

Research article

## Characteristics and quality of life of patients with stage 5 chronic kidney disease admitted to a hospital

Salmah Handayani Lubis<sup>1</sup>, Azizah Nasution<sup>\*2</sup>, Khairunnisa<sup>2</sup>

<sup>1</sup>Graduate Student, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, 20155, Indonesia.

<sup>2</sup>Department of Pharmacology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, 20155, Indonesia.

**Key words:** CKD, QoL, SF36.

### Abstract

**\*Corresponding Author:** Azizah Nasution, Department of Pharmacology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, 20155, Indonesia.

**Background:** Chronic Kidney Disease (CKD) is a global health problem with high morbidity, mortality and therapeutic costs. Patients with CKD have various complications that affect their Quality of Life (QoL). The aim of this study was to determine the QoL of stage 5 CKD patients undergoing hemodialysis treated with erythropoietin in Haji Adam Malik (HAM) Hospital Medan. **Methods:** A prospective cohort study was conducted to analyze QoL of stage 5 CKD patients with BPJS insurance claims undergoing hemodialysis (n = 88) admitted to HAM Hospital Medan period August to October 2017. The patient's characteristics were descriptively analyzed. Their QoL was analyzed using SF-36 instrument with 9 dimensions (physical function, physical limitations, emotional, energy, well-being, social function, pain, perception of general health, and health changes). All data were organized in Microsoft Excel and SPSS version 16. The relationship between their QoL, diagnosis, and comorbidities was analyzed by Chi-square. The patient's QoL scores (in %) were categorized: very good  $\geq 80$ ; good 75- <80; fair 60- <75, poor <60. **Results:** Most (59%) of the patients were male. The patient's age was  $48.74 \pm 14.06$  (years). There was a relationship between the QoL of the patients with diagnosis and comorbidities ( $p = 0.039$ ). The average QoL of the patients (in %) was  $47.01 \pm 18.41$ . Most (71.7%) of the patients had poor QoL. **Conclusion:** Quality of Life of the patients was classified as poor category.

### Introduction

The prevalence of kidney disease is increasing dramatically and the cost of treating this growing epidemic represents an enormous burden on healthcare systems worldwide. Even in high income countries, the very high cost of long term dialysis for increasing numbers of people is a problem. In low and middle income countries long term dialysis is unaffordable.

Patients with stage 5 CKD require dialysis or kidney transplantation, which are highly costly and consume a large portion of the health budget [1].

The prevalence of Chronic Kidney Disease (CKD) patients receiving renal replacement therapy in developing countries is increasing rapidly, along with their economic progress. The prevalence stage 5 CKD patients which undergoing routine hemodialysis increases from year to year. Nearly half million people with CKD must undergo hemodialysis to prolong their lives [2].

Several factors influence the QoL of patients with CKD undergoing hemodialysis such as hemoglobin, albumin, nutritional status, inadequacy of hemodialysis, psychosocial and comorbidities mainly cardiovascular disease and diabetes mellitus. Worsening of these

conditions will have negative impact on the QoL of CKD patients [3-4].

Facts indicate that stage 5 CKD patients experience a decrease in their QoL with a high mortality rate around 22% per year. Additionally, people with CKD who undergo routine hemodialysis will experience a decline in physical condition due to increasing severity of the disease and psychical conditions resulting in the decrease in QoL. It is imperative to maintain the QoL of hemodialysis patients and to evaluate the progression of the disease and therapy. There are many ways to assess the patient's QoL, one of them is Short form-36 (SF-36) to examine the specific health status of patients with CKD [5-6]. It is necessary to conduct research to determine the characteristics and QoL of stage 5 CKD patients.

### Method

#### Research design

This prospective descriptive cohort study was undertaken on CKD Stage 5 patients period August to October 2017 by accessing the required data from the patient's status and hospital information system, while their QoL was assessed using the SF-36 instrument with 9 dimensions (physical function, physical limitations, emotional,

energy, well-being, social function, pain, perception of general health, and health changes).

### Population and research subject

The study population was all CKD stage 5 outpatients undergoing hemodialysis twice weekly and received erythropoietin therapy admitted to HAM hospital period August to October 2017. As many as 88 patients were willing to participate in this study and filled out the informed consent for the assessment of QoL.

### Data analysis

Analysis of the patient's characteristics was carried out to obtain their proportion by age, gender, education, and occupation using a self-designed questionnaire. The

obtained data were analyzed statistically using Chi-square. Utility assessments related to changes in their QoL were carried out using SF-36 questionnaire instrument. The utility values obtained (in %) were categorized: very good  $\geq 80$ ; good 75- <80; fair 60- <75, poor <60.

### Results and discussion

#### Characteristics of research subjects

Of the 250 target population, only 88 patients fulfilled inclusion criteria. The patient's characteristics including gender, age, education and occupation is showed in table 1.

Table1. Patient characteristics.

No	Characteristics	CKD patients stage-5 (%)	Distribution of the patients by comorbidity (%)					P
			NH	DN	NH+DN	CGN	IOKD	
1	Gender							
	Male	59	28.4	9.1	2.3	15.9	3.4	0.562
	Female	41	14.8	10.2	2.3	6.8	6.8	
2	Age (year)							
	15-24	6.8	2.3	9.1	0.0	3.4	0.0	0.007
	25-34	12.5	3.4	9.1	0.0	6.8	1.1	
	35-44	13.6	5.7	9.1	0.0	4.5	2.3	
	45-54	22.7	10.2	9.1	1.1	4.5	2.3	
	55-64	34.1	15.9	9.1	2.3	2.3	3.4	
	65-74	10.2	5.7	9.1	1.1	1.1	1.1	
3	Education							
	Elementary	14.8	6.8	3.4	1.1	2.3	1.1	0.446
	Junior High School	11.4	2.3	2.3	2.3	3.4	1.1	
	Senior High School	51.1	22.7	10.2	0.0	13.6	4.5	
	Diploma	4.5	2.3	0.0	0.0	1.1	1.1	
	Bachelor	18.2	9.1	3.4	1.1	2.3	2.3	
4	Occupation							
	Retired	2.3	0.0	1.1	0.0	0.0	1.1	0.033
	Others	3.4	1.1	1.1	0.0	1.1	0.0	
	Student	8.0	4.5	0.0	0.0	3.4	0.0	
	private employees	9.1	5.7	1.1	0.0	2.3	0.0	
	farmer	10.2	5.7	1.1	0.0	2.3	1.1	
	Government employees	12.5	4.5	3.4	1.1	1.1	2.3	
	Housemaid	25.0	9.1	6.8	1.1	4.5	4.5	
	Entrepreneur	28.4	12.5	4.5	2.3	8.0	1.1	

### Characteristics of the patients by gender

Based on gender of the patients diagnosed with stage-5 CKD with comorbidities period of August-October 2017, of the 88 patients, it was proved that most 59% of the patients were male, while there were only 41% of them were female. However, based on the results of statistical analysis, there were no significant differences between the number of male and female patients ( $p = 0.562$ ).

### Characteristics of the patients based on diagnosis and comorbidity

Based on the results of the study on stage 5 CKD patients with regular hemodialysis, it was obtained that the patients experienced many complications including distributed into 5 diagnosis groups and co-morbidities, namely nephropathy hypertension (NH), Diabetic Nephropathy (DN), Chronic Glomerulo Nephritis (CGN), and Infective Obstructive Kidney Disease (IOKN). Rank of the patients by comorbidities with decreasing order as shown in table 1 was CKD with NH (43%), CKD with CGN (23%), CKD with DN (19%), CKD with IOKN (10%), and CKD with NH and DN (5%).

### Quality of life

The utility assessment related to changes in the QoL of stage 5 CKD patients with hemodialysis was carried out using the SF-36 questionnaire instrument consisting of 36 questions. SF-36 is a health survey questionnaire that measures 8 health criteria namely physical function, limited role of physical health, body ache, general health perception, vitality, social function, emotional problems, and mental health. A score of 100 obtained describes a perfect health condition with a utility value of 1.0 and a score of 0 for mortality with a utility value of 0.0 [7]. The patient's QoL by dimension is demonstrated in Table 2.

As shown in table 2, all dimensions of the patient's QoL were categorized as poor that reached 45 to 95 % of the patients. Only health changes dimension of the patient's

QoL that was categorized as very good (81%). Overall, the mean value of the patient's QoL based on statistical analysis was  $47.01 \pm 18.41$ .

The patient's QoL according to comorbidities experienced by them is shown in table 3. Based on the percentage of QoL obtained that very good category was 4 (4.5%) patients consisting of IOKD diagnosis 81.24 (2.3%), CGN 80.69 (1.1%), and NH 82.63 (1.1%). The QoL of patients in the good category obtained 3 (3.4%) patients consisting of CGN 79.25 (2.3%) patients and NH 75.69 (1.1%) patients. The fair category of QoL of patients was 18 (20.4%) patients consisting of IOKD 60 (11%), DN 66.6 (5.7%), CGN 67.89 (8%), NH 71.35 (5.7%). The QoL of patients was classified as poor was 63 (71.7%) patients consisting of NH 38.36 (36%), CGN 38.03 (10.2%), DN 33.35 (14%), IOKD 36.89 (7%) and NH + DN 36.07 (4.5%). Comorbidities of CKD affect the QoL of stage 5 CKD patients with hemodialysis.

About 10% of people have some degree of CKD. The disease can develop at any age and several diseases can be risk factors for CKD. It, however, becomes more common in older people due to other health conditions including diabetes, hypertension, and heart disease.

Glomerular filtration rate (GFR) begins to fall by approximately 1% per year at the age of 40 years [1].

Distribution of the QoL of stage 5 CKD patients is shown in table 3. All the stage 5 CKD patients with complications of NH and DN had poor QoL. Additionally, most of the stage 5 CKD patients with complication of DN had also poor QoL. The same results were obtained for stage 5 CKD patients with other complications in which most of them had poor QoL. Statistical test indicated that there was a relationship between the QoL of patients with the diagnosis group of the patients ( $p = 0.039$ ).

**Table 2. Quality of life of the patients based on dimension.**

No.	Quality of life by dimensions	Very good		Good		Fair		Poor	
		n	%	n	%	n	%	n	%
1	Physical function	6	7	5	6	37	42	40	45
2	Limitations due to physical problems	21	24	5	6	0	0	62	70
3	Emotional	15	17	0	0	13	15	60	68
4	Energy	9	10	5	6	21	24	53	60
5	Welfare	4	5	1	1	14	16	69	78
6	Social Function	5	6	21	24	21	24	41	47
7	Pain	18	20	5	6	16	18	49	56
8	Health perception	0	0	0	0	4	5	84	95
9	Health changes	71	81	14	16	0	0	3	3

**Table 3. The QoL of the CKD patients based on the diagnosis group.**

No	Diagnosis	Average QoL of stage 5 CKD patients							
		Very good		Good		Fair		Poor	
		%	QoL	%	QoL	%	QoL	%	QoL
1	NH + DN (n=4)	0	0	0	0	0	0	4.5	36.07
2	IOKD (n= 9)	2.3	81.24	0	0	1.1	60	7	36.89
3	DN (n= 17)	0	0	0	0	5.7	66.6	14	33.35
4	CGN (n=20)	1.1	80.69	2.3	79.25	8	67.89	10.2	38.02
5	NH (n= 38)	1.1	82.63	1.1	75.69	5.7	71.35	36	38.36
	<b>Total (%)</b>	4.5		3.4		20.4		71.7	

### Conclusion

The QoL of stage 5 CKD patients with hemodialysis was classified as poor.

### Acknowledgement

The authors are grateful to Director of HAM Hospital Medan and Faculty of Pharmacy Universitas Sumatera Utara for providing technical facilities to conduct this study.

### References

- World kidney day. Assessed online 3<sup>rd</sup> September 2018 from: [www.worldkidneyday.org/faqs/chronic-kidney-disease/](http://www.worldkidneyday.org/faqs/chronic-kidney-disease/).
- O'Mara NB. Anemia in patients with chronic kidney disease. *Diabetes Spectrum* 2008; 21(1):12-9.
- Cruz MC, Andrade C, Urrutia M, Draibe S, Nogueira-Martins LA, Sesso RD. Quality of life in patients with chronic kidney disease. *Clinics* 2011; 66(6):991-5.
- Merkus MP, Jager KJ, Dekker FW, Boeschoten EW, Stevens P, Krediet RT. Quality of life in patients on chronic dialysis: self-assessment 3 months after the start of treatment. *American journal of kidney diseases* 1997; 29(4):584-92.
- Perlman RL, Finkelstein FO, Liu L, Roys E, Kiser M, Eisele G, Burrows-Hudson S, Messana JM, Levin N, Rajagopalan S, Port FK. Quality of life in chronic kidney disease (CKD): a cross-sectional analysis in the Renal Research Institute-CKD study. *American journal of kidney diseases* 2005; 45(4):658-66.
- Abdel-Kader K, Unruh ML, Weisbord SD. Symptom burden, depression, and quality of life in chronic and end-stage kidney disease. *Clinical Journal of the American Society of Nephrology* 2009; 4(6):1057-64.
- Ware Jr JE, Gandek B. Overview of the SF-36 health survey and the international quality of life assessment (IQOLA) project. *Journal of clinical epidemiology* 1998; 51(11):903-12.