Analysis of Socio-Demographic Factors Influencing Anxiety in Hemodialysis Patients

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ABSTRACT

Background: Advanced chronic kidney disease patients need hemodialysis, the most used method of renal replacement therapy today. The patient will receive hemodialysis therapy for the rest of their life so that it can have a psychological effect like anxiety. Aims: This study aims to examine the socio-demographic variables affecting anxiety in hemodialysis patients. Method: This research used a cross-sectional analytical observational study design. A total sampling technique was used in this research. From 113 outpatient hemodialysis patients in March 2023, 80 samples of patients at Roemani Semarang Hospital met the inclusion and exclusion criteria. Inclusion criteria were patients undergoing hemodialysis at Roemani Semarang Hospital who were willing to participate in the study. Exclusion criteria were incomplete questionnaires, patients with impaired consciousness, patients with communication disorders, and patients using anti-anxiety medication. The information collected was primary information from questionnaires and interviews. The data were tested using the Spearman test with a significance level of p<0.05 for age and family support, and the chi-square test for gender, employment, and educational status. Results: The statistical analysis showed a p-value of 0.704 for age, a p-value of 0.020 for gender, a p-value of 0.558 for employment, a p-value of 0.138 for educational level, and a p-value of 0.000 for family support. Conclusion: The results showed a significant relationship between gender and family support with anxiety levels. The higher the family support, the lower the anxiety level. There is no relationship between age, employment, and education level with the anxiety level of patients undergoing hemodialysis at Roemani Semarang Hospital.

Keywords: Anxiety, Hemodialysis, Socio-demographic factors.

INTRODUCTION

A steady loss of renal function and irreparable kidney damage characterize chronic kidney disease (CKD). Glomerulonephritis, diabetes mellitus, and hypertension lead to kidney injury. Hemodialysis, the most widely used treatment method, is necessary for patients in advanced stages of renal replacement therapy (Jesus et al., 2019).

The purpose of hemodialysis is to prolong the patient's life. Still, it can occasionally harm the patient's quality of life by altering daily routines and lifestyles, such as long-term medication use, water intake restrictions, work schedule disruptions, physical and nutritional limitations, and dependence on treatment schedules. In addition to diminished sex life, existential struggles, and spiritual distress, CKD patients experience these conditions, exacerbating their physical and psychological problems. These disorders can result in a deterioration in quality of life and physical, mental, and emotional disability (Jesus et al., 2019; (Huang *et al.*, 2021).

Patients undergoing long-term hemodialysis also face various problems, including financial difficulties, difficulty maintaining employment, depression, and fear of death (Fadlilah, 2019). Patients' emotional and psychological needs are frequently disregarded in routine medical practice (Mosleh et al., 2020). These psychiatric comorbidities have the potential to impact the patient's prognosis and mortality if they are ignored. Physicians are increasingly required to evaluate and treat CKD patients with psychological comorbidities (Goh and Griva, 2018).

Hemodialysis therapy in CKD patients is continuous until the end of the patient's life and can, therefore, have a physical, psychological, social, and economic impact on patients. The physical effects experienced by patients, such as weakness, nausea, vomiting, chills, headaches, fatigue, sleep disturbances, back pain, hypotension, and itching, can cause patients to experience limitations and reductions in their activities, affecting their work and economic conditions. In addition, the main psychological problems experienced by patients are such as feelings of guilt for being a burden on others, difficulty accepting their condition, stress, anxiety, frustration, depression, boredom, and indifference (Kao *et al.*, 2020) (Husna, Rohmah and Pramesti, 2021).

These psychiatric comorbidities have the potential to impact the patient's prognosis and mortality if they are ignored. Physicians are increasingly required to evaluate and treat CKD patients with psychological comorbidities and indirect suicide attempts (Thomas Nti and Frances Emily, 2021). Compared to other chronic diseases like diabetes or congestive heart failure, their incidence is significantly higher. In addition to depression, patients also suffered from anxiety with about 50% of patients showing increased levels of anxiety (Qawaqzeh et al., 2023). People with chronic renal disease who are receiving hemodialysis experience anxiety. Anger, nervousness, body tremors, sadness, increased vital signs, and frequent repetition of questions are the characteristics of anxiety. Anxiety is a state that arises when there is a threat of helplessness or lack of control, feelings of loss of function and self-esteem, failure of defenses, and feelings of isolation (Sipayung, 2020). Concerning CKD patients, anxiety significantly affects clinical and psychosocial results (Huang et al., 2021).

Several studies have investigated possible social, clinical, and psychological factors associated with anxiety in patients with CKD. Several socio-demographic characteristics contribute to anxiety, such as age, gender, ethnicity, education, employment, and social support (Goh and Griva, 2018). There is a lack of similar research in the city of Semarang. Therefore, it would be interesting to find out if socio-demographic factors such as age, gender, educational level, employment, and family support significantly affect anxiety among hemodialysis patients. This study analyzes the socio-demographic characteristics affecting patients' anxiety while receiving hemodialysis at Roemani Semarang Hospital, where the number of chronic kidney disease patients who undergoing hemodialysis at Roemani hospital Semarang is increasing from year to year.

METHODS
Study design
This research used a cross-sectional analytical observational study design.
Sampling
Total sampling is the sampling technique used in this research. From 113 outpatient hemodialysis patients in March 2023, 80 samples of patients at Roemani Semarang Hospital met the inclusion and exclusion criteria. Inclusion criteria: patients undergoing hemodialysis at Roemani Semarang Hospital who were willing to participate in the study. Exclusion criteria: incomplete questionnaire, patients with impaired consciousness, patients with communication disorders, patients using anti-anxiety medication.
Data source
The study's instrument was a questionnaire asking participants about their identities, including age, gender, education level, and employment status. The Zung Self-Rating Anxiety Scale was used to measure anxiety levels. A Likert scale questionnaire was the method used in this study to measure family support.
Data analysis
The data were tested using the Spearman test with a significance level of $p<0.05$ for age and family support and the chi-square test for gender, employment, and educational status.
Ethical approval
This research has received an ethically proper decision by the issuance of a letter by the Health Research Ethics Commission (KEPK) Faculty of Medicine Universitas Muhammadiyah Semarang No. 025/EC/KEPK-FK/UNIMUS/2023 according to the seven ethical standards of WHO 2011.

RESULTS AND DISCUSSION

Table 1. Frequency distribution of hemodialysis patients

Variable	Frequency	Percentage (%)
Gender		
Male	50	62.50
Female	30	37.50
Employment		
Yes	35	43.80
No	45	56.20
Educational level		
Not school	3	3.80
Elementary school	9	11.30
High School	47	58.75
College	21	26.25
Family Support		
Poor	0	0
Moderate	15	18.8
Good	65	81.3
Anxiety Level		
Low	63	78.75
Moderate	17	21.25
High	0	0
Total	80	100

Table 2. Age, family support and anxiety level in patients undergoing hemodialysis.

Variable	Minimum-Maximum	Mean	Standard Deviation
Age	21 - 81	51.73	11.96
Family Support	40 - 76	62. 01	8.51
Anxiety	21 - 58	30.72	10.80

The youngest respondent was 21 years, and the oldest was 81 years. The average age of the respondents was 51.73 years. The majority of 50 respondents (62.5%) were male. Most respondents don't have any job, with 45 respondents (56.2%). Most respondents, 65 (81.3%), had family support that was considered good. Most respondents, 47 (58.75%), had the latest secondary education. On the other hand, only three (3.75%) respondents did not go to school. The analysis results in the table show that the majority of 63 respondents, with a percentage of 78.75%, have a low level of anxiety. The average score for family support is 62.01, and the average for anxiety is 30.72.

Table 3. Spearman correlation test results between age and family support with anxiety levels.

Variable	r	p-value
Age	- 0.043	0.704
Family support	- 0.625	0.000

Table 4. Chi-square test results between gender, employment, and educational level with anxiety levels.

Variable	Anxiety Level				Total		p-value
	Low		Moderate				
	n	%	n	%	n	%	
Gender							0.020
Male	44	88	6	12	50	100	
Female	19	63.33	11	36.67	30	100	
Employment							0.558
Yes	26	74.28	9	25.71	35	100	
No	37	82.22	8	17.78	45	100	
Educational Level							0.138
No	3	100	0	0	3	100	
Elementary School	5	55.55	4	44.45	9	100	
High School	40	85.10	7	14.90	47	100	
College	15	71.42	6	28.58	21	100	

From the analysis of the relationship between gender and anxiety level, it was found that there were 44 (88%) male respondents who had mild anxiety levels. In comparison, 19 (63.33%) female respondents had mild anxiety. The results of the chi-square test obtained a value of p = 0.020. It can be concluded that there is a relationship between gender and the anxiety level of CKD patients undergoing

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hemodialysis at Roemani Semarang Hospital.

From the analysis of the relationship between employment and anxiety level, we obtained data that as many as 26 (74.28%) respondents with jobs have mild anxiety levels. In comparison, 37 (82.22%) respondents without a job have mild anxiety. The results of the chi-square test obtained a p-value = 0.558. It can be concluded that there is no relationship between the job and the anxiety level of CKD patients undergoing hemodialysis at Roemani Semarang Hospital.

The results of the Spearman correlation test between age and anxiety level obtained a p-value = 0.704 and a value of r = -0.043. It can be concluded that there is no relationship between age and anxiety level of CKD patients undergoing hemodialysis at Roemani Semarang Hospital. The older age, the lower the anxiety level detected of CKD patients undergoing hemodialysis at Roemani Semarang Hospital.

The results of the Spearman correlation test between family support and anxiety level obtained a p-value = 0.000 and a value of r = -0.625. It can be concluded that there is a significant relationship between family support and the anxiety level of CKD patients undergoing hemodialysis at Roemani Semarang Hospital. The higher the family support, the lower the anxiety level of CKD patients undergoing hemodialysis at Roemani Semarang Hospital.

From the results of the analysis of the relationship between education level and anxiety level, it was found that there were 40 (85.10%) respondents having a secondary education level who had a mild anxiety level, 4 (44.45%) respondents who had a primary education level had a moderate anxiety level. The results of the chi-square test obtained a value of p = 0.138. It can be concluded that there is no relationship between the education level and anxiety level of CKD patients undergoing hemodialysis at Roemani Semarang Hospital.

Relationship between Age and Anxiety Level

The results of this study indicate that age was not related to the anxiety level of CKD patients undergoing hemodialysis at Roemani Semarang Hospital. This can be due to the mean age of the patients was 51,7 years, which at this age includes middle aged. About 7% of middle-aged adults (30-59 years) are diagnosed with depression, while very few suffer from by severe anxiety (Sikström, Kelmend and Persson, 2022). Furthermore, older adults with anxiety disorders may be less likely to identify themselves as having a mental health problem. Elderlies are more likely to experience physical symptoms of anxiety than younger people. This age group also has a higher risk of medical problems and may be taking more medication. Both of these things can increase the risk of developing an anxiety disorder. The strengths of aging come from the knowledge and experience gained throughout life. As people age, there is a tendency to avoid information or situations that increase negative emotions (such as anxiety) and put pressure on cognition (Spalding et al., 2021).

The findings of this study are not in line with previous study, which indicated that as a patient got older, somatic complaints were more common, their quality of life was worse, they had fewer social opportunities, and their depression levels were higher. Patient age was inversely linked with anxiety levels, indicating that anxiety was less common in older patients. Eight out of 11 CKD people over 60 had a more significant chance of developing depression than people under 60 years (Mosleh et al., 2020). Another study revealed that older individuals had higher sadness levels and poorer physical well-being. Older individuals showed the highest mood improvement and anxiety decrease. Even though the disparities were widely anticipated, they also explained why older patients reported fewer social activities and interests and distressing sentiments (Gadia P, Awasthi A, Jain S, 2020).

Relationship between Gender and Anxiety Level

The study's findings revealed association between patients with CKD at Roemani Semarang Hospital's anxiety levels and gender. Other findings revealed that women's anxiety levels were noticeably higher than men's. This discovery is consistent with numerous CKD patient studies from the past. According to certain studies, women typically experience higher levels of anxiety and suicide ideation than men (Mosleh et al., 2020). Women were much more likely than men to have anxiety and cognitive

impairment (Thomas Nti and Frances Emily, 2021). A previous study reported similar results. As for anxiety, it was found to be significantly higher in female CKD patients compared to their male counterparts (p value=0.027). This could be explained by the greater sensitivity of women to stressful life events such as illness. Hormonal differences may also play a role (Alshelleh et al., 2022).

Several studies suggest that the clinical presentation of men and women with anxiety disorders may differ, although most of these differences are subtle. Women with anxiety disorders tend to report more severe anxiety symptoms and higher levels of impairment than men with anxiety disorders. Women with anxiety disorders also report more somatic complaints than their male counterparts. It is clear that anxiety disorders are more common in girls and women. Although less is known about gender differences in clinical symptoms and their course, women seem to experience more severe and prolonged symptoms than men. There are also gender differences in risk factors for anxiety disorders, which may make women more vulnerable to developing (sub)clinical forms of anxiety (Elizabeth T. Hallers-Haalboom, Joyce Maas, Laura E. Kunst, 2020).

Relationship between Employment and Anxiety Level

The results of this study suggest that there is no relationship between employment and levels of anxiety. This could be due to the fact that patients do not pay for routine hemodialysis. All respondents in this study used health insurance, namely BPJS Kesehatan. With this health insurance, patients no longer have to pay a large fee to pay for hemodialysis costs, so that the existence of BPJS Kesehatan can reduce the anxiety level of a CKD patient undergoing hemodialysis.

The result of the study aligns with research utilizing the Hamilton Depression Rating Scale, which revealed that p-value did not indicate significance (Hawamdeh et al., 2017). The results of the Mosleh et al. study, which demonstrated that work was not substantially related to anxiety or depression, are consistent with this (Mosleh et al., 2020). Additionally, it was discovered that patients with less education and those without jobs had a higher risk of developing anxiety. These

patient categories are more likely to have psychological well-being, social connections, and general health, probably due to a lower socioeconomic profile (Goh and Griva, 2018). Unemployment is associated with significantly higher levels of depression and anxiety. This is a major public health concern (Arena et al., 2023). Work is important because it provides income, but it also provides social contacts, structure and social status. Work is therefore an important contributor to quality of life (Knobbe et al., 2022).

Relationship between Educational Level and Anxiety Level

The finding of this study showed no relationship between level of education and level of anxiety. In this study, the majority of respondents had a high school education (58.75%), a college education (26.25%), and the remainder had a primary education or were not in school. This illustrates the uneven distribution of respondents, so the results do not fit with the theory that education level can affect anxiety levels. Another factor in reducing anxiety as a trait was education (Qawaqzeh et al., 2023). The result is consistent with previous studies, which also found no correlation between respondents' education and anxiety levels. Nevertheless, some research has indicated that individuals with low levels of education and those without jobs are more likely to experience anxiety, presumably due to their low socioeconomic status. Other research has revealed a connection between schooling and anxiety in CKD patients. Compared to the group with more education, patients with less education had higher levels of anxiety and depression (Mosleh et al., 2020).

These findings contradict the widely accepted theory that patients with higher education will have broader knowledge, which will enable them to control themselves in overcoming problems, have increased self-confidence, experience, and the right mindset to overcome situations, quickly understand what will be advised by healthcare professionals, and can reduce anxiety so that it can assist the person in making decisions. In case the patient's level of education is high, the level of anxiety may decrease because the patient will be able to understand what is being communicated by the nurse and will be able to overcome

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the anxiety that occurs when undergoing hemodialysis treatment (Sumah, 2020).

Relationship between Family Support and Anxiety Level

The finding of this study showed relationship between family support and level of anxiety. Based on the study's results, the family support of CKD patients in the hemodialysis unit of Roemani Semarang Hospital shows most of them have good support because the family offers hemodialysis patients complete support. One of the finest preventive intervention techniques for family members is family support. Permission can be given by those closest to the person, such as spouses or family members, close friends, and someone with whom they get along (Siburian *et al.*, 2021).

The family environment is inextricably linked to family members. Family members are considered to have access to support and assistance when needed. The family can provide support, for example, help find information related to hemodialysis therapy. Families can also communicate with each other about any discomfort the patient is experiencing and can provide entertainment, encouragement, and motivation for patients undergoing hemodialysis therapy, t To keep patients happy and not easily discouraged (Ernawati, 2019).

Family support significantly impacts behavior, which results in the desired health outcomes, making it crucial for patients with chronic conditions, especially those receiving hemodynamic therapy. Family is thought to offer benefits. Thus, it can boost patients' perceptions of control and self-control while lowering anxiety (Sipayung, 2020).

The family has an important role to play in the process of mental and emotional empowerment of CKD patients, particularly in helping them to accept the emotional reactions that occur so that they are ready to take their condition and face the current reality, thereby reducing or even eliminating the patient's anxiety (Aini and Wahyu, 2020).

CONCLUSION

The results showed a significant relationship between gender and family support with anxiety levels. The higher the family support, the lower the anxiety level. There is no relationship between age, employment, and education level with the anxiety level of patients undergoing hemodialysis at Roemani Semarang Hospital. A multidisciplinary outpatient CKD care program can reduce the severity of psychological disturbance in CKD patients undergoing hemodialysis.

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