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Research Article

Health-Related Quality of Life: Chronic Kidney Disease Patients in Riau

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ABSTRACT

Chronic Kidney Disease (CKD) can have an impact on quality of life which affects physical, mental health, functional status, and independence. The high prevalence of CKD will have an impact on the quality of life. The purpose of this study was to see the effect of the characteristics of CKD patients on the utility index score and to determine the dimensional correlation to the utility value measured using the SF-6D questionnaire. The study was conducted with an observational approach using a cross-sectional design in the CKD population in the city of Pekanbaru. The SF-6D questionnaire was administered to 122 patients to measure utility index scores. The difference in utility index scores based on patient characteristics was tested using Mann Whitney and Kruskal Wallis, while the correlation between domains and utility scores was used Pearson Correlation 0.61 ± 0.07. Score utility measured using the SF-6D instrument can distinguish utility values based on education and comorbidities. There is a strong correlation (> 0.797) between vitality and mental domains with the SF-6D utility index.

1. INTRODUCTION

Indonesia has implemented the National Health Insurance program since 2014. The program aims to ensure the fulfillment of basic decent living needs in the form of health care and protection benefits for every Indonesian citizen. The advancement of medical technology which is increasingly sophisticated and expensive absorbs huge funds, while the available funds are very limited. Therefore, it is necessary to carry out a health technology assessment, including the cost-effectiveness analysis (CEA). CEA is a method of health economic analysis carried out by comparing the costs and outcomes of health interventions (Andayani, 2013). Instruments for assessing outcome parameters in a single health index (utility index) are increasingly being used. Instruments that have been widely used include the EQ-5D and SF-6D (Nguyen et al., 2017). These instruments differ in the scoring algorithm and the descriptive system of the health state so that the utility index score results can vary based on the selected instrument. The EQ-5D questionnaire is a generic questionnaire to measure health-related quality of life (HRQoL) and has been widely used for population surveys, clinical practice, and clinical trials (Islam, Khan, Ferdous, & Rasker, 2017).

The prevalence of CKD incidence in Indonesia is increasing. According to the results of the 2018 Basic Health Research (Kementerian Kesehatan Republik Indonesia [Kemenkes RI], 2018), the prevalence of chronic kidney failure in Indonesia is 0.38%, or as many as 713,783 people. One of the provinces in Indonesia with a high prevalence value in Riau Province, which is 17,258 people. Based on basic health research in 2018, it was stated that there were 25.57% of CKD patients undergoing hemodialysis therapy in Riau Province (Kemenkes RI, 2018). Before undergoing dialysis, CKD patients will be very disturbed by their activities both for work and socializing,

as well as difficulty in sleeping because of the pain they feel. Besides that, various physical complaints that patients complain about depending on the severity of the disease and the complications that accompany it which are not the same from one patient to another. This is following the theory that CKD patients will feel discomfort, tightness, edema, chest pain, nausea or even vomiting, and muscle cramps that cause severe pain. For this reason, patients are very dependent on dialysis therapy to improve their quality of life. The hemodialysis process takes 4-5 hours generally will cause stress, the patient will feel fatigued, headaches, and cold sweat due to decreased blood pressure. HD therapy will also affect the patient's psychological state. Patients will experience disturbances in the process of thinking and concentration as well as disturbances in social relations. All of these conditions will cause a decrease in the quality of life of CRF patients undergoing HD therapy.

2. MATERIALS AND METHODS

Sample and Data Collection

The study was conducted with a cross-sectional design in the city of Yogyakarta. The inclusion criteria are respondents who are more than 18 years old and live in the province of Riau. The 122 respondents residing in the Riau region were given the SF-6D questionnaire, as well as questions related to patient characteristics (gender, age, education level, HD stage, Hb level, HD duration, and comorbid).

Statistic Analysis

Descriptive analysis was conducted to describe the characteristics of the respondents. To find out the correlation between the SF-6D was used Pearson correlation test. To determine the difference in the utility index based on the characteristics of the respondent, the Mann Whitney test is used in two categories and the Kruskal Wallis test is used if there are more than two categories.

3. RESULTS AND DISCUSSIONS

Hemodialysis is one of the therapies in patients with end-stage chronic kidney disease. Chronic kidney disease, especially with hemodialysis therapy, will affect various aspects of life such as physiological, psychological, and socio-economic aspects. This does not only have an impact on oneself but also affects the family and society. The process of hemodialysis therapy, which takes a long time, will affect various aspects of life. Patients can experience disturbances in concentration, thought processes to disturbances in social relationships. This condition will cause a decrease in the patient's quality of life (Mayuda, Chasani, & Saktini, 2017).

The results of the study on 122 respondents in the Pekanbaru area indicated that the mean utility value of CKD patients undergoing hemodialysis in the Pekanbaru area using the SF6D instrument was 0.61 ± 0.07. Various utility values can be caused by differences in sociodemography and clinical characteristics studied such as differences in age, duration of hemodialysis, and comorbidities (Javanbakht, Abolhasani, Mashayekhi, & Baradaran, 2012).

Based on **Table 1**, it is known that patients undergoing hemodialysis therapy in Pekanbaru City are mostly in the age range of 40-60 years with 66.4%. Most patients who received HD were at CKD stage 5 (92.6%). Of the 122 patients, 104 of them had comorbid more than 2. Patients who had HD for more than 5 years were 7.4%, while for less than 1 year were 24.6%. The utility score, the longer the patient underwent hemodialysis, the lower the quality of life. Also, high hemoglobin levels cause the average utility score to be high.

Age did not affect the patient's quality of life with a p-value > 0.05. According to Luy and Di Giulio (2006), a person's age does not have a significant effect on the quality of life. Research conducted on a population in Germany states that there is no significant difference in age differences in the quality of life and health of a person, differences in lifestyle and awareness of healthy life are one of the factors that determine whether or not a quality of life is good (Luy & Di Giulio, 2006).

In this study, the gender of men (56.6%) is more than women but has the same utility value as women, namely 0.61. Men have a greater risk of chronic kidney disease than women, this can be due to risk factors for systemic diseases such as diabetes mellitus, hypertension, glomerulonephritis, polycystic and lupus as well as heredity (Basir, Herlina, & Amirullah, 2018). Differences in behavior or habits between men and women may affect the incidence of chronic kidney disease. The results of a study in Nigeria showed that the risk factors for

Table 1. Characteristics of respondents

Characteristics	N	%	SF6D	
			Mean: SD	P-value
Age (years)				
18 - 40	21	17.2	0.63: 0.05	0.126
40 - 60	81	66.4	0.60: 0.07	
≥ 60	20	16.4	0.61: 0.08	
Gender				
Women	53	43.4	0.61: 0.07	0.569
Man	69	56.6	0.61: 0.07	
Level of education				
Primary school	20	16.4	0.62: 0.05	0.003
Secondary school	73	59.8	0.59: 0.07	
High School	29	23.8	0.64: 0.05	
HD Stage				
Stage 4	9	7.4	0.63: 0.02	0.324
Stage 5	113	92.6	0.61: 0.07	
Hb levels				
<10g / dL	61	50.0	0.60: 0.07	0.284
10 - 11 g / dL	33	27.0	0.61: 0.07	
> 11 g / dL	28	23.0	0.62: 0.06	
HD duration				
<1 year	30	24.6	0.62: 0.05	0.192
15 years	82	67.2	0.60: 0.08	
> 5 years	9	7.4	0.60: 0.03	
Comorbid				
2	18	14.75	0.64: 0.05	0.011
> 2	104	85.25	0.60: 0.07	

smoking and drinking were found to be more dominant in male respondents and significantly different from female respondents (Watila, Bwala, & Ibrahim, 2011).

In this study, an increase in Hb levels would increase the average quality of life score. This is consistent with previous studies which stated that an increase in hemoglobin levels resulted in improvements in all subscales of the patient's quality of life (Lefebvre et al., 2006). A study conducted by Thaweethamcharoen, Sakulbumrungsil, Vasuvattakul and Nopmaneejumruslers (2011), stated that increased hemoglobin levels significantly improve the quality of life of patients with chronic kidney disease in several conditions. This increase is not continuous, where the quality of life can experience a decrease in the increase in hemoglobin levels.

The SF-6D instrument can distinguish utility values based on sociodemography, however, significant differences are shown at the level of education and comorbidity (**Table 1**). After further SF6D analysis using Spearman correlation, it was found that there was a correlation between utility and education level, namely 0.181 with a value of p = 0.047 (**Table 2**). This means that the higher the level of education, the value of utility will increase. This can be seen from the average utility value, the higher the level of education, the higher the patient's quality of life. In contrast to the comorbid characteristics, namely -0.232, which means that the higher the comorbid, the lower the utility value. This is also supported by the utility average value in this study which decreases with the increasing number of comorbidity.

Education is one of the factors that influence the patient's quality of life. Based on **Table 1**, shows that the quality of life of patients undergoing hemodialysis is influenced by educational factors where the higher the level of education the better the quality of life of patients undergoing hemodialysis. This is following Ghozally's theory (Larasati, 2012), the quality of life will increase along with the high level of education obtained by individuals. The higher a person obtains an education, it is expected that the higher one's understanding of the disease experienced. A person's education level can support or influence a person's level of knowledge. Low education means low knowledge, the higher a person's education, the higher his/her knowledge. Patients who have higher education will have broader knowledge that also allows patients to control themselves in overcoming the problems they face, have high self-confidence, experience, and have the right estimate of how to deal with events and easily understand recommendations from health workers. Besides, it can reduce anxiety so that it can help individuals in making decisions (Notoatmodjo, 2011).

Table 2. Spearman[1] and Pearson[2] Correlation

Characteristics	Correlation	P-Value
Educationa[1]	0.181	0.047
Comorbides[1]	-0,232	0.010
Creatinin serum[2]	0.043	0.639

Table 3. The correlation of the SF6D dimensions to utility

No.	Dimensions	*Pearson Correlation*	*P-value*
1	Physical	-0,714	0,000
2	Role	-0.506	0,000
3	Social	-0,601	0,000
4	Pain	-0,736	0,000
5	Mental	-0,792	0,000
6	Vitality	**-0,797**	**0,000**

Apart from education level, comorbidity also correlates with utility. Based on research data, as many as 85.25% of CKD patients in Pekanbaru who underwent hemodialysis had more than two comorbid. This study is in line with the research of Fraser et al (2020), which states that the highest number of comorbid is mild to moderate CKD, which is more than two. as much as 34.1%. Based on the data in this study, CKD patients who underwent hemodialysis had at least two comorbid. According to research by Pereira, Mendes, Fragoso, Silva and Neves (2019), high comorbidities will cause risk factors for cardiovascular mortality. Morbidity will increase in the presence of hemodialysis. Although patients can live longer on dialysis, the patient's quality of life will decline. Several comorbidities were found, such as hypertension, diabetes mellitus, and hyperlipidemia. According to research by Chiang et al (2004), physical function will be influenced by the number of comorbidities, age, and serum creatinine.

Based on **Table 2**, the correlation coefficient is 0.043, which means that SF6D utility and serum creatinine levels have a very weak positive correlation. This means that the higher serum creatinine levels will increase the utility of SF6D. It can also be concluded that based on the correlation coefficient test, because the p-value is 0.639 which is greater than 0.05, the initial hypothesis of the correlation analysis is not rejected. It is concluded that there is no correlation between utility SF6D and serum creatinine levels.

The validity of the internal construct was carried out by using the Pearson correlation test between dimensions on the SF-6D questionnaire. The validity of the internal dimensional constructs of the SF-6D showed a very strong correlation with the utility index of the SF-6D which was vitality followed by mental, pain, and physical dimensions, while the limitation of the role and social function showed a strong correlation (**Table 3**). Based on the result of the dimensional correlation to the utility score, the result is that there is a correlation but it is negative. This means that the SF6D instrument, the higher the vitality, the lower it will be.

4. CONCLUSIONS

This study shows the average utility value of CKD patients is0.61 ± 0.07. SKore utility measured using the SF-6D instrument can distinguish utility values based on education and comorbidities. There is a strong correlation (> 0.797) between vitality and mental domains with the SF-6D utility index.

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