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RESEARCH ARTICLE

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The Association between Coping Mechanisms and Depression in Patients with Chronic Kidney Disease Undergoing Hemodialysis at Dr. Moewardi Hospital Surakarta

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Abstract:

Patients with chronic kidney disease (CKD) undergoing routine hemodialysis (HD) may experience psychiatric comorbidities like depression. The coping mechanism is thought to be associated with the emergence of depression in patients with CKD. This cross-sectional study examines the association between coping mechanisms and depression in CKD patients undergoing routine HD therapy at Dr. Moewardi Hospital, Surakarta. Brief COPE and Hospital Anxiety and Depression Scale (HADS) questionnaire were used as study instruments. The result showed that 29 (78.38%) research subjects used adaptive coping, while 8 (21.62%) used maladaptive coping. There are 13 (35%) participants with mild depression. Spearman's rank correlation showed a strong negative correlation between adaptive coping mechanisms and the severity of depression in CKD patients undergoing hemodialysis ($r=-0,655$; $p<0,01$)

Keywords: Brief-COPE; Chronic kidney disease; depression; Hospital Anxiety and Depression Scale; hemodialysis

Introduction

Chronic Kidney Disease (CKD) causes a significant global health burden and is increasing significantly in the world.[1] Central Java has the third highest number of CKD patients in Indonesia, in which 16,15 % required routine hemodialysis (HD) therapy. Based on Dr. Moewardi Surakarta Hospital data, CKD patients requiring HD therapy are continuously increasing; 2836 patients in 2020; and 2982 patients in 2021.[2]

Patients with CKD are often associated with comorbidities and poor quality of life. They are also susceptible to nutritional, infectious, hormonal, and psychological disorders.[3] Depression is the most common psychological disorder experienced by CKD patients. A previous study using the Hospital Anxiety and Depression Scale (HADS) had shown that CKD patients undergoing haemodialysis therapy were likely suffered from symptoms of depression and anxiety.[4]

Exploratory studies of the role of coping mechanisms in chronic diseases showed that maladaptive coping is associated with increased anxiety and depression and decreased quality of life, whereas engagement in adaptive coping is associated with a lower risk of development of these symptoms.[5] This study aimed to examine the types of coping mechanisms used and their relationship with depression in CKD patients undergoing routine HD therapy at Dr. Moewardi Surakarta Hospital, Central Java, Indonesia.

Research Method

Study Design dan Population

This study is an observational analytic study with a cross-sectional design. This study was conducted in the hemodialysis unit of RSUD Dr. Moewardi Surakarta in January 2023.

This study enrolled clinically stable CKD patients undergoing HD with the following inclusion criteria: (i) patients diagnosed with CKD; (ii) aged between 18-60 years; and (iii) cooperative and well-communicated. Patients with severe mental disorders, dementia, and life-threatening conditions are excluded from this study. A total of 37 patients were obtained and included in this study. All participants provided written informed consent prior to the study procedures.

Data Collection

Demographics

Age, marital status, occupation, education, socio-economic status, address, and duration of hemodialysis were obtained and collected from medical records.

Brief-COPE

An abbreviated version of the COPE (Coping Orientation to Problems Experienced) Inventory, or Brief COPE, in a translation for the Indonesian population, was used to assess coping mechanisms in this study. The instrument consists of 28 items that measure 14 factors of 2 items each. All the elements are measured and rated on a four-point Likert-type scale (from 0 to 3).

HADS questionnaire

The severity of depression was measured using the Indonesian-language version of the Hospital Anxiety and Depression Scale

(HADS). HADS comprises 14 questions and has two domains: Anxiety (7 items) and depression (7 items). To assess depression, It has a specificity and sensitivity of 0.79 and 0.83, respectively.[6]

Statistical Analysis

Demographic variables were expressed as the mean ± SD, median (interquartile range, IQR) or percentage, as appropriate. The correlations between coping mechanisms and the severity of depression were explored using Spearman's rank correlation. Adaptive and maladaptive coping mechanisms were also compared using the Mann-Whitney U test. Analyses were performed with IBM SPSS 27.0 software (SPSS Institute, IBM, USA). The P-value was set at ≤0.05.

Results

Demographic Data of Research Subjects

The demographic characteristics of the study subjects (age, gender, marital status, education, occupation, and duration of HD) are shown in **Table 1**. Most participants were males (67,57%) with an average age of 44.70 years. Twenty-eight (75,68%) of our study participants were married. Most of the patients' educational level was high school graduate. There are 29,7% of CKD patients who underwent HD who were found to be unemployed. On average, the participants have undergone hemodialysis for 4.34 years.

Assessment of Coping Mechanism

As shown in **Table 2**, The most commonly used coping mechanisms in CKD patients undergoing HD at Dr. Moewardi Hospital are Religious-coping, instrumental support, Emotional Support, and Acceptance. Of the total 37 research subjects, 8 of them used maladaptive coping mechanisms.

The **Figure 1.** demonstrate that based on the HADS-D questionnaire, 13 (35%) and 2 (5%) of the participant had moderate and mild depression, respectively. No participant had a severe depression.

Table 1. Demographic Characteristics of Research Subjects

Characteristics	Frequency	%
Age (year)		
Mean ± SD	44,70 ± 15,53	
Gender		
Male	25	67,57
Female	12	32,43
Marital Status		
Married	28	75,68
Unmarried	8	21,62
Widow/widower	1	2,7
Education		
Primary	4	10,81
Middle	11	29,73
High	13	35,14
Bachelor	9	24,32
Occupation		
Unemployed	11	29,7
Private sector employee	5	13,5
Entrepreneur	4	10,8
Retiree	3	8,1
Housewife	7	18,9
Civil servant	1	2,7
laborer	2	5,4
Farmer	4	10,8

Characteristics		Frequency	%
Address			
	Surakarta	9	24,3
	Karanganyar	6	16,2
	Sragen	12	32,4
	Boyolali	7	18,9
	Purwodadi	1	2,7
	Ngawi	1	2,7
	Wonogiri	1	2,7
HD Duration (year)			
	Mean ± SD	4,34 ± 3,05	
Age (year)			
	Mean ± SD	44,70 ± 15,53	

Table 2. Coping Mechanisms in Chronic Kidney Disease Patients Undergoing Hemodialysis

Classification	Coping Mechanisms	Mean
Maladaptive	Self Distraction	5,62
	Denial	3,78
	Substance Use	2,14
	Behavioral engagement	3,76
	Venting	4,14
	Self blame	4,43
Adaptive	Active Coping	5,49
	Planing	4,89
	Use of Instrumental Support	5,86
	Use of Emotional Support	5,81
	Positive Reframing	5,43
	Acceptance	5,76
	Humour	4,68
	Religion	6,78

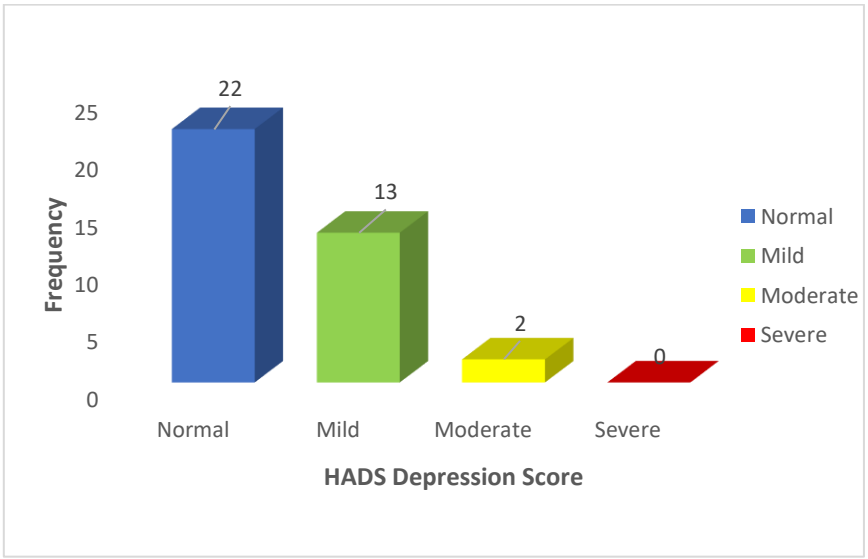

Figure 1. HADS Depression Score in Chronic Kidney Disease Patients Undergoing Hemodialysis

Table 3. Association of Adaptive and Maladaptive Coping Mechanisms with depression in CKD Patients Undergoing Hemodialysis

	Coping Mechanism	N (%)	Coofficient Correlation	P
HADS - D	Adaptive	29 (78,38%)	*r*=-0,655	0,000*
	Maladaptive	8 (21,62%)		

*p<0.05 was considered significant

As shown in Table 3, there is a statistically significant and robust negative correlation between coping mechanisms and the severity of depression in CKD patients undergoing hemodialysis (r=-0,655; p<0,01). The more adaptive the coping mechanism used, the lower the severity of depression that occurred.

Discussion

Depression is common in patients with CKD undergoing HD, but it is often underdiagnosed and understudied. In the present study, CKD patients undergoing hemodialysis who suffered from depression were mainly in the stage of mild depression (13), and the rest of the patients were in moderate depression (2). A similar result was obtained by Octafiani et al. (2020) and Agustin et al. (2021), where most of the CKD patients who underwent HD experienced the mild depression. [7,8]

Potential explanations for the high incidence of depression observed in CKD patients are a combination of behavioral and biological mechanisms. Based on a study conducted by Bezerra et al. (2018), The high number of depressive disorders among CKD patients is the result of intricate interplays involving multiple factors.[9] The psychosocial mechanisms that include disease burden, lack of social support, detrimental health behaviors, and poor quality of life, together with potential biological mechanisms involving inflammation, altered autonomic activity, and neurohormonal disturbances, may contribute to the development of depression in patients with chronic kidney disease who have undergone hemodialysis.[10,11]

The initial six months following renal replacement therapy may exhibit heightened clinical manifestations of depression in patients with HD. In contrast, patients undergoing long-term HD have adapted to their condition and usually develop milder forms of depression symptoms.[12] This explanation is in accordance with our study, where the subjects of this study had an average duration of HD of 4.34 years.

Patients with chronic illnesses, including CKD, will experience many challenges in various aspects of their life. These challenges can be significant stressors in their life. Patients may experience physical, psychosocial, and spiritual challenges that lead to a decline in their health status. Managing stress in these patients requires the individual to cope with the stressful situation and deal with any emotional reactions triggered by the situation, one of which is by using coping mechanisms.[13] Over the past few

decades, it has been shown that depression is associated with maladaptive coping strategies. Thus, suggesting that the more maladaptive the coping mechanisms used, the more likely to be associated with undesirable outcomes, including distress. In contrast, adaptive coping strategies tend to be associated with better clinical outcomes.[5]

The most used coping mechanisms by our patients are *religious coping, use of instrumental support, use of emotional support* and *acceptance*. Similar research conducted by Gurkan et al. (2015) and Agustin et al. (2021), showed that most CKD patients undergoing HD used adaptive coping mechanisms.[7,14] These coping mechanisms mentioned above are all adaptive coping mechanisms.

The adaptive coping mechanisms of emotion-focused coping (religious coping, use of emotional support and acceptance) are primarily used by study participants. Emotion-focused coping aims to reduce the negative emotions associated with the problem; in our case is how our patients cope with their chronic illness.[15] Yucens et al. (2019), in their study, showed similar results where emotion-focused coping mechanisms in CKD patients undergoing HD were more prevalent than other coping mechanisms, although the difference was not significant.[16]

The most-used coping mechanism in our study is religious coping. Similarly, the research by Bravin et al. (2019) in CKD patients was also dominated by religious- and acceptance-coping.[17] Religious coping strategies in hemodialysis patients are also commonly found in patients with other chronic diseases. According to Pham et al. (2020), patients suffering from CKD use this religious coping to accept wisdom and to look for lessons from their illness, which further reduce feelings of uselessness due to their illness. Most patients will be more consistent in worshipping and maintaining positive thoughts, and "every cloud has a silver lining".[17] Another research on elderly hemodialysis patients showed that religious coping strategies are often used, where elderly individuals consider it as the most common social activities.[18]

Our study showed a significant negative correlation between coping mechanisms and the degree of depression. These results indicate that the more adaptive coping mechanisms used by CKD patients undergoing HD, the lower the severity of depression experienced by these patients. A similar result was obtained by Ibrahim et al. (2013), where adaptive coping mechanisms in the forms of active coping, emotional support, instrumental support, positive reframing, and planning are inversely correlated with the incidence of depression in patients undergoing HD.[19] In other words, the more often the adaptive coping mechanisms mentioned above are used, the less the incidence of depression in patients with CKD.

This study has several limitations. The first limitation is its small sample and study design, which cannot examine the long-term relationship between coping mechanisms and the degree of depression in CKD patients undergoing HD. The second limitation is that various factors affecting depression, such as biological, psychological, and social factors, cannot be entirely controlled in this study. Another

limitation is that we were unable to analyze different medical conditions that contribute to the occurrence of depression in CKD patients, such as nutritional status, or physical activity.

Conclusions

The coping mechanisms most widely used by CKD patients undergoing HD at Dr. Moewardi Hospital Hemodialysis unit are the adaptive coping mechanisms of *religious-coping*, *instrumental support, emotional support*, and *acceptance*. There is a significant negative correlation between coping mechanisms and the severity of depression.

The limitation of our study is its design and relatively small sample size; therefore, all the presented results should be confirmed in a more extensive prospective study. Further research is also needed to analyze underlying medical conditions, nutritional status, physical activity, or other factors that can affect the severity of depression in CKD patients undergoing HD.

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