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ORIGINAL ARTICLE

The relationship between anemia and quality of life in chronic kidney disease patients undergoing hemodialysis at Royal Prima Hospital

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ABSTRACT

This study aimed to investigate the relationship between anemia and quality of life in patients with chronic renal failure undergoing hemodialysis at Royal Prima Hospital. An analytical observational design using a cross-sectional approach was used. Data were collected from pre-existing medical records, and quality of life was assessed using a modified WHOQOL-BREF questionnaire that evaluates various aspects of life using a 5-point Likert scale. The chi-square test was used to determine the significance of the relationship between anemia status and quality of life among patients. A study of 51 hemodialysis patients at Royal Prima Hospital showed a high prevalence of anemia, with 86.3% of patients showing hemoglobin levels below the normal range. Although most patients (92.2%) were prescribed Sangobion, an iron supplement, many patients remained anemic, indicating a potential problem in terms of treatment efficacy or compliance. The duration of hemodialysis varied among the participants, with most undergoing treatment for more than 24 months, while the others were on hemodialysis for less than 24 months. About 92.2% reported a moderate quality of life, while only 7.8% experienced a poor quality of life. Statistical analysis showed no significant difference in the quality of life between patients with and without anemia (p=0.495), indicating that anemia may not have a direct impact on the overall quality of life for this patient population. In conclusion, although anemia is prevalent in hemodialysis patients at Royal Prima Hospital, its association with quality of life appears to be limited based on the findings of this study. Future research should focus on understanding the causes of anemia in this population and developing targeted strategies to improve the hematological status and overall quality of life of patients undergoing hemodialysis.

Keywords: CKD patient, anemia, quality of life

Introduction

CKD is a persistent disorder of kidney function in which serum creatinine is abnormally elevated for more than three months or the glomerular filtration rate is less than 60 mL/min/1.73m².[1] Chronic kidney disease (CKD) is a widespread condition affecting approximately 10-13% of the global population.[2] The prevalence varies by sex and region, with women and low- and middle-income countries showing higher rates. Globally, CKD affects approximately 225.7 million men and 271.8 million women.[3] Disease burden is particularly concerning in some countries, with prevalence rates reaching 24% in Saudi Arabia and Belgium.[4] CKD is often asymptomatic in its early stages and is associated with an increased risk of

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cardiovascular morbidity and premature mortality.[5] The global increase in CKD prevalence is primarily driven by the rising rates of diabetes, hypertension, obesity, and aging populations (Lv & Zhang, 2019).[6] The prevalence of chronic kidney disease (CKD) in Indonesia is approximately 0.38%, with variations across provinces, with the highest prevalence reported in North Kalimantan at 0.64% and the lowest in West Sulawesi (0.18 %).[7,8] Given its significant impact on public health and healthcare systems, there is a pressing need for effective prevention, detection, and treatment strategies.

One of the common complications associated with CKD is anemia, which can significantly impact a patient's quality of life. Research has consistently shown that anemia negatively affects health-related quality of life (HR-QoL), particularly in older individuals and those with chronic conditions. A large population-based study found that anemia significantly impaired overall survival and HR-QoL in individuals aged > 60 years, mainly affecting physical functioning.[9] The severity of anemia appears to be a crucial factor, with a sharp drop in QoL observed when hemoglobin levels fall below 9 g/dL, suggesting potential implications for transfusion recommendations.[10] Anemia in CKD patients is typically caused by decreased production of erythropoietin, blood loss during hemodialysis, and strict dietary restrictions. This condition leads to a reduction in hemoglobin levels in the blood, resulting in insufficient oxygen delivery to the body's tissues. Consequently, various physiological functions and the patient's quality of life are impaired.[11,12] The development of anemia can result in various health problems, including tiredness, weak muscles, and kidney problems. These issues can eventually lead to a higher risk of heart problems, such as an enlarged heart and heart failure, which can be fatal for people with kidney disease.[13]

The physical and mental impact of anemia can reduce a patient's ability to perform daily activities and increase their dependence on medical care.[14] Multiple studies have demonstrated a significant relationship between anemia and quality of life in CKD patients undergoing hemodialysis. Research has shown that anemia prevalence increases with CKD progression, ranging from 42.3% in stage 3 to 93% in stage 5. Patients with anemia have significantly lower physical performance scores than those without anemia.[15] Studies have found correlations between hemoglobin levels and various QoL scales, including symptoms/problems, pain, vitality, and overall physical health. Higher hemoglobin levels are associated with improved quality of life scores, particularly in symptoms/problems and vitality scales.[16]

Therefore, it is crucial to understand the relationship between anemia and the quality of life in patients with CKD undergoing hemodialysis. Assessing iron status is a vital parameter for monitoring patients with chronic kidney disease, especially those on hemodialysis. Optimal iron levels significantly impact the success of patients' quality of life. By increasing awareness of the impact of anemia on the quality of life, it is hoped that medical interventions can be enhanced to support patients in coping with the challenges posed by this disease. Thus, this study is expected to contribute to a better understanding of the impact of anemia on the quality of life of patients with chronic renal failure and to provide a basis for consideration in efforts to improve the quality of life of patients.

Method

This was an analytical observational study with a cross-sectional design. The purpose of this study was to determine the relationship between anemia and quality of life in patients with chronic renal failure undergoing hemodialysis at the Royal Prima Hospital. This study was conducted between April and June 2024. This study included 51 patients undergoing hemodialysis. Samples in this study were obtained using a consecutive sampling technique. Samples were selected based on predetermined criteria. Inclusion criteria were patients with chronic renal failure who underwent hemodialysis twice a week in the last three months, willing to participate, and able to communicate well. Exclusion criteria were applied to patients with poor prognosis, significant communication disorders, or death during the study period.

The data source for this study was the pre-existing medical records of patients with chronic renal failure. Quality of life, which is an individual's perception of their position in life, was measured using a customized WHOQOL-BREF questionnaire. This questionnaire consists of 26 statements that explore various aspects of life, such as physical health, psychological state, social relationships, and the environment. The respondents were asked to rate each statement on a 5-point Likert scale. The total score obtained was then converted into quality of life categories: very poor, poor, moderate, good, and excellent. For further analysis, these categories were combined into two main groups: poor quality (very poor, poor, and moderate) and quality (good and excellent).

Relevant data were extracted and entered into the SPSS software for statistical processing and analysis. The results of the analysis were tabulated based on predetermined variables. The chi-square test was used to test the hypothesis of a significant relationship between anemia status and quality of life in chronic renal failure patients undergoing hemodialysis at the RSU Royal Prima Medan. The significance level set was 5%.

Results

A comprehensive analysis of 51 hemodialysis patients at the Royal Prima Hospital revealed a high prevalence of anemia. The majority of patients (86.3%) were found to be anemic, with hemoglobin levels generally below the normal range. Interestingly, while most patients (92.2%) were prescribed Sangobion, an iron supplement, a significant proportion of them continued to experience anemia. The duration of hemodialysis also varied among patients, with a substantial number undergoing the procedure for > 24 months. However, a smaller group had been on hemodialysis for less than 24 months. Regarding sex, both male and female patients were represented in the study, with a relatively even distribution. There were, however, a few patients (3) who did not report any iron supplementation, and interestingly, two of them had normal hemoglobin levels. Respondents had a poor quality of life (7.8 %) and a moderate quality of life (92.2 %).

Table 1. Relationship between anemia and quality of life of CKD patients undergoing hemodialysis

Anemia	Quality of life						p
	Poor		Moderate		Total		
	n	%	n	%	n	%	
Yes	3	5,9	41	80,4	44	86,3	
No	1	2,0	6	11,8	7	13,7	0,495
Total	4	7,8	47	92,2	51	100	

Of the 51 patients with CKD undergoing hemodialysis, 44 (86.3%) were anemic. However, the statistical analysis showed no significant difference between the anemic and non-anemic groups in terms of quality of life (p=0.495). This study found no evidence to support the hypothesis that anemia significantly affects the quality of life of CKD patients undergoing hemodialysis. The results showed that moderate quality of life was predominant in both groups, both patients with anemia and without anemia.

Discussion

Research conducted at Royal Prima Hospital provides critical insights into the prevalence of anemia among hemodialysis patients with chronic kidney disease (CKD). The study revealed that 86.3% of the 51 patients analyzed were anemic, with hemoglobin levels consistently falling below the normal range. This high prevalence underscores the significant challenge of managing anemia in this patient population, which is often exacerbated by underlying renal pathology and the effects of hemodialysis itself. Although the majority of patients (92.2%) received iron supplementation through Sangobion, many continued to experience persistent anemia, indicating potential issues with adherence to treatment protocols or the effectiveness of the supplementation.

The duration of hemodialysis among the participants varied, with many undergoing treatment for over 24 months, while a smaller group had been on hemodialysis for less than that period. This variability suggests that longer exposure to hemodialysis may not necessarily correlate with improved hemoglobin levels, as evidenced by the continued high rates of anemia. The study included both male and female patients in relatively equal proportions, which allows for a more generalized understanding of the impact of anemia across sexes in this demographic.

Interestingly, the statistical analysis indicated no significant difference in quality of life between patients with and without anemia (p=0.495), challenging the common assumption that anemia directly correlates with diminished quality of life in patients with CKD undergoing hemodialysis. While 92.2% of respondents reported a moderate quality of life, only 7.8% experienced a poor quality of life, suggesting that factors beyond hemoglobin levels may play a crucial role in determining overall well-being in these patients. This finding highlights the complexity of quality-of-life assessments and suggests that other psychosocial or health-related factors may mitigate the adverse effects typically associated with anemia.

In conclusion, this study emphasizes the need for a multifaceted approach to managing anemia in patients on hemodialysis. Although iron supplementation is a standard intervention, its effectiveness may be limited by various factors, including patient compliance and individual physiological responses. Additionally, the lack of a significant correlation between anemia and quality of life calls for further investigation of other determinants affecting patient well-being. Future research should focus on identifying these factors and developing comprehensive management strategies that holistically address both anemia and quality of life in patients with CKD undergoing hemodialysis.

Conclusion

The findings from the study conducted at Royal Prima Hospital highlight a significant prevalence of anemia among hemodialysis patients, with 86.3% of the 51 participants having anemia. Statistical analysis revealed no significant difference in quality of life between patients with and without anemia (p=0.495), challenging the assumption that anemia directly affects the overall well-being of individuals undergoing hemodialysis. This finding suggests that other factors may play a more critical role in determining the quality of these patients. The majority reported a moderate quality of life, indicating that while anemia is prevalent, it may not be the sole determinant of patient satisfaction or health status. In conclusion, while anemia is highly prevalent in patients with chronic kidney disease undergoing hemodialysis, its direct impact on quality of life appears limited based on the findings of this study. Future research should focus on identifying effective strategies for managing anemia and understanding its multifaceted relationship with patient health and quality of life to enhance the care of this vulnerable population.

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