data could be collected according to the inclusion criteria were 77 respondents.

Determination of nutritional status uses the dialysis malnutrition score (DMS) form. [11,12] The DMS form consists of seven components, namely unexpected changes in body weight, food intake, gastrointestinal symptoms, functional capacity, comorbidities, subcutaneous fat, and signs of muscle atrophy. Each DMS component has a score of 1 to 5 which is assessed subjectively. A score of 1 indicates normal nutritional status, a score of 2 to 4 is moderate, and a score of 5 indicates a very serious condition or poor nutritional status. Next, the scores of the seven DMS components are added up to obtain a total number of 7 to 35 which is classified into good (normal) nutritional status with a score of 7-13, mild to moderate malnutrition (mild-tomoderate malnutrition) with a score of 14-23, and severe malnutrition (severe malnutrition) with a score of 24-35.

Quality of life was measured using the Kidney Disease Quality of Life Short Form (KDQoL-SF). [8.13] Quality of life based on the KDQoL form consists of 24 questions which are divided into four components, namely physical health, mental health, kidney disease problems, and patient satisfaction[20]. The technique for filling out the form is by giving a score to each question. The total score obtained is included in the point value conversion and then the average value is taken. The mean value has a range between 0-100, where a score of less than or equal to 50 is categorized as good quality of life and a score of less than 50 is categorized as poor quality of life.

Data collection was carried out by 6 data collection officers (enumerators) who had previously received training in the data collection process. Data obtained from the data collection process is processed using a statistical data processing program. The data processing process consists of several steps, namely editing, coding and scoring, data entry and clearing. Data were analyzed using the SPSS program with univariate and bivariate

analysis. Univariate analysis aims to describe the characteristics of each research variable. Bivariate analysis was carried out to determine the relationship between the length of time undergoing hemodialysis and the quality of life of chronic kidney failure patients. The statistical test used in this research is the Chi Square test. If the conditions are met, namely the observed value is zero and cells have an expected value of less than 5, a maximum of 20% of the number of cells. If it does not meet these requirements, then the alternative test is the Fisher Exact test. Presentation of data in the form of tables and images.

RESULTS

The respondents in this study were all chronic kidney failure patients who underwent hemodialysis from 2024 to March-April 2024 at Luwuk Regional Hospital, totaling 77 people. In table 1, the distribution of respondents based on gender shows that there were 34 (42.2%) male respondents and 43 (55.8%) female respondents. The age of the youngest respondent in this study was 18 years and the oldest was 80 years with an average age of 52 years. Most of the respondents were aged 46-65 years (77.9%) and 16.9% were aged > 66 years and aged <45 year 5.2%.

The level of formal education experienced by respondents ranges from primary education to higher education. Respondents with primary and secondary education levels were 39.0% respectively and 22% with tertiary education.

The hemodialysis process replaces the kidney process as filtration in patients with chronic kidney failure. Most respondents (94.8%) underwent hemodialysis routinely twice a week.

Table 1 Distribution of Respondent Characteristics (Gender, Age and Education)

Variables	n	%
Gender		
Man	34	42.2
Woman	43	55.8
age		
< 45 year	4	5.2
46 – 65 year	60	77.9
≥ 66 years	13	16.9
Education		
Elementary (junior high school and below)	30	39.0
Intermediate (high school)	30	39.0
High (bachelor)	17	22.0
Frequency of hemodialysis		
1x / week	4	5.2
2x / week	73	94.8

The results of anthropometric measurements are body weight (BB) and height (TB) to determine body mass index (BMI). The largest percentage distribution of respondents according to BMI results was normal nutritional status at 75.3%, followed by fat nutritional status at 16.9% and respondents with thin nutritional status at 7.8%.

Nutritional status based on DMS consists of three categories, namely good/normal nutritional status moderate malnutrition, and severe However, in this study there were no subjects in the severe malnutrition category so there were only two categories of subject nutritional status based on DMS. The results of the analysis showed that the majority of subjects had normal/good nutritional status (72.7%) and 27.3% were classified as mild-moderate malnutrition. (Figure 1)

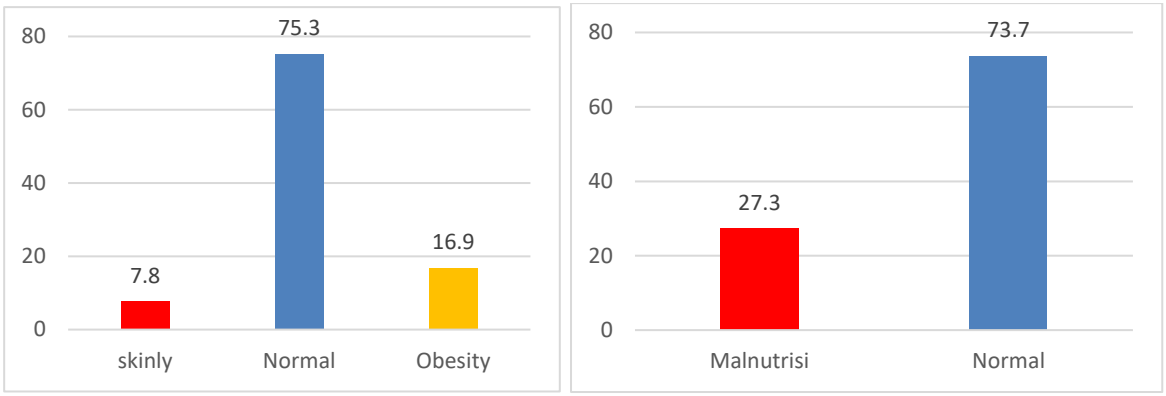

Figure 1. Nutrional status BMI and Dialysis Malnutrition Score (DMS)

Quality of life is each individual's perception of their position in life. [15]. Quality of life assessment refers to the KDQoL form which consists of two categories, namely good and poor quality of life.[16] Scoring is carried out by giving an assessment to each question in the KDQoL form on a scale of 0-100 with a high score indicating a better quality of life.[9] The results of the analysis showed that the majority of subjects had a poor quality of life, 40 people (51.9%) and a good quality of life, 37 people (48.1%).

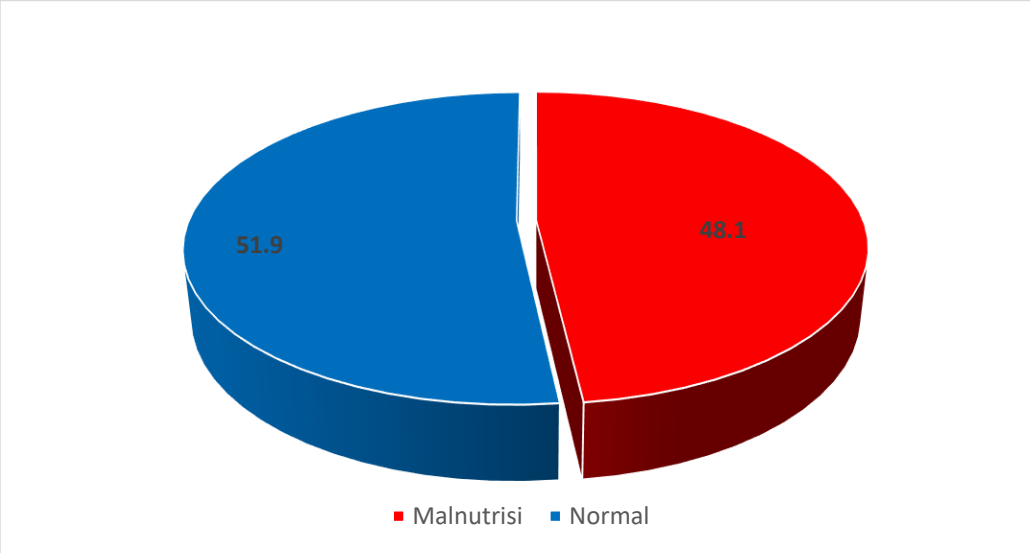

Figure 2. The respondent's quality of life Hemodialyasis is a replacement there

Kidney function is used to remove toxins and regulate electrolyte fluids in the body.[17] Patients who undergo hemodialysis therapy routinely are at risk of decreasing nutritional status which will result in malnutrition. Hemodialysis can also affect psychological conditions and cause physical stress such as fatigue, headaches and cold sweat. All of these conditions can affect the patient's quality of life. [15,18–20]

Table 2. The relationship between nutritional status and qualyty life

Nutrional Status	Quality life				Total	p-value
	good		Bad			
	n	%	n	%		
Good	25	44.6	31	55.4	56	0.113
Malnutrition	12	57.1	9	42.9	21	
Total	37	48,1	40	51.9	77	

Based on Table 2, it is known that 25 (44.6%) subjects with CKD on hemodialysis had good nutritional status and good quality of life. Meanwhile, there were 31 subjects with good nutritional status and poor quality of life (55.4%). Subjects with malnutrition status have poor quality of life compared to subjects with malnutrition status with good quality of life. These results indicate that nutritional status does not affect the quality of life in CKD sufferers.

The results of further analysis using the Chi-square test showed that there was no significant relationship between nutritional status based on DMS and the quality of life of hemodialysis patients (p=0.113).

DISCUSSION

This study involved a total of 77 chronic kidney failure patients undergoing hemodialysis at Luwuk Regional Hospital. The distribution of respondents based on gender between men and women is quite balanced (42.2% and 57.8%), this research is in line with research by Ariyani (2019) and different from Putri et.al (2014) which states that the majority of CKD patients who undergo hemodialysis is male.[15]

Chronic kidney failure can attack at any age. In this study the youngest age was 18 years and the oldest was 80 years. The majority of respondents (77.9%) were aged between 46 and 65 years. This age range shows that chronic kidney failure patients undergoing hemodialysis tend to be elderly, this is in line with research by Ariani et.all (2019).[19] This is in accordance with the theory that one of the causes of chronic kidney failure is interference imunologis dan kelainan kongenital.[11]

Most respondents had primary and secondary education, 39.0% each. Meanwhile, only 22% of respondents had higher education. This indicates that the majority of chronic kidney failure patients undergoing hemodialysis have low to medium education levels.[21] The majority of respondents (94.8%) underwent hemodialysis routinely twice a week. This shows that the common hemodialysis treatment pattern at Luwuk District Hospital is twice a week. This frequency may be the recommended standard of care for chronic renal failure patients in maintaining their health and quality of life.[22]

Based on research on DMS scores, the majority of respondents (72.7%) had normal or good nutritional status. Likewise, based on anthropometric measurements (BMI values), the majority of respondents had normal/good nutritional status (75.3%). This shows that the majority of chronic kidney failure patients undergoing hemodialysis at Luwuk Regional Hospital receive adequate nutrition to maintain their body's health. Good nutritional status can contribute to the effectiveness of treatment and improve quality of life.[14,21,23.]

Even though the majority of respondents have normal nutritional status, there are still 27.3% who are still classified as mild to moderate malnutrition. These results indicate that there are still some respondents who may experience nutritional problems and need special attention. Malnutrition in chronic kidney failure patients can be caused by various factors, such as impaired nutrient absorption, dietary restrictions, or loss of nutrients during the dialysis process.[5,24]

As many as 40 people (51.9%) of the total respondents reported having poor quality of life. This may indicate that the majority of chronic kidney failure patients undergoing hemodialysis at Luwuk District Hospital experience significant challenges in living their daily lives, both physically and psychologically. Poor quality of life can be caused by various factors, such as chronic disease symptoms, side effects of treatment, or social and economic impacts. [8,25,26]

Nevertheless, 37 people (48.1%) reported having a good quality of life. This shows that despite serious illness, some respondents are still able to maintain an adequate quality of life. Factors that may contribute to a good quality of life include social support, adherence to treatment, and effective coping strategies.

Data on the quality of life and nutritional status of respondents shows the importance of a holistic approach in treating chronic kidney failure patients. In addition to focusing on the medical management of disease, care must also address psychosocial and nutritional aspects

to improve quality of life and health outcomes.[13] Patients with poor quality of life and less than optimal nutritional status may require special interventions, such as psychological counseling, social support programs, or increased access to balanced nutritional resources.

There were 22 people (39.7%) of the total respondents who had good nutritional status and good quality of life. This shows that some respondents were able to maintain good nutritional status and obtain an adequate quality of life despite serious illness. On the other hand, as many as 60.7% of respondents had good nutritional status, but their quality of life was not good. This indicates that even though patients have adequate nutritional intake, they still face challenges in living their daily lives, whether due to disease symptoms, side effects of treatment, or other factors.

The results of the analysis using the Chi-square test showed that there was no significant relationship between nutritional status based on the DMS (Dietary Management Score) and the quality of life of hemodialysis patients (p=0.160). The results of this research are supported by research by Ullu et al (2018) and research by Nurcahyati et al (2024) which show that some respondents with malnutrition have a good quality of life.[27] The results of this study indicate that there is no strong correlation between nutritional status and quality of life in this study sample. Status is not a determining factor in quality of life or vice versa. Quality of life and nutritional status are influenced by various factors, including medical conditions, social support, psychological conditions, and compliance with treatment. Therefore, although there was no significant relationship in this study, other factors still need to be considered in designing effective treatment interventions.[4,28,29].

The results of the study emphasize the importance of routine evaluation of the quality of life and nutritional status of chronic kidney failure patients as part of comprehensive care. By monitoring changes in these two areas, the medical team can respond in a timely manner and provide more focused and effective care. In addition, further in-depth research to better understand the relationship between nutritional status, quality of life, and other factors that influence CKD patients undergoing hemodialysis.

CONCLUSIONS

Based on the research results, the majority of chronic kidney failure patients undergoing hemodialysis at Luwuk District Hospital have normal or good nutritional status (72.7%), more than half (51.9%) of patients have poor quality of life. Statistical analysis using the Chi-square test shows that there is no significant relationship between nutritional status and the quality of life of hemodialysis patients. Improving quality of life can be achieved through a holistic and multidisciplinary approach, such as nutritional counseling, physical therapy, and psychological support, to improve the patient's overall well-being. Further research needs to be carried out by looking at quality of life more comprehensively and considering other factors, such as level of family support, mental condition and physical activity.

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