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ORIGINAL ARTICLE

Anxiety in patients treated with hemodialysis

Eva Anita Yunia[1], Julwansa Saragih[1]*, Derma Wani Damanik[1], Rani Sartika Dewi[1]

Abstract

Patients with renal failure undergoing hemodialysis often experience anxiety due to various individual, socioeconomic, and environmental factors. This study aimed to analyze the factors associated with anxiety in these patients. This was a quantitative, cross-sectional study. The risk factors for anxiety investigated in this study were education, duration of hemodialysis, knowledge, and family support. The study included 50 patients with renal failure undergoing hemodialysis (total sampling). Data were collected directly by distributing questionnaires to the patients. Data were analyzed using the chi-square test and logistic regression analysis (α=0.05). The results showed that education level was not significantly associated with anxiety in these patients (p= 0.816). However, the duration of hemodialysis (p= 0.023) and patient knowledge (p= 0.048) were significantly associated with the anxiety experienced by the patients. Family support was a protective factor against anxiety in these patients (P = 1.00). The dominant variable affecting patient anxiety is the duration of hemodialysis (p=0.041; PR = 4.1; 95%CI 1.061-16.107). This means that patients undergoing hemodialysis for more than 6 months are 4.1 times more likely to experience moderate anxiety compared to patients who have been undergoing hemodialysis for 6 months or less.

Keywords: renal failure, hemodialysis, associated factor

Introduction

The progressive and reversible decline in renal function, which leads to the accumulation of metabolites, fluid, and electrolytes, resulting in uremia and azotemia, is known as renal failure.[1,2] The prevalence of renal failure has increased significantly in the last 20 years, imposing a substantial burden on low- and middle-income countries.[3] One of the treatment options for patients with renal failure is hemodialysis, a procedure that replaces the kidney's excretory function by removing waste products from the blood, such as creatinine and urea. Hemodialysis is commonly used for patients with end-stage renal disease (ESRD) and is also a medical procedure for patients with specific conditions.[4] Some patients undergo hemodialysis for the rest of their lives, while others do so only a few times, and their kidneys may return to normal function.[5] The opportunity for improvement through hemodialysis depends on the patient's severity of illness, their willingness to undergo treatment, and the support of their family and healthcare team.[6,7]

Patients undergoing hemodialysis often experience anxiety, which is a common condition. This anxiety is attributed to the high cost of hemodialysis, which adds to the patients' anxiety, in addition to individuals suffering from renal failure. The numerous problems associated with hemodialysis lead to increased anxiety in patients.[8–10] Several studies have investigated the factors associated with anxiety in patients undergoing hemodialysis therapy for renal failure. One study have identified various predictors of anxiety, including creatinine level, fatigue level, duration of hemodialysis, number of dialysis sessions per week, blood urea nitrogen level, and age.[11] Additionally, anxiety disorders have been consistently linked to lower perceived quality of life and poorer behavioral adherence in patients. It is important for healthcare

Affiliation
[1]Akademi Perawat Kesdam I/BB Pematangsiantar

Correspondence
saragihjuan02@gmail.com

providers to recognize and address anxiety in these patients, as it can significantly impact their well-being and treatment adherence.[12]

Several studies in Indonesia have reported that factors such as family support, education, duration of hemodialysis, and knowledge are associated with anxiety levels in patients with renal failure undergoing hemodialysis. A study conducted at RSUD Bengkalis in 2016 showed a relationship between family support and anxiety in chronic kidney disease patients undergoing hemodialysis.[13] Other studies have found that factors related to the level of anxiety in chronic kidney disease patients undergoing hemodialysis include education, duration of hemodialysis, knowledge, and family support.[14,15] Patient anxiety affects hemodialysis and hemodynamic stabilization processes, which may increase the risk of complications during the intervention.[15] Therefore, reducing the anxiety of hemodialysis patients can help improve the hemodialysis intervention process and maintain stable hemodynamics, thus reducing the occurrence of complications during the intervention. By understanding the risk factors for anxiety, healthcare providers can assist hemodialysis patients in reducing anxiety and improving the hemodialysis intervention process. This study aimed to analyze the relationship among education, duration of hemodialysis, knowledge, family support, and anxiety in patients with end-stage renal disease undergoing hemodialysis.

Method

This was a quantitative, cross-sectional study. The risk factors for anxiety investigated in this study were education, duration of hemodialysis, knowledge, and family support. The study was conducted at Rumah Sakit Tingkat IV 01.07.03 Pematangsiantar in August 2023. The study subjects were 50 patients with renal failure undergoing hemodialysis (total sampling).

Data collection was conducted directly by administering questionnaires to the patients. Educational assessment was conducted in two categories: low, middle, and high. Hemodialysis duration was divided into two categories: ≤6 months and >6 months. Patient knowledge was assessed by administering questionnaires to hemodialysis patients, with a maximum score of 10 and a minimum score of 0. The knowledge-level variable was divided into two categories: poor and good. Subsequently, a family support assessment was conducted by administering questionnaires with a maximum score of 10 and minimum score of 0. The variables for family support were divided into two categories: not good and good. Patients' anxiety was assessed using the Hamilton Anxiety Rating Scale (HARS), which consists of 14 questions with a score of 0, no symptoms, 1= mild; 2= moderate, 3= severe; and 4, very severe.

Data processing in research begins with data verification, which involves checking the data obtained from the field after conducting the research, either in the form of a questionnaire or a respondent's answer to the questionnaire. Next, the researcher provided the code for the answer to the questionnaire answered by the respondent during the research process. The researcher then moved the respondent's answer by utilizing the functionality of the Office Excel program, and this was followed by transferring the data to the STATCAL application. Subsequently, the data are checked again to determine if there are any errors in the data that have been entered into the computer program. Finally, the data were compiled in the form of frequency distribution tables and cross-tabulations.

Descriptive data analysis was performed to examine the distribution of various variables in the study, including education, duration of hemodialysis, knowledge, family support, and patient satisfaction. Bivariate analysis was then conducted to investigate the relationship between education, duration of hemodialysis, knowledge, and family support with patient satisfaction in hemodialysis patients, using the chi-square test (α=0.05). Finally, multivariate analysis was performed using logistic regression.

Results

The majority of respondents in this study were aged ≤ 45 years (56 %) and were male (54 %). As shown in Table 1, educational level did not significantly affect the severity of renal failure in patients undergoing hemodialysis (p= 0.816). However, the duration of hemodialysis (p= 0.023) and respondent knowledge (p= 0.048) significantly affected the severity of renal failure in patients undergoing hemodialysis. Patients who underwent hemodialysis for > 6 months had a higher risk of experiencing deterioration, with an odds ratio of 1.76 compared to those who underwent hemodialysis for ≤6 months.

Patients with lower knowledge had a higher risk of experiencing deterioration, with an odds ratio of 1.67 compared than those with higher knowledge. However, family support did not significantly affect the severity of renal failure in hemodialysis patients (p= 1.00). This indicates that family support acts as a protective factor against the severity of renal failure in patients undergoing hemodialysis.

Table 1. The relationship between education, duration of hemodialysis, knowledge, and family support with anxiety in patients undergoing hemodialysis

Variable	Anxiety level						p	OR	95%CI	
	Mild		Moderate		Total					
	n	%	n	%	n	%			Lower	Upper
Education										
Low	11	57,9	8	42,1	19	100				
Middle	13	61,9	8	38,1	21	100	0,816	-	-	-
High	7	70	3	30	10	100				
Duration of hemodialysis										
≤6 months	18	81,8	4	18,2	22	100	0,023	1,76	1,130	2,747
>6 months	13	46,6	15	53,6	28	100				
Knowledge										
Poor	20	76,9	6	23,1	26	100	0,048	1,67	1,035	2,721
Good	11	45,8	13	54,2	24	100				
Family support										
Not good	2	66,7	1	33,3	3	100	1,000	1,080	0,471	2,481
Good	29	61,7	18	38,8	47	100				

Table 2 highlights that the variable that significantly influences the incidence of patients is the duration of hemodialysis (p=0.041; PR = 4.1; 95%CI 1.061-16.107). This means that patients who undergo hemodialysis for more than 6 months have a 4.1-fold increased risk of developing complications compared to those who have undergone hemodialysis for 6 months or less.

Table 2. Logistic regression test results

Variable	Model 1	
	p value	OR (95%CI)
Duration of hemodialysis	0,041	4,1 (1,061-16,107)
Knowledge	0,094	2,9 (0,828-10,790)

Discussion

Hemodialisis is a method used to remove excess fluid and toxins from a patient's blood when it circulates through an artificial kidney (dialyzer).[4] The main goals of hemodialisis are to correct fluid and electrolyte imbalances, eliminate toxins, and remove waste products of cellular metabolism, as well as to control blood pressure. The hemodialisis process involves separating fluid with a semi-permeable membrane, allowing electrolytes and other substances to diffuse through the membrane until equilibrium is achieved.[16] Hemodialisis can be performed daily for acute kidney failure patients or for patients with chronic kidney disease, typically undergoing two to three sessions per week. It is indicated for patients in acute conditions requiring short-term dialysis (ranging from several days to a few weeks) or for patients with end-stage renal failure requiring long-term or permanent dialysis.[1,4,17]

In this study, education was not associated with anxiety in patients with renal failure undergoing hemodialysis. This finding contradicts previous research results.[18,19] Patients with higher education may have broader knowledge, be able to control themselves in facing problems, have high self-confidence and experience, have an accurate estimate of how to deal with events, and easily understand what is recommended by healthcare providers. These factors can help individuals make decisions and reduce their anxiety levels. Literature mentions that the level of education is often associated with morbidity and mortality rates, as it can affect various aspects of life, including health maintenance. The higher the level of education, the expected exposure to disease is also expected to decrease.[20,21] The study's results also indicate that family support is not a significant factor associated with the anxiety of renal failure patients undergoing hemodialysis. However, it is widely recognized that family members play an important role in supporting patients undergoing hemodialysis, and their support can significantly impact the patients' quality of life.[22] Family is the primary source of care for patients undergoing hemodialysis and plays a fundamental role in managing the disease and improving the quality of life (QOL) of patients.[23] Additionally, a study conducted in Iran found that there is an important relation between social support, including family support, and adherence to dietary and fluid restrictions among hemodialysis patients.[24]

The findings of this study indicate that hemodialysis duration is associated with anxiety in patients with renal failure undergoing hemodialysis. This repetitive process can cause trauma to patients, especially in new cases, which can lead to increased anxiety due to a lack of experience with hemodialysis therapy and fear of its effects. A study shows that anxiety is a common problem among patients undergoing hemodialysis, and the duration of dialysis can be linked to an increase in anxiety levels.[25] A recent study in West Nusa Tenggara also found similar conclusions.[26] Some studies show that the longer patients undergo hemodialysis, the lower the perceived level of anxiety.[27,28] However, the findings of our study show the opposite. Respondents who underwent hemodialysis for more than 6 months were 1.76 times more likely to experience moderate anxiety than those who had undergone hemodialysis for less than 6 months. This may be due to the educational characteristics of high school graduates; therefore, patients' health information is not too extensive. Knowledge is related to anxiety in patients with renal failure undergoing hemodialysis. Patients undergoing hemodialysis experience anxiety due to a lack of knowledge during therapy, uncertain expectations about the results of hemodialysis, and its impact, such as fear related to pain, changes in body image, and diagnostic procedures. Some previous studies have concluded similar findings.[13,29]

Handling anxiety in hemodialysis patients can be done through a combination of pharmacological and non-pharmacological approaches. Cognitive-behavioral therapy (CBT) has been suggested as an effective treatment option for depression and anxiety symptoms in patients with end-stage kidney disease.[30] In addition, the use of antidepressants, anti-anxiety medications, and beta-blockers has been recommended to treat anxiety in dialysis patients.[31–33] Non-pharmacological interventions such as exercise programs, relaxation techniques, and mindfulness exercises have also been proposed to help alleviate anxiety symptoms in this patient population.[34] It is important for healthcare providers to routinely screen for anxiety, evaluate the psychological status of patients, and provide appropriate support and interventions to address anxiety in patients undergoing hemodialysis.[12,34]

Conclusion

The majority of respondents were aged ≤45 years and were male. The respondents' education level was not significantly related to the anxiety of renal failure patients undergoing hemodialysis (p= 0.816). However, the duration of hemodialysis (p= 0.023) and respondents' knowledge (p= 0.048) were significantly associated with anxiety experienced by the patients. Family support was a protective factor against anxiety in patients with renal failure undergoing hemodialysis (p= 1.00). The dominant variable affecting patient anxiety was the duration of hemodialysis (p=0.041; PR = 4.1; 95%CI 1.061-16.107). This means that respondents who have been undergoing hemodialysis for > 6 months are likely to experience moderate anxiety 4.1 times more than patients who have been undergoing hemodialysis for ≤ 6 months.

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