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Research Article

Understanding Anxiety in Chronic Kidney Disease: The Role of Haemodialysis Duration and Family Support – A Correlational Study

Nana Juwita Sari[1,2], Warsono[1], Aric Vranada[1*]

[1] Nursing Department, Faculty of Nursing & Health Sciences, Universitas Muhammadiyah Semarang, Indonesia

[2] Nursing Department, Dr. Kariadi Hospital Semarang City, Indonesia

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Correspondence

Phone: (+62) 856-255-2421
E-mail: aricvranada@unimus.ac.id

Website

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ABSTRACT

Chronic kidney disease (CKD) is a progressive and irreversible decline in renal function, often necessitating long-term hemodialysis. Anxiety is a prevalent psychological concern among CKD patients, potentially influenced by treatment duration and the level of family support. This study aimed to examine the correlation between hemodialysis duration, family support, and anxiety levels among patients with CKD at Dr. Kariadi General Hospital, Semarang, Indonesia. A cross-sectional correlational study was conducted involving 89 hemodialysis patients, selected through a non-probability sampling method from total of 165 CKD patients with hemodialysis. Data collection occurred between July 2023 and March 2024, utilizing three instruments: a demographic questionnaire, the Hamilton Rating Scale for Anxiety (HRS-A), and the Family Support Scale (FSS). Data were analyzed using univariate and bivariate approaches, including Spearman's rank correlation test. A significant negative correlation was found between the duration of hemodialysis and anxiety levels, indicating that patients undergoing hemodialysis for a longer period tended to experience lower anxiety. Similarly, higher levels of family support were significantly associated with lower anxiety scores ($p<0.001$). Both longer hemodialysis duration and stronger family support are associated with reduced anxiety in CKD patients. Enhancing family involvement and providing consistent education about hemodialysis care may contribute to better psychological well-being in this population.

INTRODUCTION

Chronic kidney disease (CKD) is a progressive and irreversible impairment of renal function that gradually diminishes the kidneys' ability to regulate metabolic processes, fluid balance, and electrolyte homeostasis (Yan et al., 2021). In its advanced stages, CKD progresses to end-stage renal disease (ESRD), necessitating lifelong renal replacement therapies such as haemodialysis or kidney transplantation (Maringhini & Zoccali, 2024). Without timely and appropriate management, CKD can lead to uraemia and multisystem complications, significantly compromising patients' physical, psychological, and social well-being (Chen et al., 2019, 2023).

CKD has emerged as a major global public health concern, marked by increasing incidence and prevalence, poor clinical outcomes, and escalating healthcare costs (Francis et al., 2024). According to the Global Burden of Disease (GBD) report, CKD accounts for approximately 1.2 million deaths annually, ranking as the twelfth leading cause of mortality worldwide (Kovesdy, 2022). Diabetes mellitus and hypertension are the primary aetiologies, particularly among older adults aged 70 years and above (Iglesias et al., 2014; Mallamaci & Tripepi, 2024). The burden is especially pronounced in low- and middle-income countries, where limited access to early detection, renal replacement therapy, and patient education exacerbates morbidity and mortality (Ayalew et al., 2025; Xie et al., 2025).

Haemodialysis is the most commonly employed renal replacement therapy for ESRD patients (Liew, 2018; Putri et al., 2022). Although it prolongs survival, the treatment entails substantial physiological, emotional, and lifestyle adjustments (Al Naamani et al., 2021; Rikos et al., 2023). Patients undergoing long-term haemodialysis often face fatigue, loss of independence, dietary and fluid restrictions, and reduced social engagement (Al Naamani et al., 2021; Elezi et al., 2023). These challenges predispose individuals to psychological distress, with anxiety being among the most prevalent conditions (Elezi et al., 2023; Ye et al., 2022). Anxiety in this population may stem from uncertainties regarding disease progression, fear of death, concerns about family and financial responsibilities, and the chronic nature of their condition (Mohamed et al., 2023). Persistent anxiety negatively impacts quality of life, treatment adherence, and clinical outcomes (Jha et al., 2013; Nagy et al., 2023).

Family support serves as a critical psychosocial determinant in the adaptation to chronic illness (Lin et al., 2025). Supportive family dynamics can offer emotional reassurance, motivation, and practical assistance, thereby enhancing coping mechanisms and promoting psychological resilience (Shahin et al., 2025). Conversely, inadequate family support may amplify anxiety, diminish self-efficacy, and impair adherence to treatment regimens. Thus, understanding the role of family support is vital in developing effective nursing interventions that address the mental health needs of CKD patients (Wang et al., 2024).

A preliminary observation conducted in the Haemodialysis Unit of Dr. Kariadi General Hospital, Semarang, between September and October 2023, revealed that approximately 55 patients undergo haemodialysis daily, comprising inpatients, outpatients, and paediatric cases. Among roughly 30 patients receiving routine bi-weekly haemodialysis, about 70% exhibited symptoms of anxiety. Patients frequently expressed fears related to disease progression, physical limitations, family obligations, financial burdens, and mortality. These findings underscore anxiety as a prevalent, yet often underrecognized, concern in haemodialysis care.

Despite increasing recognition of the psychosocial challenges faced by CKD patients, limited empirical evidence exists

regarding the correlation between haemodialysis duration, family support, and anxiety particularly in the Indonesian context. Therefore, this study aims to investigate the relationship between haemodialysis duration and family support with anxiety levels among CKD patients at Dr. Kariadi General Hospital, Semarang.

METHOD

This study employed a quantitative, cross-sectional correlational design to examine the relationship between haemodialysis duration, family support, and anxiety levels among patients with chronic kidney disease (CKD) at Dr. Kariadi General Hospital in Semarang, Indonesia. Data collection took place in the Haemodialysis Unit between July 2023 and March 2024.

The study population included 165 CKD patients who underwent haemodialysis during September and October 2023. From this population, 89 participants were selected through a purposive non-probability sampling method. Eligible participants were adults aged 18 years or older, clinically diagnosed with CKD, and undergoing haemodialysis regularly twice a week. Individuals were excluded if they were hospitalized or unavailable during the study period. Three instruments were used to gather data: a demographic questionnaire, the Hamilton Rating Scale for Anxiety (HRS-A), and the Family Support Scale (FSS) (Kurniawan et al., 2025; Ramdan, 2019). Data collection involved structured interviews and self-administered questionnaires. Prior to participation, all respondents provided written informed consent, and the study protocol received ethical approval. Data analysis was performed using the computer program . Descriptive statistics were used to summarize demographic and clinical characteristics, while Spearman's rank correlation test was applied to examine the relationships among the study variables. A p-value of less than 0.05 was considered statistically significant. Ethical Clearance was also obtained from Dr. Kariadi Hospital Health Research Ethics Committee (Number 1678 /EC/KEPK-RSDK/2024)

RESULTS

A total of 89 individuals diagnosed with chronic kidney disease (CKD) and undergoing routine haemodialysis twice weekly were included in the present analysis. The participants' ages ranged from 21 to 75 years, with a mean age of 51.19 ± 12.39 years. The majority of respondents were male (64.0%), married (83.1%), and unemployed (51.7%). Regarding educational background, most had completed senior high school (40.4%), and the predominant religious affiliation was Islam (88.8%). The mean duration of haemodialysis was 24.63 ± 28.09 months, while the mean duration since CKD diagnosis was 30.27 ± 36.78 months

Table 1. Demographic and Clinical Characteristics of Respondents (n = 89)

Variable	f	(%)	M±SD (Min–Max)
Age			51.19 ± 12.39 (21–75)
Gender			
Male	57	64.0	
Female	32	36.0	
Occupation			
Unemployed	46	51.7	
Housewives	19	21.3	
Private employee	13	14.6	
Civil servant	7	7.9	
Military	4	4.5	
Education			
Elementary school	9	10.1	
Junior high school	14	15.7	
Senior high school	36	40.4	
College	30	33.7	
Marital Status			
Married	74	83.1	
Unmarried	8	9.0	
Widow/Widower	7	7.9	
Religion			
Islam	79	88.8	
Christian	7	7.9	
Catholic	3	3.4	
Haemodialysis Durations (months)			24.63 ± 28.09 (1–144)
Duration of CKD (months)			30.27 ± 36.78 (2–240)
Anxiety Level			19.84 ± 6.62 (5–35)
No anxiety	8	9.0	
Mild anxiety	35	39.3	

Moderate anxiety	35	39.3
Severe anxiety	11	12.4
Panic anxiety	0	0
Family Support		
Good	67	75.3
Poor	22	24.7

Primary data sources

With respect to psychological and social parameters, the mean anxiety score, as measured by the Hamilton Rating Scale for Anxiety (HRS-A), was 19.84 ± 6.62. The majority of respondents were categorized as experiencing mild (39.3%) or moderate (39.3%) anxiety. Notably, none of the participants reported anxiety symptoms classified as very severe or panic-level. Regarding family support, as assessed by the Family Support Scale (FSS), the mean score was 48.43 ± 10.32. A substantial proportion of participants (75.3%) reported receiving a high level of family support, indicating robust familial involvement in the care and support of patients undergoing long-term haemodialysis.

Table 2. Correlation Between Haemodialysis Duration and Family Support with Anxiety Levels (n = 89)

Independent Variable	Dependent Variable	Correlation Coefficient (r)	p-value
Duration of Haemodialysis	Anxiety Level	−0.401	< 0.001
Family Support	Anxiety Level	−0.496	< 0.001

Primary data sources

Inferential analysis using Spearman's rank correlation test revealed a statistically significant inverse association between the duration of haemodialysis and anxiety levels ($r = -0.401$, $p < 0.001$), suggesting that individuals with longer exposure to haemodialysis therapy tended to exhibit lower levels of anxiety. Additionally, a significant negative correlation was observed between family support and anxiety levels ($r = -0.496$, $p < 0.001$), indicating that greater perceived family support was associated with reduced anxiety symptoms. These findings underscore the critical role of treatment adaptation and psychosocial support in mitigating anxiety among patients with CKD undergoing haemodialysis, thereby highlighting the importance of integrating family-centered care within comprehensive renal treatment strategies

DISCUSSION

The present study identified significant negative correlations between both the duration of haemodialysis and family support with anxiety levels among patients with chronic kidney disease (CKD) undergoing maintenance haemodialysis at Dr. Kariadi General Hospital, Semarang. These findings suggest that prolonged treatment exposure and stronger familial support play protective roles in mitigating anxiety among CKD patients. The results underscore the importance of both physiological adaptation to treatment and the psychosocial environment in shaping patients' emotional well-being.

Duration of Haemodialysis and Psychological Adjustment

The inverse relationship between the duration of haemodialysis and anxiety levels indicates that patients who have been receiving treatment for a longer period experience lower psychological distress (Nagy et al., 2023; Qawaqzeh et al., 2023; Ye et al., 2022). This finding aligns with earlier studies, which emphasize that repeated exposure to the haemodialysis process allows patients to develop adaptive mechanisms to manage fear, uncertainty, and stress (Barello et al., 2022; Mahyuvi & Sari, 2024). In the early stages of therapy, many patients experience anxiety stemming from limited knowledge, fear of death, concerns over dependency on machines, and uncertainty about the future. However, over time, repeated treatment sessions promote a process of psychological habituation and

normalization, which reduces anticipatory anxiety and emotional reactivity (Qawaqzeh et al., 2023).

This adaptive process can be understood through Lazarus and Folkman's Transactional Model of Stress and Coping (1984). According to the model, individuals continually evaluate potential stressors (primary appraisal) and assess available coping resources (secondary appraisal). Over time, CKD patients undergoing haemodialysis develop a more realistic perception of the treatment and their ability to control related stressors. They shift from emotion-focused coping such as denial or avoidance to problem-focused coping, characterized by active information seeking, acceptance, and cognitive restructuring. Familiarity with healthcare professionals, medical procedures, and treatment routines enhances patients' confidence and perceived control, thereby reducing anxiety (Ye et al., 2022).

In addition, prolonged exposure to haemodialysis contributes to increased health literacy and treatment competence. Patients gradually acquire the knowledge and practical skills necessary for effective self-management, including dietary regulation, fluid restriction, and adherence to medication schedules. As a result, they gain a sense of mastery over their condition, which, according to Bandura's concept of self-efficacy, strengthens resilience and psychological stability (Nagy et al., 2023). Conversely, patients who are newly diagnosed or newly initiated into haemodialysis often experience acute anxiety due to uncertainty and the overwhelming adjustment demands of chronic therapy.

Furthermore, adaptation is also influenced by social modelling and peer observation within the haemodialysis unit. Patients often interact with others undergoing similar treatments, sharing experiences, fears, and coping strategies. These social exchanges can reduce feelings of isolation and normalize the emotional challenges of living with CKD. Peer support serves as an informal therapeutic network that reinforces emotional adaptation and provides observational learning on how others successfully cope with the demands of long-term treatment (Ye et al., 2022).

The Role of Family Support in Reducing Anxiety

Family support emerged as another critical determinant of anxiety in CKD patients. The strong negative correlation between family support and anxiety suggests that emotional, informational, and instrumental assistance from family members plays a substantial role in protecting patients' mental health (Wang et al., 2024). Similar findings have been reported that adequate family involvement is associated with improved emotional well-being, treatment adherence, and overall quality of life among CKD populations (Fuertes et al., 2025; Hasnidar et al., 2022).

Family support can be conceptualized within Cobb's theory of social support (1976), which identifies three essential forms: emotional support (love, empathy, and reassurance), instrumental support (practical help and care), and informational support (guidance and feedback) (Lin et al., 2025). In the context of CKD, these dimensions collectively help patients cope with chronic stressors. Emotional reassurance mitigates feelings of hopelessness, while practical assistance with transportation, diet regulation, or scheduling medical appointments reduces logistical burdens. Informational support such as help understanding medical instructions enhances patients' confidence and sense of control (Barello et al., 2022; Mahyuvi & Sari, 2024; Qawaqzeh et al., 2023).

In Indonesian society, which is characterized by collectivistic cultural values and strong family interdependence, family plays an even more pivotal role in chronic illness management. Unlike in Western individualistic contexts, where

patient autonomy predominates, Indonesian families tend to share decision-making responsibilities and caregiving roles. This cultural dimension amplifies the importance of family presence and involvement in maintaining emotional stability and adherence to treatment. Studies conducted in other Southeast Asian settings have similarly shown that familial cohesion and shared religious or spiritual practices act as psychological buffers, helping patients to reinterpret illness experiences as meaningful and manageable (Hasnidar et al., 2022; Lin et al., 2025; Wang et al., 2024).

Conversely, inadequate or inconsistent family support can have detrimental effects. Patients who perceive neglect, emotional distance, or family fatigue may experience heightened anxiety, depression, and decreased motivation for treatment. Chronic stress without adequate social buffering can dysregulate the hypothalamic-pituitary-adrenal (HPA) axis, exacerbating fatigue, sleep disturbances, and emotional instability. Therefore, reinforcing positive family engagement is a crucial element of holistic renal care.

Integration of Psychosocial and Family-Centered Nursing Care

The findings of this study carry significant implications for nursing practice and healthcare policy. In the holistic model of nursing care, physical interventions must be accompanied by psychosocial support to address the emotional dimensions of chronic illness (Afenigus & Sinshaw, 2025). Nurses, as the healthcare professionals most frequently in contact with patients, are uniquely positioned to assess, identify, and manage anxiety and other emotional disturbances in CKD patients (Bennett et al., 2025).

Incorporating family-centered nursing interventions into haemodialysis management is essential. Nurses should actively engage family members in the care process through structured education sessions, family counselling, and continuous communication regarding the patient's condition and treatment plan (Hayati et al., 2023). Empowering families enhances their competence and reduces caregiver anxiety, which in turn supports the patient's emotional stability (Barello et al., 2022; Hasnidar et al., 2022; Qawaqzeh et al., 2023; Wang et al., 2024). Family education programs that emphasize the importance of empathy, positive communication, and shared responsibility can strengthen relational bonds and improve psychological outcomes for patients (Hasnidar et al., 2022; Mahyuvi & Sari, 2024).

Additionally, psychoeducational and behavioural interventions should be implemented within haemodialysis units (Lin et al., 2025). Group therapy sessions, mindfulness training, and relaxation techniques can equip patients with coping strategies to manage anxiety (Barello et al., 2022; Qawaqzeh et al., 2023; Wang et al., 2024). Support groups facilitated by nurses or psychologists can serve as platforms for mutual encouragement and experience sharing (Elezi et al., 2023; Ye et al., 2022). Furthermore, developing standardized psychosocial screening tools such as brief anxiety and depression inventories may assist nurses in routinely identifying patients at risk of emotional distress and providing early intervention.

From a broader healthcare perspective, integrating psychosocial services into nephrology care requires organizational support. Collaboration among multidisciplinary teams including nephrologists, psychologists, social workers, and spiritual counsellors is critical to ensuring that patients receive comprehensive care. Hospital administrators and policymakers should recognize the cost-effectiveness of psychosocial interventions, as reducing anxiety and improving adherence can ultimately decrease hospitalization rates and treatment complications.

CONCLUSIONS AND RECOMMENDATION

Duration of haemodialysis and the level of perceived family support were significantly associated with anxiety levels among patients with chronic kidney disease (CKD) undergoing maintenance haemodialysis. The average duration of haemodialysis among respondents was 24.63 ± 28.09 months, and a statistically significant negative correlation was found between treatment duration and anxiety levels ($r = -0.401$; $p < 0.001$), suggesting that patients with longer treatment exposure tend to exhibit lower levels of anxiety. This may reflect psychological adaptation and increased familiarity with the dialysis process over time.

Furthermore, 75.3% of participants reported receiving strong family support, and the analysis revealed an even stronger inverse correlation between family support and anxiety levels ($r = -0.496$; $p < 0.001$). This highlights the pivotal role of family involvement in fostering emotional stability and reducing anxiety. The mean anxiety score, measured using the Hamilton Rating Scale for Anxiety (HRS-A), was 19.84 ± 6.62, with the majority of patients experiencing mild (39.3%) or moderate (39.3%) anxiety. These results reinforce the need to address psychosocial dimensions in the holistic management of CKD.

Given these findings, healthcare professionals—particularly nephrology nurses—should prioritize holistic care models that actively incorporate family engagement and structured emotional support. Family-centered interventions and psychosocial programs should be developed and tested for efficacy through interventional or randomized controlled trials to establish evidence-based practices in anxiety reduction and quality-of-life improvement among CKD patients.

Additionally, longitudinal studies are recommended to better understand fluctuations in anxiety levels across various treatment phases and the evolution of family support over time. Future research should also examine potential moderating and mediating variables such as socioeconomic status, religious coping, perceived stigma, and personality traits. Exploring these factors can offer deeper insight into how psychosocial resources interact with clinical and demographic variables to shape emotional outcomes in the context of chronic illness and long-term dialysis care.

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