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Research Article

The Relationship Between Depression and Quality of Life in Patients Undergoing Hemodialysis in Indonesia

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Abstract. Patients undergoing hemodialysis (HD) must spare four hours a day, three days a week, irrespective of the patient's schedule. Thus, it is common for chronic kidney disease (CKD) patients to be depressed, and with the progression of CKD, their overall quality of life (QOL) could decrease. Therefore, this study aimed to examine the relationship between depression and QOL among patients undergoing hemodialysis in Indonesia. This cross-sectional research was conducted at a West Java Province, Indonesia, public health center, from August to December 2020. The inclusion criteria of participants were over the age of 20 and having been undergoing HD for at least six months. Depression was evaluated using the Beck Depression Inventory-II (BDI-II) and QOL was measured using The Kidney Disease and Life Quality-SF^{TM} v1.3 Survey (The KDQOL-SF^{TM} v1.3). Pearson's correlation analysis was used to investigate the correlation between depression and QOL. There were 190 respondents out of 225 (response rate: 84.4%), including 100 patients with CKD stages 1-3 (response rate: 75.6%). No correlation was found between demographic characteristics and QOL in HD patients (p > 0.05). The Indonesian KDQOL-SFTM v1.3 was associated with the BDI-II, and r ranged from 00.354 to 0.486. In order to increase QOL, it is recommended that depression is treated with routine follow-up in a collaborative care approach because intensive treatment is not normally reproduced in real-world practices.

Keywords: quality of life, depression, hemodialysis, cross-sectional, Indonesia

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1. Introduction

Kidney disease is a global public health problem affecting more than 750 million people worldwide [1,2]. According to WHO statistics, close to 10% of the population is diagnosed with chronic kidney disease worldwide. Only an appropriate 10% of this patient population receives some treatment in the form of dialysis or transplant to stay alive [3]. In Indonesia, the prevalence of CKD in the population aged ≥15 years in 2013 was 2.0%. It increased in 2018 to 3.8% of the total population in Indonesia [4]. Similarly, patients undergoing hemodialysis in Indonesia indicate there has been an increase from

year to year. For example, in 2017, there were 77,892 patients undergoing hemodialysis. It increased to 132,142 people in 2018 (Kementerian Kesehatan RI Badan Penelitian dan Pengembangan, 2018).

Patients with CKD who were undergoing hemodialysis (HD) must spare four hours a day, three days a week, irrespective of the patient's schedules. For patients with continuous outpatient peritoneal dialysis, people must hold three two-liter bags of dialysis fluid to conduct dialysis on a daytime basis. This is inconvenient, but it also becomes increasingly burdensome as people become frailer as the duration of dialysis increases because initiation of dialysis cannot stop the deterioration of the underlying causes of CKD [6]. It is difficult for dialysis patients to retain their work, which eventually decreases their socioeconomic status [7]. Thus, it is common for CKD patients to be depressed, and with the progression of CKD, their overall quality of life (QOL) could be worse [8].

QOL has been recognized in nephrology as a significant patient-reported outcome measure (PROM) [9]. Patients' quality of life undergoing dialysis is influenced by physical, biological, psychological, social, and cultural factors [10,11]. Many patients experience dialysis as a heavy burden; they even have poorer quality of life than patients with diabetes or malignancies [12]. Factors such as financial dependence, inability to fulfill family responsibilities, and active social life were attributed to lower quality of life in long-term hemodialysis patients [13]. These factors can lead to mental health problems like depression or anxiety [13]. Therefore, improving QOL in patients undergoing hemodialysis is significant.

Depression is one of the most common psychological disorders among hemodialysis patients [14]. The prevalence of depression in CKD patients, including predialysis patients, is higher than in the general population and other chronic disease patients [15,16]. A previous study conducted in a Nigerian tertiary hospital found that depression was 34.5% [17,18]. Another study reported that the prevalence of depressive symptoms among patients with hemodialysis was approximately 44%, and 6% of them were reported having severe depression [11]. Depression due to the hemodialysis treatment modality may be related to severe limitations in independent living.

Depression is the most significant of these due to its high prevalence, reduced quality of life, and increased mortality risk [15,16]. Depressive hemodialysis has a higher risk of death and hospitalization than non-depressive patients [19]. Despite the high prevalence and damaging effects, depression is still a misdiagnosed condition due to concurrent uremia-related symptoms (anorexia, exhaustion, sleep disorders) and lack of formal psychiatric evaluation [20]. Depression can lead to adverse clinical

outcomes by affecting dialysis and drug treatment compliance, altering the immune system's role, and its detrimental effect on nutritional status [20]. However, few studies explore depression and quality of life among hemodialysis in Indonesia. Therefore, this study aimed to examine the relationship between depression and quality of life among patients undergoing hemodialysis in Indonesia.

2. Methods

2.1. Study design and

Cross-sectional research was conducted at a West Java Province, Indonesia, public health center, from August to December 2020. Public health centers are government-mandated community health clinics located across Indonesia. They are supervised by the Indonesian Ministry of Health and provide healthcare at the sub-district level. West Java Province is located on Java Island close to the Capital city of Indonesia, Jakarta. West Java consists of 17 regencies and nine cities.

2.2. Sample

The study population is patients undergoing hemodialysis. Participants in this study will be recruited from the hospital's hemodialysis center in Karawang, Indonesia. In Karawang, there is 10 HD center that covered by national health insurance. However, this study will only be used in one HD center, a referral HD center in Karawang, namely the General Hospital of Karwang City, West Java, Indonesia. The inclusion criteria of participants were over the age of 20, having been hemodialyzed for at least six months, capable of speaking and writing in Indonesian, and willing to participate in this study. Participants who agree to participate in this study were allocated through the use of convenience sampling.

2.3. Measures

The first part of the tool is used to obtain the respondents ' demographic data, including sex, age, marital status, education, income level, occupation, and length of HD treatment receipt.

Depression was evaluated using the Beck Depression Inventory-II (BDI-II) comprising 21 items—each item reflects a symptom with a scale rating of 0 (no symptom) to 3 (severe

symptom) and sums the total scores from 0 to 63. Higher total scores indicate more severe depressive symptoms. The standardized cutoffs used differ from the original:0–13: minimal depression, 14–19: mild depression, 20–28: moderate depression, and 29–63: severe depression. Based on Craven et al. (Craven, 1988).

The Kidney Disease and Life Quality-SF^{TM} v1.3 Survey (The KDQOL-SF^{TM} v1.3) is a KDQOL short-form questionnaire and has two main components: a general core and a disease-specific core (Joshi VD, 2010). The items on general health are divided mainly between physical and mental health across eight sub-scales, with one item on overall health. The scores ranging from 0 to 5 response scale ranging from worse possible to best possible health. Higher scores show better HRQOL states for both core components. Scoring algorithms given in the user manual were used to calculate scores ranging from 0 to 100. The scores represent the percentage of total possible scores achieved, with 100 representing the highest quality of life. There is no cuff of score indicated higher, or lowered HRQOL provided from the KDQOL guideline.

2.4. Data collection

The information was collected through the use of a web-based survey with closed-ended questions. Throughout the process, the author created a Google Form, which was used throughout. If the survey had previously been completed, the computer automatically dealt with the possibility of double participation by rejecting two or more access permits to the survey from the same e-mail address. The research was carried out on the Internet in roughly five to ten minutes.

2.5. Ethical consideration

Ethics was considered before data was collected by obtaining approval from the Institutional Review Board's ethical committees. Before administering the survey, participants were provided thorough information about the consent form. The data were collected and stored on a separate drive, accessible only to the management staff.

2.6. Data Analysis

Standard deviation (SD) was applied to continuous data, whereas frequency and percentage were utilized for categorical variables. The Kolmogorov–Smirnov test revealed that the data for depression and QOL were usually distributed. In this study, the ANOVA/t

test was employed to characterize the mean QOL values for various socio-demographic variables. Pearson's correlation analysis was used to investigate the correlation between depression and QOL. SPSS for Windows (version 22.0) was used to conduct the statistical analysis. A two-tailed P-value of 0.05 was considered statistically significant.

3. Results

Of the 225 participants, 190 (response rate: 84.4%) agreed, including 100 patients with CKD stages 1-3 (response rate: 75.6%). Participants' demographics are represented in Table 1. The majority of the patients (54.7 percent) were male, with a mean age of 51.87 years (standard deviation: 19.33). The average length of hemodialysis treatment was 13.87 months (standard deviation: 4.29) (Table 1). No correlation was found between demographic characteristics and quality of life in HD patients (p>0.05).

A significant correlation was found between the eight domains of Indonesian KDQOL-SF^{TM} v1.3 and BDI-II (Table 2). The correlation between the KDQOL-SF^{TM} v1.3 and the BDI-II was moderate. The Indonesian KDQOL-SFTM v1.3 was associated with the BDI-II, with r ranged from 00.354 to 0.486.

4. Discussion

This study found that patients undergoing HD had a moderate quality of life score. Many patients experience dialysis as a heavy burden; they even have poorer quality of life than patients with diabetes or malignancies [12]. Regular hemodialysis (HD) has been regularly suggested to enhance the quality of life in HD patients, among others [21]. Hemodialysis has been shown to help patients with kidney failure improve their health, but hemodialysis is not without side effects. While home hemodialysis is becoming increasingly popular nowadays, it requires training before patients can do it independently [3,22]. Hemodialysis allows the patients to follow a strict schedule to make the best treatment results possible. Patients on dialysis are attached to the hemodialysis system for a total of three days per week, for at least 2 hours per day [23]. HD patients need to take medications recommended by the doctor and limit fluid intake strictly [24]. HD can improve quality of life and extend life expectancy. However, it only works as much as 10% of the actual kidney, so it is essential for HD patients according to schedule.

This study found that patients undergoing HD had average depression scores. The prevalence of depression in CKD patients, including predialysis patients, is higher than in

the general population and other chronic disease patients [15,16]. Depression can lead to adverse clinical outcomes by affecting dialysis and drug treatment compliance, altering the immune system's role, and its detrimental effect on nutritional status [20]. Patients with depressed dialysis had significantly elevated plasma levels of pro-inflammatory cytokines, especially interleukin (IL)-6, which may be associated with adverse cardiovascular outcomes [25]. A recent randomized, double-blind, placebo-controlled trial found that 12-week serum serumIL-6 rates in HD patients with depression were substantially decreased [25]. The risk of suicide and self-harm should not be underestimated, last but not least.

Despite the high incidence of depression observed, fewer than 20 percent of suicidal patients received adequate antidepressant or alternative therapy treatment. Most of them did not undergo regular medical or psychotherapy supervision. Alternative therapies, such as cognitive-behavioral therapy and exercise programs, have recently been shown to positively impact stress treatment [26], but these interventions have not been recommended. Only a minority of depressed CKD patients are treated appropriately, especially those needing pharmacologic therapy [11,18]. The main reason for this lack of treatment may be the absence of controlled trials in this particular population studying the safety of antidepressants [16,26].

The study's limitations must be considered when evaluating the findings. We did not assess the relationship between HD-specific therapy and QOL. Although our sample size was sufficiently large, we did not examine how many patients got psychotherapy alone. Thus we did not tell how many patients received only psychotherapy. We could not differentiate between the various antidepressant medicines and psychotherapies (for example, cognitive behavioral therapy and interpersonal therapy). Further research is needed to determine whether specific drugs and therapy improve patients' quality of life while enduring HD and depression. Finally, social desirability distortions and recall distortions are further restrictions, as the respondents self-report the information in the database.

5. Conclusion

In conclusion, we found statistically significant relationships between depression therapy and QOL measures among patients receiving hemodialysis and depression after correcting for a demographic factor that may affect the quality of life. In order to increase QOL, depression could need to be treated with routine follow-up in a collaborative

TABLE 1: Demographic characteristics (n=190)

	n (%)	QUOTE			
		Mean	SD	F/t	*P*-value
Age, Mean ± SD	51.87 ± 19.33				
Gender					
Male	104 (54.7)	69.86	23.77	2.321	0.118
Female	86 (45.3)	70.18	25.55		
Education level					
Above the senior high school	98 (51.6)	70.07	23.17	1.634	0.452
Below senior high school	92 (48.4)	77.69	24.82		
Marital status					
Married	154 (81.0)	73.51	22.05	1.821	0.312
Single	36 (19.0)	76.32	21.13		
Working status					
Employed	57 (30.0)	74.64	20.43	2.567	0.124
Unemployed	133 (70.0)	77.44	19.07		
Length of hemodialysis (months), Mean ± SD	13.87± 4.29				

TABLE 2: Correlation of each subscale of Indonesian KDQOL-SF^{TM} v1.3 with the BDI-II

	BDI-II
Total QOL score	0.441**
Domain's score	
Role physical	0.465**
Physical functioning	0.398**
Pain	0.465**
General health	0.394**
Emotional well-being	0.432**
Role emotional	0.354*
Social function	0.486*
Energy/fatigue	0.465**
Note: * p<0.05; **p<0.001	

care approach because intensive treatment is not generally reproduced in real-world practices.

6. Conflict of interest

All authors declare no conflict of interest.

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