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Evaluation of the Quality of Life of Chronic Kidney Failure Patients Undergoing Hemodialysis at General Hospital in Jakarta

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ABSTRACT

Hemodialysis (HD) is an ongoing treatment given to chronic kidney disease patients as a substitute for kidney function so it is important to assess the quality of life among these patients. Quality of life (QoL) is one of the parameters to see the improvement of HD treatment in HD patients. To evaluate the QoL of chronic kidney disease patients undergoing HD at General Hospital in Jakarta using the Indonesian version of kidney disease QoL-short form 24 questionnaire. This type of research is descriptive analytics with a cross-sectional design. Consecutive sampling is used to select patients based on inclusion criteria. This study involved 116 patients who had inclusion criteria in the Hemodialysis Room of General Hospital in Jakarta. HD patients who have a poor QoL category 38 people (32.8%), enough category 73 people (62.9%), and good category 5 people (4.3%). Female patients are the most patients undergoing hemodialysis as much as, patients over the age of 45 years (60.3%), patients who work (87.9%), patients who have low levels of education (82.8%), patients who have undergone HD for less than 5 years (82.8%) and patients with hypertension (84.5%). HD patients who have a good QoL are patients over the age of 45 years (60%), patients of the female sex (80%), patients who work (100%), patients with higher education levels (60%), patients who have undergone HD < 5 years (60%) and patients with diabetes and hypertension (60%). There are six components have a mean and standard deviation (SD) lower than the standard form; cognitive function (19.22 ± 18.88), quality of social interaction (17.24 ± 10.33), sleep quality (39.05 ± 9.21), emotional well-being (32.64 ± 8.54), emotional role (28.73 ± 35.13), and social functioning (48.92 ± 7.65). HD patients at General Hospital in Jakarta have a sufficient quality of life category. The component scores of cognitive function, quality of social interaction, quality of sleep, emotional well-being, emotional role, and social functioning were lower than standard scores.



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INTRODUCTION

Chronic kidney disease (CKD) is a common condition that often goes unrecognized until its most advanced stage. Diagnosis is determined only by laboratory examination: proteinuria or hematuria, and/or decreased glomerular filtration rate, for more than 3 months [1]. Patients with CKD stage G5 with glomerular filtration rate values of < 15 ml/minute/1.73 m² are required to undergo hemodialysis therapy. Hemodialysis therapy will affect various aspects of life such as physiological,

psychological, social, and economic aspects so the assessment of the quality of life in CKD patients with hemodialysis is essential in the evaluation of the quality and effectiveness of the patient's medical care.

According to the World Health Organization, definition quality of life (QoL) is a multidimensional category consisting of physical, mental, social, and economic components [2]. Advances in dialysis treatment have contributed to improved survival of patients with end-stage kidney disease (ESRD). However, despite improvements in ESRD treatment, health-related quality of life (HRQoL) rates are much lower for these patients than for the general population [3]. Many factors affecting HRQoL in ESRD patients have been identified such as country, ethnicity, and demographic variables. HRQoL was investigated in ESRD patients on hemodialysis (HD) or peritoneal dialysis in Korea, Singapore, Brazil, the US, Turkey, the Netherlands, South Africa, and Sweden. The impact of dialysis modalities on HRQoL has been analyzed [4]. KDQoL-SF (Quality of Kidney Disease of Life-Short Form) is a disease-specific personal satisfaction measure for patients with ESRD/terminal kidney failure.

It includes non-exclusive and explicit segments of the disease for HRQoL evaluation. KDQoL-SF is a patient-related questionnaire that includes assessments of physical function, physical role, pain, general health, emotional well-being, emotional roles, social functioning, and energy/fatigue.

In this study, the KDQoL-SF 24 questionnaire was used to look at the QoL of CKD patients undergoing HD at General Hospital in Jakarta and look at the relationship of sociodemographic factors, duration of HD, and comorbidities to the QoL of CKD patients who undergoing dialysis at General Hospital.

MATERIALS AND METHODS

This study was conducted at the Hemodialysis Unit of General Hospital in Jakarta. All chronic kidney failure patients undergoing HD at Koja Hospital Jakarta.

However, only 116 patients met the inclusion criteria. This research design is cross-sectional.

Inclusion Criteria

1. All HD patients suffering from diabetes and/or hypertension
2. Patient \geq 18 years
3. Willing to participate in the study and sign the informed consent

Exclusion Criteria

1. Acute kidney failure patients
2. Cancer patients
3. Pregnant patients
4. HIV/AIDS patients
5. Systemic lupus erythema patients

The ethical approval was given by the health research ethics committee of Koja Jakarta Regional General Hospital (RSUD). The research reference number is 01/KOMEPE/2021. Patients who met the inclusion criteria with medical records were identified. The purpose of the study was explained to the patients before the commencement of the study and their willingness to participate was obtained in the patient's consent form. Validated KDQoL was used to evaluate the QoL among 116 patients. Data is analyzed descriptively using SPSS software version 25 [Figure 1].

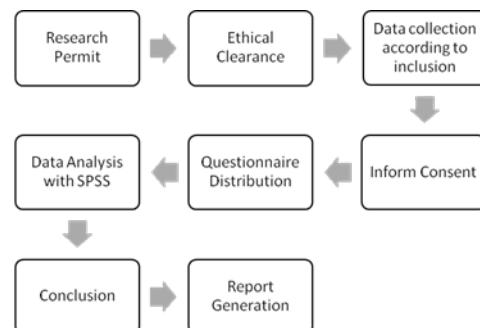


Figure 1: Research Framework of the Study

RESULTS AND DISCUSSION

The Indonesian version of KDQoL Reliability Analysis

Table 1 shows Cronbach Alpha statistical tests for 4 categories of KDQoL-SF24 questionnaire questions covering health, kidney disease, the effects of kidney disease on daily life, and satisfaction with treatment.

A study conducted by Ramatillah in 2019 on 23 HD patients to assess the HRQoL of HD patients in Indonesia, because the Indonesian version of KDQoLSF24 was not found on RAND's website. Cronbach's alpha value was about 0.7 after analyzing pilot study data from 23 HD patients [5].

Table 2 shows the demographic characteristics of 116 patients; most of the respondents were female, with 65 (56%) remaining male and 51 men (44%). In general, both women and men have an equally high risk of CKD. The mechanism of kidney injury is

Table 1: Reliability Analysis

Component	The Sum of Each Component	Cronbach Alpha
Your health	24	0.663
Your Kidney Disease	21	0.667
Effects of Disease on Daily Life	19	0.688
Satisfaction in Care	3	0.613
Total	67	0.684

Source: Malaysian Journal of Public Health Medicine 2019

Table 2: Distribution of Demographic Characteristics of Patients Undergoing Hemodialysis (n = 116)

Variable	Category	Frequency (F)	Percentage (%)
Gender	Male	51	44
	Female	65	56
Age	Young (< 45 years old)	46	39.7
	Old (> 45 years old)	70	60.3
Job-status	Work	102	87.9
	doesn't work	14	12.1
Education Level	Low	96	82.8
	High	16	13.8
	Not school	4	3.4
Duration of HD	< 5 years	96	82.8
	> 5 years	20	17.2
Comorbidities	Hypertension	98	84.5
	Diabetes	7	6.0
	Hypertension & Diabetes	11	9.5

unknown but is thought to be related to differences in sex hormones and differential effects of sex on lifestyle and risk factors [1]. Research conducted by Levey *et al.*, (2003) states that clinically, men have a risk of developing CKD 2 times greater than women. This is possible because women pay more attention to health and maintain a healthy lifestyle than men, so men are more susceptible to CKD than women. Women are more obedient than men in using drugs because women are more able to take care of themselves and can regulate the use of drugs [6].

More HD patients are elderly (> 45 years old) as many as 70 people (60.3%). This is in line with research conducted by Smeltzer *et al.*, (2008) which stated that the age of 40 years will decrease the glomerular filtration rate progressively by approximately 50% from normal [7]. According to Bohlke *et al.* age had a significant influence on physical function among patients on dialysis in southern Brazil, as measured by KDQoL-SF 36 [8]. Other studies have also found that HD patients were less active than patients who did not undergo HD and this difference was more pronounced among older patients [9].

The number of HD patients who worked more

than those who did not work was 102 people (87.9%). Researchers looked at CKD patients who chose to keep working and could no longer do the job as usual because they had difficulty thinking, completed less work than desired, were limited in terms of work, reduced the amount of time spent by work, and did not do work as thoroughly as usual. Judging from the level of education, the majority of respondents are poorly educated, namely 96 people (82.8%), highly educated 16 people (13.8%), and those who are not in school 4 people (3.4%). This is in line with a study conducted by Dogan in 2008 which stated that patients with low levels of education are more at risk of developing chronic kidney failure [10].

Patients who have undergone HD for less than 5 years amounted to 96 people (82.8%) and those who had undergone more than 5 years amounted to 20 people (17.2%). The average length of HD for patients is 18 months with the lowest range being 3 months and a maximum of 10 years. During the HD process, the patient experiences acute complications such as muscle cramps, numbness/ tingling, pain, nausea and vomiting, headaches, fever, and

Table 3: Distribution of Demographic Relationships, Duration of HD and Comorbidities with QoL

Variable	Less (n)	%	QoL		Good (n)	%	Total
			Enough (n)	%			
Age							
< 45 years old	13	34.2%	31	42.5%	2	40%	46(39.7%)
> 45 years old	25	65.8%	42	57.5%	3	60%	70(60.3%)
Gender							
Men	20	52.6%	30	41.1%	1	20%	51 (44%)
Woman	18	47.4%	43	58.9%	4	80%	65 (56%)
Job Status							
Work	33	86.8%	64	87.7%	5	100%	102(87.9%)
Not working	5	13.2%	9	12.3%	0	0.0%	14 (12.1%)
Education Level							
Low	35	92.1%	60	82.2%	1	20%	96 (82.8%)
Tall	2	5.3%	11	15.1%	3	60%	16 (13.8%)
Not school	1	2.6%	2	2.7%	1	20%	4 (3.4%)
HD Duration							
< 5 years	34	89.5%	59	80.8%	3	60%	96 (82.8%)
> 5 years	4	10.5%	14	19.2%	2	40%	20 (17.2%)
Comorbidities							
Hypertension	33	86.8%	64	87.7%	1	20%	98 (84.5%)
Diabetes	3	7.9%	3	4.1%	1	20%	7 (6%)
Diabetes and Hypertension	2	5.3%	6	8.2%	3	60%	11 (9.5%)

chills. Patients should limit fluid intake and a low-protein diet.

In this study, the most commonly suffered disease suffered by HD patients was hypertension, which was as many as 98 people (84.5%) in line with the Indonesia Renal Registry report in 2018 which stated that hypertension and diabetes are the most common diseases owned by CKD patients. Hypertension is thought to affect the vascular and tubulointerstitial components of the kidneys, resulting in ischemic damage from narrowing of the arteries. The result is the loss of nephron mass and atrophy and fibrosis of the tubules and interstitium. One of the consequences of complications of diabetes mellitus is a microvascular disease, including diabetic nephropathy which is the main cause of terminal kidney failure [1].

Table 3 shows that patients over the age of 45 have a better QoL than patients under the age of 45. This is because young patients (< 45 years old) cannot accept their condition as kidney failure patients, and although they may be young and full of energy, they are frustrated because of the condition. However, research conducted by Germin *et al.*, (2011) reports that rates of depression in older patients have a sig-

nificant impact on physical and mental aspects [2]. So it can be concluded that both younger and older patients have similar levels of depression. The reason that older patients have a better QoL due to age may be more emotionally positive is because they have a better emotional state in terms of accepting their condition and pushing themselves to survive [5].

Furthermore, female patients have a better QoL than male patients. The results are in line with research conducted by Bayoumi *et al.*, (2013) and Lopes *et al.*, (2003) which showed that women have a better QoL [11, 12]. Research conducted by Nemati *et al.*, (2014) reveals that there are several things to note about the effects of sex on QoL, among others: i) women are more capable than men in giving and receiving emotional support. ii) Women get more family support. iii) Men are at higher risk of hepatitis virus than women while undergoing HD [13].

Working patients have a better QoL than patients who don't work. This is possible because work can be a great social support and having a job status will add to the contribution to higher quality and confidence and patients who are still working have a more stable financial condition. Despite this, they

Table 4: KDQoL Questionnaire Score for 116 Patients Undergoing HD

Component	Number of Components	Score Each Component (Mean±SD)	Standard Score (Mean±SD)
Symptoms/Permorignal	12	89.81±6.23	71.21±16.77
The effects of kidney disease	8	93.91±7.30	57.30±24.53
The burden of kidney disease	4	66.48±18.71	49.62±30.27
Employment status	2	51.72±27.97	25.26±37.82
Cognitive function	2	19.22±18.88*	79.11±19.75
Quality of interaction Social	3	17.24±10.33*	76.65±18.71
Sexual function	2	99.67±2.58	69.30±36.17
Quality of sleep	4	39.05±9.21*	60.68±28.61
Social support	2	74.67±12.77	64.61±27.73
Quality of service of dialysis staff	2	90.40±11.92	69.90±23.13
Patient satisfaction	1	74.67±9.68	71.38±22.04
Physical function	3	52.29±30.60	51.83±29.73
Physical role	3	33.18±57.83	32.46±39.68
Perception of pain	2	80.21±14.39	
RAND scoring			60.40±30.11
SF - 36 scoring			57.60±29.7
General health	5	51.98±8.86	
RAND scoring			42.88±24.32
SF - 36 scoring			43.87±24.75
Emotional well-being	3	32.64±8.54*	69.54±20.36
Role of emotions	3	28.73±35.13*	57.76±43.90
Social function	2	48.92±7.65*	63.57±29.77
Energy/fatigue	2	57.15±15.97	45.89±24.06
Number of components	65	63.89±6.14	59.37±19.54
Sum			

*Low

have physical limitations in doing their work so they cannot work as beautifully as usual. The next QoL is education. In this study, patients with higher education levels had a better QoL than patients with low levels of education. Research conducted by Mohamed Nasr and Valderrabano highlights that high levels of education protect against the declining QoL [14].

Based on Table 3 patients who underwent HD for less than 5 years have a better quality of life than patients who have undergone HD for more than 5 years. The weight of the burden of HD therapy effects received by them became one of the factors aggravated by the accompanying disease owned by the patient. In this study, patients with hypertension had a better QoL compared to patients with hyper-

tension or diabetes alone. However, research conducted by Mingardi *et al.*, (1999) revealed that diabetes is associated with low QoL and physical function [15, 16]. This is not following this study, possibly due to several factors including compliance in undergoing HD therapy, adherence to drugs, diet & control of fluids under the directions of doctors and nurses, and support from friends, relatives, relatives, family, and dialysis staff.

QoL Score of Patients Undergoing HD at General Hospital in Jakarta

Table 4 shows the mean and standard deviation (SD) of each component of the KDQoL-SF24 questionnaire for patients undergoing HD therapy at Koja Hospital, Jakarta. The component values of cognitive function, quality of social interaction, quality

of sleep, emotional well-being, emotional role, and social functioning were lower than standard scores. This means the QoL of HD patients on those components is not good. Ramatillah *et al.*, (2017) also found the average grade components for patients undergoing HD in Penang Malaysia were low including employment status, cognitive function, quality of social interaction, quality of sleep, social support, patient satisfaction, physical function, general health, and emotional roles [17].

Pei *et al.*, (2019) revealed that age is negatively related to physical components [4]. This is in agreement with Griva *et al.*, (2014) who found that older patients showed significantly better HRQoL than younger patients despite their worse clinical profiles. Anxiety and depression levels are also lower in elderly patients [18]. But according to Bohlke age had a significant influence on physical function among patients on dialysis in southern Brazil, as measured by KDQoL-SF 36. Other studies have also found that HD patients were less active than healthy sedentary controls, and this difference was more pronounced among older patients [8]. This agrees with Mingardi's study that diabetes patients undergoing HD had lower scores in terms of physical function [15].

On the other hand, research conducted by Ramatillah *et al.*, (2017) revealed that emotional and physical role-factors are components that can also determine the QoL of diabetic and/or hypertensive patients undergoing HD. The diseases and ongoing treatments they will receive are factors that affect their emotions and physical functioning. Some HD patients are unable to accept their condition as kidney failure patients, and although they may be young and full of energy, they are frustrated because of their condition. For others who don't have more energy to survive due to age may be more emotionally positive because they have a better emotional state in terms of accepting their condition and pushing themselves to survive. Other patients will experience problems due to the severity of the disease [5].

A previous study reported moderate levels of depression in HD patients and concluded. The relationship between physical and psychological dimensions and low levels of physical activity states the importance of regular or supervised physiotherapy training to improve the quality of life associated with impaired health [19].

In this study, sleep disorders were identified as one of the problems in patients with diabetes and/or hypertension undergoing HD in Indonesia. Sleep disorders are one of the measures used to determine

the quality of life in these patients. Sustained HD activity may be one contributing factor. Parvan *et al.*, (2013) revealed that 83.3% of patients undergoing HD had poor sleep quality [20]. Another study conducted by Chang & Yang reported that more than half (57.1%) of the 275 HD patients enrolled in the study had poor sleep quality (PSQI >6) [21]. This is similar to the results of this study.

Low QoL scores in the social domain may be because, with increased duration of dialysis, patients have less time and a desire to spend time with their family and friends which can negatively impact their personal and social relationships. In addition, patients who had been on dialysis for more than 5 years were least satisfied with their sexual lives which may also lead to lower scores in the social domain. In contrast, Atapour *et al.*, (2016) found no association between HD duration and QoL in patients with chronic kidney failure [22]. But research by Joshi *et al.*, (2017) revealed that older patients have a much better QoL than younger patients in the social domain [23, 24]. Lemos *et al.*, (2015) also found the social aspects were better in older patients than in younger patients [21].

Once patients with ESRD begin to receive HD, they must face chronic stress associated with time restrictions, treatment-related economic and vocational costs, functional limitations, dietary constraints, and possible side effects of treatment. Patients may feel tired, bored, and disappointed because of their illness. Therefore, HD patients urgently need support from family, friends, relatives, and even dialysis staff who care for them. This agrees with research by Ohlke which shows that emotional feelings in CKD patients can decrease the QoL in CKD patients over time due to increased kidney disease burden on a person's life that causes feelings of frustration. The level of support received in a family environment has been described as an important predictor of mental quality of life among ESRD patients. However, the effects of family involvement have not always been shown to be beneficial to patients, and they can vary between extremes, to not assist and take control of the patient's life [8].

CONCLUSION

The quality of life of CKD who undergoing HD at the Dialisa Unit of General Hospital in Jakarta is affected by education and accompanying diseases. Age, gender, occupation, and length of HD did not affect the QoL of HD patients at General Hospital, Jakarta. The component scores of cognitive function, quality of social interaction, quality of sleep, emotional well-

being, emotional role, and social functioning were lower than standard scores.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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