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Relationship Between Coping Strategies and Anxiety Levels Among Hemodialysis Patients with Chronic Kidney Disease: A Cross-Sectional Study at Moewardi Hospital

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Abstract

Anxiety is the most common psychopathological response among patients with chronic kidney disease (CKD). Coping strategies play a key role in helping individuals adapt to stressful conditions, yet no prior research has examined their relationship with anxiety levels among CKD patients undergoing hemodialysis at Moewardi Regional General Hospital, Surakarta. This observational cross-sectional study involved 37 CKD patients. Coping strategies were assessed using the Brief-COPE questionnaire, while anxiety levels were measured using the HADS-A instrument. Data were analyzed using Spearman's rho correlation and the Mann–Whitney test with a significance level of 0.05. Most participants were male (67.6%), elderly (29.7%), married (75.7%), and had undergone hemodialysis for ≥5 years (51.4%). The analysis revealed a very strong inverse correlation between coping strategies and anxiety levels ($\rho = -0.793$; $p = 0.000$). Significant differences were also found between patients using adaptive versus maladaptive coping strategies ($p = 0.000$). These findings indicate a significant association between coping strategies and anxiety severity in CKD patients receiving hemodialysis at Moewardi Regional General Hospital, Surakarta.

INTRODUCTION

Anxiety is one of the most common psychological problems experienced by patients with chronic diseases and has a significant impact on treatment adherence, quality of life, and clinical outcomes (Valsaraj, 2016). In patients undergoing long-term medical therapies, persistent anxiety can interfere with daily functioning, reduce motivation to continue treatment, and worsen overall health status. As in the case of Chronic Kidney Disease (CKD), when anxiety persists for prolonged periods, it may lead to severe psychological distress and negatively affect both physical and mental well-being (Goh and Griva, 2018).

CKD is a chronic ailment necessitating intricate and enduring therapy, especially in its advanced phases. Hemodialysis (HD) is the predominant renal replacement therapy for those with end-stage CKD, generally performed for 5-6 hours per session, 2-3 times a week. Despite enhancing survival, HD's rigorous treatment regimen, physical constraints, lifestyle limitations, and ambiguity over disease progression impose persistent psychological stress on patients. Anxiety problems are commonly observed in individuals with chronic kidney disease undergoing hemodialysis and constitute one of the most prominent psychological consequences in this demographic (Syamsiah et al., 2022).

The worldwide prevalence of CKD is rising, leading to an increasing population of people need prolonged dialysis treatment. Data from Riskesdas 2018 reported that 19.3% of the population over 15 years old suffer from CKD, with the highest age group in the range of

65-74 years, underscoring the rising population subjected to extended hemodialysis and its related psychological difficulties. This situation highlights the necessity of addressing both the physical dimensions of CKD care and the psychological disorders associated with prolonged dialysis therapy, particularly anxiety (Kemenekes, 2018).

Responses to anxiety-inducing situations differ significantly and are shaped by coping mechanisms. Coping denotes the cognitive and behavioral strategies employed by individuals to address internal and external demands regarded as stressful. Adaptive coping practices, including problem-solving and meaning-focused coping, can alleviate psychological distress and enhance emotional regulation. Conversely, inadequate coping mechanisms may intensify anxiety and impede psychological adaptation, especially in patients undergoing chronic and transformative therapies like hemodialysis (Deater-Deckard, 2004; CYRIL N. DAGA and KEMPIS, 2021).

Anxiety is frequently found in patients with chronic kidney disease receiving hemodialysis; however, information about the impact of coping methods on anxiety levels is scarce and inconsistent, particularly within distinct clinical and cultural contexts. Furthermore, no research has investigated the correlation between coping techniques and anxiety levels in CKD patients receiving hemodialysis at Moewardi Regional General Hospital, Surakarta. This study seeks to examine the correlation between coping methods and anxiety levels in hemodialysis patients with CKD, offering findings that could enhance psychosocial support and psychological interventions in dialysis environments.

RESEARCH METHODS

This study employs a quantitative research method with a non-experimental (observational) approach utilizing an analytical descriptive technique. The employed study design is cross-sectional, including data collection at a singular moment in time. This study was conducted at the hemodialysis (HD) unit of Dr. Moewardi Regional General Hospital in Surakarta from October to December 2021. The population in this study is CKD patients undergoing HD therapy at Dr. Moewardi Surakarta Hospital. The study subjects were selected based on inclusion criteria, namely patients who are willing to sign a letter of consent as a research participant, undergo routine HD twice a week, have undergone hemodialysis for more than three months, are 18 years old and above, and understand Indonesian. Meanwhile, exclusion criteria include patients with hearing and vision impairments that hinder communication, have a history of severe mental disorders, are in life-threatening emergency conditions, and are taking antidepressants and anti-anxiety medications. The sample size of this study follows the "Rule of Thumb" guideline, where the minimum number of samples analyzed statistically is 30 subjects (Dahlan, 2016). The sampling technique is carried out by the purposive sampling method, which is the deliberate selection of subjects based on the inclusion criteria that have been set. The research instruments included the Indonesian version of the coping questionnaire developed by the research team based on the Brief-COPE framework, and the Hospital Anxiety and Depression Scale–Anxiety subscale (HADS-A) to assess anxiety levels. Both items were administered in Indonesian and subjected to validity and reliability assessments prior to data collection. This study was conducted in accordance with ethical principles for human research and received ethical approval from the Health Research

Ethics Committee of Dr. Moewardi Regional General Hospital, Surakarta (Ethical Clearance No. 1.129/VIII/HREC/2022).

The conceptual framework of this study describes the synthesis of individual coping mechanism theory on the anxiety level of patients with CKD. The individual coping mechanism in this study is an independent variable and the level of anxiety as a dependent variable. This study aims to prove that there is a relationship between individual coping mechanisms and anxiety levels in CKD patients.

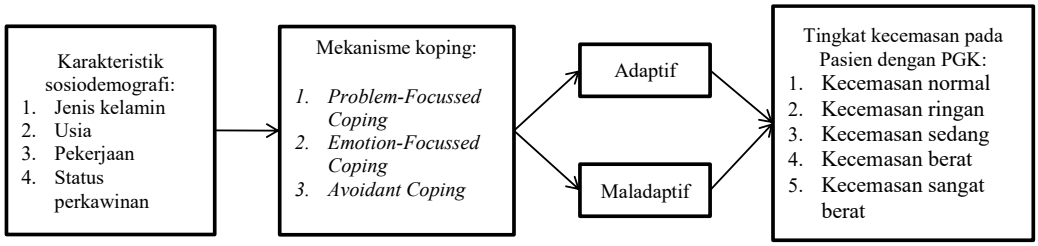

Figure 1
Research Concept Framework

The data collected is analyzed through two stages. First, univariate analysis was used to describe respondent characteristics, coping strategies, and anxiety levels in the form of frequency distribution. Second, bivariate analysis was performed to test the relationship between independent and dependent variables using the Mann-Whitney test and the Spearman correlation test with a 95% confidence level ($\alpha = 0.05$).

RESULT

Coping Strategy Overview

The categorization of the coping strategy scale was carried out by grouping the types of coping used by the respondents, the grouping of these types is: (1) adaptive coping and (2) maladaptive coping Grouping is carried out by calculating the relative score obtained from the calculation of the total score per subtype divided by the maximum score of the dimension. After that, a comparison is carried out which score is the largest, which will later determine the type of coping strategy used by the respondents.

Table 1
Average Types of Coping Strategies for Chronic Kidney Disease Patients Undergoing Hemodialysis (HD) Therapy at Moewardi Regional General Hospital

No	Coping Strategy	Average Score	Number of Items	Mean Coping Type
1	Coping Adaptif	45.30	8	5.66
2	Maladaptive Coping	22.68	6	3.78

The average adaptive coping turned out to have a greater value (5.66). This means that the study respondents used adaptive coping more.

Sub-Scale Overview of Coping Strategy

An overview of the sub-scale coping strategy can be seen in Table 2.

Table 2
Overview of Sub-Scale Coping Strategy for Chronic Kidney Disease Patients Undergoing HD Therapy at Moewardi Hospital

No	Coping Strategy	Sub-Scale	Average Total Score
1	Maladaptive Coping	Venting	3.95
		Self-Blame	4.14
		Denial	3.51
		Self-distraction	5.51
		Behavioral Disengagement	3.51
		Substance Use	2.05
2	Coping Adaptif	Active Coping	5.51
		Using Emotional Support	5.89
		Using instrumental support	6.03
		Positive Reframing	5.43
		Planning	4.97
		Acceptance	5.84
		Humor	4.78
		Religion	6.84

Each number of items on each subscale is the same, namely two items, so the average total score is enough to be used as a benchmark to see the priority picture of the coping subscale used by hemodialysis patients.

It can be explained that the largest mean score is the religion subscale (6.84) while the smallest total score is the substance use subscale (2.05). This means that the respondents in this study use coping religion the most, while substance use is the least used subscale by hemodialysis patients. Overall, the majority of HD patients used adaptive coping strategies (83.8%, n=31).

Distribution of Respondents based on Coping Strategy

The distribution of respondents based on coping strategies can be seen in Table 3.

Table 3
Distribution of respondents based on coping strategy

Yes	Coping Strategy	Quantity (n)	Percentage (%)
1	Adaptive coping strategies	31	83.8
2	Maladaptive coping strategies	6	16.2

Identify HD Patient Anxiety Levels

Table 4
Anxiety Levels of Chronic Kidney Disease Patients Undergoing HD Therapy at Moewardi Regional General Hospital

Yes	Anxiety Level	Sum n (%)
1	Normal (score 0-7)	5 (13.5)
2	Light (score 8-10)	26 (70.3)
3	Medium (score 11-15)	6 (16.2)
	Total	37 (100)

Table 4. shows that the anxiety level of chronic kidney patients undergoing HD therapy at Moewardi Regional General Hospital was mild (70.3%, n=26).

The Relationship of Coping Strategies to Anxiety Levels in HD Patients

A data normality test determines if a dataset adheres to or approximates a normal distribution. To ascertain if the data follows a normal or atypical distribution, various methods might be employed. In this approach, the researcher employed a data normality test by

assessing the significance level of the Shapiro-Wilk test, given that the sample size was fewer than 50 participants. In accordance with testing criteria:

- If the significant number (Sig.) exceeds 0.05, the data is regularly distributed.
- If the significance value (Sig.) is less than 0.05, then the data is abnormally distributed.

Table 5
Test of Normality of Coping Strategies and Anxiety Levels

		Shapiro-Wilk		
	Coping Mechanism	Statistic	Df	Sig.
Anxiety Level	**Adaptive**	0.656	31	0.000
	Maladaptive	0.866	6	0.001

Based on the results of the Shapiro-Wilk normality test, a significance value of $p < 0.05$ was obtained, so that the two variables were not normally distributed.

The results of the differential test using Mann-Whitney in the group using adaptive coping strategies and maladaptive coping strategies can be seen in Table 6.

Table 6
Results of the Mann Whitney TestCoping Strategy with Anxiety Levels of Chronic Kidney Disease Patients Undergoing HD Therapy at Moewardi Hospital

	Coping Mechanism	**N**	**Mean Rank**	**P**
Anxiety Score	Maladaptive	6	6.83	0.000
	Adaptive	31	4.47	

Table 6. shows that the test results differed in the group using adaptive coping strategies and maladaptive coping strategies resulting in a p value of 0.000 (< 0.05), meaning that there was a significant (meaningful) difference between the anxiety level of patients who used adaptive coping and the anxiety level of patients who used maladaptive coping.

The relationship between coping strategies and anxiety levels of Chronic Kidney Disease Patients Undergoing Hemodialysis Therapy at Moewardi Regional General Hospital can be seen in Table 7.

Table 7
Results of the Spearman Test of Coping Strategies with Anxiety Levels of Chronic Kidney Disease Patients Undergoing Hemodialysis Therapy at Moewardi Regional General Hospital

			Anxiety levels
Spearman's Rho	**Coping strategy**	**Corelation Coefficient**	-0,793**
		Sig. (2-tailed)	0.000
		N	37

**. Correlation is significant at the 0,01 level (2-tailed)

Table 7 indicates that the correlation coefficient is 0.793**, signifying a very strong association between the coping technique variable and the patient's anxiety level. The asterisk (**) denotes a significant correlation at a significance level of 0.01. The correlation coefficient indicated above is negative, signifying a non-directional relationship between the two variables. This indicates that an increase in the coping technique variable correlates with a drop in the anxiety level variable. Table 4.6 indicates that the significance value or Sig. (2-tailed) of 0.000 (< 0.05) signifies a substantial link between coping mechanisms and the patient's anxiety level. Based on the aforementioned reasoning, it can be inferred that there exists a robust and inverse significant link between the coping technique variable and the patient's anxiety level variable.

DISCUSSION

Chronic Kidney Disease (CKD) is a worldwide health issue characterized by elevated morbidity and mortality rates. Demographic variables and etiologies of CKD may differ across nations. The study's participants were predominantly male (67.6%, n=25), primarily in the elderly cohort (ages 56–65 years) at 29.7% (n=11), mostly married (75.7%, n=28), and had been undergoing hemodialysis (HD) for five or more years (51.4%, n=19). Prior research indicates that men are at a greater risk of getting chronic kidney disease (CKD) compared to women, with an overall ratio of 1.8:1. Furthermore, patients with chronic kidney disease (CKD) in several developing nations are generally younger (mean age 50.9 years; SD 17.98 years), but in industrialized countries, the average age exceeds 60 years. This can be ascribed to enhanced access to healthcare services in developed nations, encompassing preventive initiatives, early detection, and management of at-risk individuals (Sigdel and Pradhan, 2024).

Studies indicate a correlation between marital status and the comfort level of hemodialysis (HD) patients. Married patients exhibited greater comfort than single individuals (p=0.050), with single individuals nearly three times more likely to encounter discomfort. Qualitative research indicate that the presence of spouses, family, and friends positively influences patient comfort. Familial support is deemed crucial due to the substantial alterations in the patient's life resulting from chronic kidney disease (CKD) and hemodialysis (HD), including restricted physical activity, employment, and arm utilization with fistulas. The patient's self-management is also influenced by marital status. (Melo et al., no date; Chen et al., 2018)

Longer duration of HD was associated with a 0.992-fold reduced risk of non-adherence to treatment (95% CI [0.986, 0.998], p=0.005). This is likely to happen because patients better understand the effects of therapy on their bodies and learn to cope with complications through interaction with fellow patients and medical personnel. Longer treatment periods increase patients' interactions with healthcare workers and other patients, so they are better informed about the disease and its treatment (Ozen et al., 2019)

Coping strategies play a role in patients' self-adjustment to chronic disease and their survival rate (Ghaffari et al., 2019) The study subjects used more adaptive coping (94.6%, n=35). In this study, most participants used adaptive coping strategies (94.6%, n=35), with coping religion being the most common strategy, while substance use was the least used. These results are in line with previous research that showed that CKD patients tend to rely on spiritual-based coping strategies. In contrast, the use of substances as a coping strategy is rarely found in patients with chronic diseases, as reported in various studies and recommendations from the WHO and CDC (Işık Ulusoy and Kal, no date; Girma, Ayalew and Mesafint, 2021)

Spiritual activities play a role in improving social communication, providing a strong coping strategy, and improving the quality of life of patients. Some patients report that they have a positive

outlook on life and consider stress to be a natural part of life. A positive attitude helps them more easily adapt to the disease and its impact. Other studies have also shown that individuals with an optimistic attitude toward stress tend to have better emotional stability as well as a more positive outlook on the future (Ghaffari et al., 2019)

CKD patients undergoing HD often experience psychological problems such as depression, anxiety, and stress, which can worsen their health conditions. Anxiety is associated with poor health outcomes in CKD patients. In this study, the majority of participants experienced mild anxiety (70.3%, n=26), while one participant (2.7%) experienced severe anxiety. Factors such as physical symptoms, lifestyle changes, as well as psychosocial distress can trigger anxiety in HD patients (Şentürk and Tekinsoy Kartın, 2018)

Studies show that the highest prevalence of anxiety is found in Europe and Asia. Between pre-dialysis and dialysis patients, the prevalence of anxiety was 31% and 42%, respectively, with no statistically significant differences. Risk factors that contribute to anxiety include comorbidities, low levels of parathyroid hormone, increased duration of hospitalization, and decreased quality of life and vitality. Given the high prevalence of anxiety in CKD patients, more research is needed to evaluate the role of anxiety screening in improving patient clinical outcomes (Huang et al., 2021)

Identifying coping strategies and anxiety levels of CKD patients can help improve treatment planning as well as response to therapy. Statistical analysis showed a significant relationship between coping strategies and patients' anxiety levels ($p=0.000$; $\rho=-0.793$). The results of the differential test between patients with adaptive and maladaptive coping strategies showed significant differences in anxiety levels ($p=0.000$; <0.05), whereas patients with adaptive coping strategies had lower levels of anxiety. These findings are in line with previous research that showed that anxiety and depression negatively impact the expectations of CKD patients. Therefore, a multidisciplinary approach, including psychiatric consultation, needs to be applied in the management of CKD patients to improve adherence to treatment and their quality of life.

The etiopathology of neuropsychiatric disorders in CKD patients, including anxiety disorders and depression, is multifactorial in nature, covering various aspects both biological and psychosocial. The presence of prolonged pain, as well as sleep disturbances was stated to be related to anxiety and depression in CKD patients. Biological mechanisms are thought to be due to microvascular disorders in the kidneys which are hypothesized to reflect microvascular disorders as well as microstructural abnormalities in the brain as well as the toxic consequences of uremic toxicity released on CKD (Simões e Silva et al., 2019) However, unfortunately, this study does not clearly distinguish between the causes of anxiety that come from organic factors or psychosocial factors. This leads to limitations in understanding in detail the causes of anxiety in patients and limits the possibilities of providing appropriate therapies to overcome them.

CONCLUSION

The results of the analysis showed that there was a significant difference between the anxiety level of patients who used the adaptive coping strategy and the maladaptive coping strategy, with a value of $p = 0.000$ (< 0.05). This indicates that the coping strategy used by the patient has an effect on the level of anxiety experienced. In addition, statistical analysis also showed a very strong and inverse relationship between coping strategies and patients' anxiety levels ($\rho = -0.793$; $p = 0.000$). This means that the more adaptive the coping strategy used, the lower the patient's anxiety level, while the use of maladaptive coping strategies tends to increase anxiety.

BIBLIOGRAPHY

Carney, E.F. (2020) 'The impact of chronic kidney disease on global health', Nature Reviews Nephrology, 16(5), pp. 251–251. Available at: https://doi.org/10.1038/s41581-020-0268-7.

Chen, T.K., Knicely, D.H. and Grams, M.E. (2019) 'Chronic Kidney Disease Diagnosis and Management', JAMA, 322(13), p. 1294. Available at: https://doi.org/10.1001/jama.2019.14745.

Chen, Y. et al. (2018) 'The Roles of Social Support and Health Literacy in Self-Management Among Patients With Chronic Kidney Disease', Journal of Nursing Scholarship, 50(3), pp. 265–275. Available at: https://doi.org/10.1111/jnu.12377.

CYRIL N. DAGA, C. and KEMPIS, G. (2021) 'Coping Mechanism of Teenagers of Stress and Anxiety: A Case Study', International Journal of Research Publications, 69(1). Available at: https://doi.org/10.47119/IJRP100691120211706.

Deater-Deckard, K. (2004) 'Parenting Stress', Parenting Stress [Preprint]. Available at: https://doi.org/10.12987/9780300133936/HTML.

Ghaffari, M. et al. (2019) 'What Are the Hemodialysis Patients' Style in Coping with Stress? A Directed Content Analysis.', International journal of community based nursing and midwifery, 7(4), pp. 309–318. Available at: https://doi.org/10.30476/IJCBNM.2019.81324.0.

Girma, A., Ayalew, E. and Mesafint, G. (2021) 'Covid-19 Pandemic-Related Stress and Coping Strategies Among Adults with Chronic Disease in Southwest Ethiopia', Neuropsychiatric Disease and Treatment, Volume 17, pp. 1551–1561. Available at: https://doi.org/10.2147/NDT.S308394.

Goh, Z.S. and Griva, K. (2018) 'Anxiety and depression in patients with end-stage renal disease: impact and management challenges – a narrative review', International Journal of Nephrology and Renovascular Disease, Volume 11, pp. 93–102. Available at: https://doi.org/10.2147/IJNRD.S126615.

Huang, C.W. et al. (2021) 'Prevalence and risk factors for elevated anxiety symptoms and anxiety disorders in chronic kidney disease: A systematic review and meta-analysis', General Hospital Psychiatry, 69, pp. 27–40. Available at: https://doi.org/10.1016/j.genhosppsych.2020.12.003.

Işık Ulusoy, S. and Kal, Ö. (no date) 'Relationship Among Coping Strategies, Quality of Life, and Anxiety and Depressive Disorders in Hemodialysis Patients', Therapeutic Apheresis and Dialysis, 24, pp. 189–196. Available at: https://doi.org/10.1111/1744-9987.12914.

Kemenekes (2018) 'Riset Kesehatan Dasar'.

Liyanage, T. et al. (2022) 'Prevalence of chronic kidney disease in Asia: a systematic review and analysis', BMJ Global Health, 7(1), p. e007525. Available at: https://doi.org/10.1136/bmjgh-2021-007525.

Melo, G.A.A. et al. (no date) 'Factors related to impaired comfort in chronic kidney disease patients on hemodialysis', Revista brasileira de enfermagem, 72, pp. 889–895.

Ozen, N. et al. (2019) 'Nonadherence in Hemodialysis Patients and Related Factors: A Multicenter Study', Journal of Nursing Research, 27(4), p. e36. Available at: https://doi.org/10.1097/jnr.0000000000000309.

Şentürk, A. and Tekinsoy Kartın, P. (2018) 'The Effect of Lavender Oil Application via Inhalation Pathway on Hemodialysis Patients' Anxiety Level and Sleep Quality', Holistic Nursing Practice, 32(6), pp. 324–335. Available at: https://doi.org/10.1097/HNP.0000000000000292.

Sigdel, M. and Pradhan, R. (2024) 'Chronic Kidney Disease in a Tertiary Care Hospital in Nepal', Journal of Institute of Medicine Nepal, 40(2), pp. 104–111. Available at: https://doi.org/10.59779/jiomnepal.879.

Simões e Silva, A.C. et al. (2019) 'Neuropsychiatric Disorders in Chronic Kidney Disease', Frontiers in Pharmacology, 10, p. 932. Available at: https://doi.org/10.3389/fphar.2019.00932.

Syamsiah, N. et al. (2022) 'The Relationship Between Depression and Quality of Life in Patients Undergoing Hemodialysis in Indonesia. KLS', in. Available at: https://doi.org/10.18502/kls.v7i2.10298.

Valsaraj, B.P. (2016) 'Cognitive Behaviour Therapy for Anxiety and Depression among People Undergoing Haemodialysis: A Randomized Control Trial', JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH [Preprint]. Available at: https://doi.org/10.7860/JCDR/2016/18959.8383.

Vart, P. et al. (2020) 'National Trends in the Prevalence of Chronic Kidney Disease Among Racial/Ethnic and Socioeconomic Status Groups, 1988-2016', JAMA Network Open, 3(7), p. e207932. Available at: https://doi.org/10.1001/jamanetworkopen.2020.7932.