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Overview of Readmissions in Chronic Kidney Disease Patients with Hemodialysis Therapy in Hospital

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Abstract

Background: Chronic kidney disease (CKD) patients undergoing hemodialysis have a high readmission rate, which contributes to an increased healthcare burden. Readmissions are influenced by patient characteristics and adherence to treatment regimens.

Objective: To provide an overview of readmissions in CKD patients undergoing hemodialysis in hospitals.

Method: This quantitative study used a cross-sectional design conducted in September 2024. The study population was all CKD patients undergoing hemodialysis and hospitalization related to kidney disease complications (n=78). A total of 66 patients were selected using purposive sampling technique. Data regarding patient characteristics and readmissions were collected using a questionnaire that had been tested for validity and reliability. Data were analyzed using descriptive statistics.

Results: The majority of respondents were aged 45-65 years (74.2%), male (54.5%), had a high school education (59.1%), and were employed (51.5%). A total of 28.8% of respondents experienced hospital readmission within 30 days. Factors such as age, gender, education, and lifestyle influence the risk of readmission, which is in line with the findings of previous studies.

Conclusions: Hospital readmissions in CKD patients undergoing hemodialysis remain high. Effective prevention strategies are urgently needed to address this problem, focusing on patient compliance, education, and targeted interventions for high-risk groups.

Keywords: Chronic kidney disease, hemodialysis, hospital readmission

INTRODUCTION

Hemodialysis is still the main renal replacement therapy alongside peritoneal dialysis and kidney transplantation in most countries around the world. There are more than two million patients currently undergoing hemodialysis worldwide. The most hemodialysis is performed in the United States which reaches around 350,000 people, Japan 300,000 people, while in Indonesia it is close to 15,000 people (1). Based on Riskesdas data in 2020, the incidence of hemodialysis was 19.3% in the population aged more than 15 years diagnosed with Chronic Kidney Failure in Indonesia (2).

Chronic kidney disease is a late-stage kidney disease caused by the loss of the body's function to maintain metabolism and fluid and electrolyte balance, causing high blood ureum levels that require hemodialysis therapy (3). According to the results of the 2019 Global Burden of Disease study, chronic kidney disease is the 18th cause of death globally in all age groups, the 9th cause of death in the >74 age group and the 8th cause of death in the >50 age group. In Indonesia, chronic kidney disease is in 13th position as a

disease with a mortality rate of 2% or around 35,217 people. The prevalence of chronic kidney disease in Asian countries varies from 10-18%, this is not much different from other countries in the world (4).
Based on data obtained from the Indonesian Renal Registry (IRR) in 2018, 98% of patients with chronic kidney disease undergo hemodialysis therapy. Hemodialysis is a supporting therapy for the sustainability of chronic kidney disease (5). Based on Indonesian Renal Registry data in 2015 the number of chronic kidney disease patients in Indonesia who underwent hemodialysis was 15,424 patients, this figure increased in 2017 obtained data on the number of patients undergoing hemodialysis, namely 77,892 patients. In 2018 the number of patients undergoing hemodialysis increased again to 135,486 and continued to increase until in 2019 to 185,901 patients.
30-day readmission refers to re-hospitalization within 30 days of previous treatment in chronic kidney disease patients undergoing hemodialysis (6). The high readmission rate is influenced by various factors (7), including characteristics such as age, gender, and education level. These characteristics affect a person's lifestyle, activity, rest, and psychological state (8), which in turn can contribute to the incidence of readmissions (9). To reduce unnecessary readmissions for kidney failure patients requiring dialysis is a top priority for hospitals, nephrologists and outpatient dialysis centers. Patients on dialysis have a higher overall 30-day hospital readmission rate than other patients. This signifies the importance of developing effective readmission prevention strategies specific to this vulnerable patient group (10).
The US Renal Data System 2020 Annual Data Report reveals that patients' risk of readmission within 30 days to the hospital varies depending on their kidney condition. Only 16.6% of Medicare beneficiaries aged 66 and above who did not have chronic kidney disease returned to the hospital within that period. However, this percentage jumped to 23.2% for those with chronic kidney disease, and even reached 31.1% for patients on dialysis. This clearly shows a correlation between chronic kidney conditions and an increased risk of readmissions, with dialysis being the factor that triggers the highest risk.

OBJECTIVE

To describe readmissions in chronic kidney disease patients with hemodialysis therapy in the hospital.

METHOD

This type of research is a quantitative study with a cross sectional design to determine the picture of readmissions in chronic kidney disease patients with hemodialysis therapy in hospitals conducted in September 2024. The population in this study were all patients suffering from chronic kidney disease chronic kidney disease, and were undergoing hemodialysis therapy and undergoing hospitalization related to kidney disease and complications in the hospital. The total population was 78 people. The sample in this study amounted to 66 people. Before data collection is carried out, permission is given and consent is obtained from the respondent. The questionnaire was used to collect data on the characteristics of respondents consisting of patient identity, namely: age, gender, education, employment status, and readmission. The questionnaire instrument used had been tested for validity and reliability. The final interpretation stated that the instruments used were valid and reliable. Ethical approval was obtained from the Ethics Committee of the Faculty of Nursing, Andalas University (No.347.laiketik/KEPKFKEPUNAND). Data were analyzed using computerized software. The analysis included descriptive statistical tests such as frequency distribution and percentage.

RESULTS

Table 1. Frequency distribution of respondents' characteristics based on age, gender, education level and employment status in chronic kidney disease patients with hemodialysis therapy at the hospital (n=66)

Variables	*f*	%
Age	9	13.6
<45 years	49	74,2
45- 65 years	8	12.1
>65		
nder		
le Female	36	54.5
	30	45.5
Education	3	4.5
Elementary School	5	7.6
Junior High School	39	59.1
High School	19	28.8
College		
Employment status		
Employed	34	51.5
Not Employed	32	48.5

Based on table 1 above, it can be seen that most (74.2%) respondents were aged 45-65 years and as many as 12.1% of respondents were aged> 65 years. From the characteristics of gender, it can be seen that most (54.5%) are male and as many (45.5%) respondents are female. From the characteristics of education, it can be seen that most respondents (59.1%) have a high school education and as many as (4.5%) respondents with elementary school education. From the characteristics of work status, it can be seen that most respondents (51.5%) work and as many (48.5%) respondents do not work.

Table 2. Readmission features in chronic kidney disease patients with hemodialysis therapy in hospitals (n=66)

Readmissions	*f*	%
Available	19	28.8
None	47	71.2

Table 2 shows that 28.8% of patients with chronic kidney disease with hemodialysis therapy experienced hospital readmissions.

DISCUSSION

The results showed that the majority of respondents were aged 45-65 years (74.2%), male (54.5%), had a high school education (59.1%), and had a working status (51.5%). Most of the respondents in this study were aged 45-65 years (74.2%), in accordance with the findings of Ravani et al. (2020) that chronic kidney disease is more common in middle-aged to elderly. The risk increases with age, influenced by hypertension and diabetes mellitus which commonly develop at this age (11).

The decline in kidney function due to aging, known as “age-related renal decline,” causes the glomerular

filtration rate (GFR) to decrease by about 1 ml/min/year after the age of 40 years, even in healthy individuals (4). Patients aged 45-65 years are often the main target of hemodialysis therapy due to significant GFR decline, either due to age or medical conditions. The majority of hemodialysis therapy patients are male (54.5%), according to research (Yani et al., 2024) which shows the prevalence of chronic kidney disease is higher in men. Hormonal factors, lifestyle, and risk exposure such as smoking, hypertension, and cardiovascular disease are more common in men (12). The hormone estrogen in women has a protective effect against kidney disease, explaining the slower onset in women. Rahmi et al. (2021) added that risky lifestyles, such as alcohol and cigarette consumption, as well as a higher prevalence of hypertension in men, also contribute (13).

Most respondents had a high school education (59.1%). Low education is often associated with low health literacy, affecting understanding of health information, disease prevention, and management of risks such as diabetes and hypertension, the main causes of chronic kidney disease. Low-educated patients are less aware of the importance of preventive care and have limited access to health services, often only realizing kidney disease at an advanced stage and requiring hemodialysis (14). Education also influences the understanding of the benefits and risks of therapies, such as dialysis or conservative treatment (15). Most respondents (51.5%) were employed, including civil servants who in Indonesia have better access to health services such as BPJS, making expensive therapies such as hemodialysis easier. High socioeconomic status, often represented by formal employment, correlates with better healthcare access and positive clinical outcomes in chronic kidney patients, thanks to financial stability and health insurance. Employed patients also receive better social support, improving well-being during therapy (16).

Based on the study, 19 patients (28.8%) with chronic kidney disease undergoing hemodialysis experienced readmissions. A 30-day readmission, which is a readmission within 30 days of hospital discharge, is common in these patients (6). The high readmission rate is influenced by various factors (7), including characteristics such as age, gender and education level. Individual characteristics affect lifestyle, quality of activity, rest, and psychological health, ultimately impacting readmission risk (8, 9).

The US Renal Data System 2020 Annual Report reveals that the 30-day hospital readmission rate varies by kidney condition. Of Medicare beneficiaries aged 66 years and older, 16.6% without chronic kidney disease experienced readmissions, compared to 23.2% who had chronic kidney disease, and 31.1% in patients on dialysis. This suggests a close link between kidney condition and increased risk of readmission, with dialysis being the highest risk factor.

Adherence significantly affects readmission of chronic kidney disease patients (4). High non-adherence leads to long-term losses, such as cardiovascular damage, heart failure, hypertension, pulmonary edema, as well as short-term losses such as edema, bone pain, and shortness of breath. Patients with higher thirst tend to be less compliant than those without thirst (17). Excess fluid intake in hemodialysis patients increases mortality. Reducing unnecessary readmissions in renal failure patients on dialysis is a priority for hospitals, nephrologists, and dialysis centers (18). The readmission rate of dialysis patients within 30 days is higher than that of other patients, suggesting the need for effective readmission prevention strategies for this vulnerable group (10).

CONCLUSIONS

This study revealed that the readmission rate in chronic kidney disease (CKD) patients undergoing hemodialysis is still quite high, with 28.8% of patients experiencing readmission within 30 days of hospital discharge. Factors influencing the high readmission rate include the patient's age, gender, education level

and lifestyle, all of which contribute to the increased risk of readmission. Therefore, the development of more effective readmission prevention strategies is necessary. The main focus should be on improving patient adherence to medication, counseling on the importance of preventive care, and targeted interventions for high-risk patient groups. With appropriate prevention programs in place, it is hoped that readmission rates can be reduced, thereby reducing hospital burden and improving patient quality of life.

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