

# Family Support as The Key Factor that Influence Quality of Life based on SF-36 among CKD on Hemodialysis Patients

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**ABSTRACT: Background:** Chronic kidney disease (CKD) is an emerging public health problem that affects 5–10% of the world population. With the availability of recent treatment modalities including renal replacement therapy, the survival of CKD patients has increased considerably which has led to an increased focus on health-related quality of life (HRQoL). Health-related quality of life represents the impact of the disease or its treatment on the subjective feelings of patients about their physical, mental, spiritual, emotional, social, and functional wellbeing. Quality of life among dialysis patients has been shown to be lower as compared to pre-dialysis CKD patients and is an independent risk factor for mortality in dialysis patients. Family support is an important factor that serves as a support system for the patients to face health problems.

**Purpose:** To examine levels of family support and the correlation of family support and quality of life (QoL) among CKD on hemodialysis (HD) patients.

**Methods:** This cross-sectional observational study was conducted in August–November 2020 and recruited chronic HD patients from Wahidin Sudirohusodo Hospital in Makassar, Indonesia. The demographic data of HD patients were collected. Quality of life was assessed using the validated Indonesian version of the Short Form-36 (SF-36) questionnaire which consists of Physical Component Summary (PCS) and Mental Component Summary (MCS) and family support that was assessed using the validated “Dukungan Keluarga” questionnaire. The data were analyzed using SPSS version 22.0 statistical software.

**Results:** A total of 60 subjects (39 males and 21 females) were included. The mean age was  $48.9 \pm 12.1$  years old. About 55% of the subjects was graduated from college. About 86.7% subject was married. About 55% of the subject is not working. About 53.3% of subjects have a family income lower than the regional minimum wage. The mean duration of HD was  $22.1 \pm 28.6$  months. The mean score of family support was  $53 \pm 8.2$ . Family support score has a significant positive correlation with each domain of PCS and MCS, the higher score of family support is in accordance with higher score of PCS and MCS.

**Conclusion:** CKD on HD patients' quality of life was significantly affected by family support.

**Keywords:** hemodialysis, quality of life, chronic kidney disease, family support, SF-36

## 1. INTRODUCTION

Chronic Kidney Disease (CKD) is defined as the presence of kidney damage or abnormal kidney function for at least 3 months.<sup>1</sup> Chronic kidney disease is an emerging public health problem that affects 5–10% of the world population, with adverse outcomes due to the progressive loss of kidney function, cardiovascular disease (CVD), and premature death. Data from *Indonesian Renal Registry (IRR)* year 2018 showed that there are 66.433 new Hemodialysis (HD) patients and 132.142 active HD patients in Indonesia, which is patients that still receiving maintenance HD until December 31<sup>st</sup> 2018. This shows a significant increase compared to the year 2017, where there are 30.831 new HD patient and a total of 77.892 active patients until December 31<sup>st</sup> 2017.<sup>2</sup>

With the availability of recent treatment modalities including renal replacement therapy, the survival of CKD patients has increased considerably which has led to an increased focus on health-related quality of life (HRQoL) as an integral part of evaluating treatment effectiveness and assessing health outcomes of these patients.<sup>3</sup> The idea of HRQOL is not new. In 1946, the constitution of the World Health Organization (WHO) defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”<sup>4</sup> The health-related quality of life concept addresses the effects of individual health (including the effects of both disease and its treatment) on physical, cognitive, and social functioning in day-to-day life.<sup>5</sup> *The World Health Organization Quality of Life (WHOQOL) Group* defined QoL as ‘individuals’ perception of their position in life in the context of the culture and value systems in which they live in relation to their goals, expectations, standards, and concerns.<sup>6</sup>

Health-related quality of life represents the impact of the disease or its treatment on the subjective feelings of patients about their physical, mental, spiritual, emotional, social, and functional wellbeing. Health-related quality of life deteriorates as kidney function worsens. Quality of life among dialysis patients has been shown to be lower as compared to pre-dialysis CKD patients and is an independent risk factor for mortality in dialysis patients.<sup>7</sup> There is deterioration in physical health function in patients with chronic kidney disease requiring dialysis and also in the pre-dialysis stage. Patients known to have chronic kidney disease have physical, psychological, and social limitations that affect their standard of living and quality of life. In addition, HD brings additional changes in daily life. It is quite significant impacts on the functionality and the quality of life.<sup>8</sup>

Dialysis comes with a variety of life changes including diet, work, travel, activities of daily living, and spending most of their days for hours in the hospital. Given the intensity of dialysis treatment, receiving support from family members is beneficial for the patients who are already facing many challenges. Family support is an important factor that serves as a support system for the patients to face health problems.

Limited studies are available regarding patients with CKD on HD, family support, and quality of life.<sup>9</sup> This kind of study is also still limited in Indonesia. Study by Winata et al at the year 2017 using WHOQoL-BREFF questionnaires to assess the quality of life of subjects showed that subjects with excellent family support had 2,6 times bigger possibility to have an excellent quality of life compared to those who had insufficient family support.<sup>10</sup>

This research was intended to explain the effect of family support on the quality of life of CKD on HD patients based on SF-36.

## 2. MATERIAL AND METHODS

*Research Design* This is a cross-sectional observational study conducted on August-November 2020 at the HD unit of Wahidin Sudirohusodo Hospital.

*Research Subjects* Patients were recruited by a consecutive sampling method from the HD unit of Wahidin Sudirohusodo Hospital. The inclusion criteria were age older than or equal to 18 years old, signed and agreed with research informed consent, were receiving HD regularly for at least 3 months, and not pregnant.

*Research Data Collection* Collection of demographic variables (age, gender, education level, marital status, occupation, family income), frequency, and duration of HD. The QoL was assessed using the validated Indonesian version of SF-36 questionnaire<sup>11</sup>, which consist of 36 questions from 8 domains (physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions). The raw data obtained from the patients were first transformed to a pre-coded numeric value of a 0-100 possible range, with higher transformed scores always reflecting better quality of life. In the final step of the scoring process, items in the same scale were averaged together to create the scale score. Scores were then grouped into summary scores: mental component summaries (MCS) score and physical component summaries (PCS) score. Family support was assessed using a validated *Dukungan Keluarga* questionnaire. The score from 15 item question was a scale from 0-60. Family support was good at score >40, moderate at score 21-40, and poor at score ≤20.<sup>12</sup> The author uses OrthoToolKit (<https://www.orthotoolkit.com/sf-36/>) as the tool to calculate the domain of physical and mental component summary of SF-36

*Research Data Analysis* . The analysis was done using SPSS version 22.0. Statistical analysis was done by descriptive statistical analysis, frequency distribution test and Pearson's correlation. Statistical test considered significant if **p <0,05**.

*Ethical Clearance* This study protocol was approved by Health Research Ethics Commission of Hasanuddin University, Medical Faculty, with approval letter number 370/UN4.6.4.5.31/PP36/2020

## 3. RESULTS

### *Subject's Characteristics*

The current analysis included a total of 60 subjects CKD on HD patients. The subject's mean age was 48,9±12,1 years old. There are more male patients than females (39 males and 21 females). The subject's mean family income was 4,8±4,7 million rupiahs. The mean duration of HD was 22,1±28,6 months. The mean score of family support was 53±8,2, range from 38-60 (scale 0-60). The subject's characteristic describes in Table 1.

Table 1. Subject Characteristics (n=60)

Variable	n	%
Gender		
Men	39	65,0
Women	21	35,0

Education Level		
Elementary/Junior/Senior School	High	27
		45,0
College		33
		55,0
Marital status		
Married		52
		86,7
Not married		8
		13,3
Occupation		
Government employee		14
		23,3
Private sector		13
		21,7
Not working		33
		55,0
Family Income		
Less than minimum wage		32
		53,3
Equal or above minimum wage		28
		46,7
Frequency of HD (hours)		
4		1
		1,7
10		31
		51,7
12		28
		46,7
Family Support		
Good		52
		86,7
Moderate		8
		13,3

*Descriptive Analysis Score of PCS and MCS*

Descriptive Analysis Score of PCS and MCS was shown on Table 2. Mean score domain of PCS consist of physical function 52.1±34.7, role limitation caused by physical 28.3±44.5, pain 67±26.6, and general health 52.2±16.0 with total score 199.5± 92.6. Mean score domain of MCS consist of energy 56.8±23.4, role limitation caused by emotional 45±50.2, emotional well-being 77.9±19.5, and social function 47.7±36.2, with total score 227.3±109.5.

Table 2. Descriptive Analysis Score of PCS and MCS

Variable	Score Mean±SD (Min, Max)
<b>PCS</b>	
Physical Function	52.1±34.7 (0,100)
Role Limitation Caused by Physical	28.3±44.5 (0,100)
Pain	67±26.6 (10,100)
General Health	52.2±16.0 (20,85)
Total score	199.5± 92.6 (42.5,365)
<b>MCS</b>	
Energy	56.8±23.4 (5,100)
Role Limitation Caused by Emotional	45±50.2 (0,100)
Emotional Well-being	77.9±19.5 (28,100)
Social Function	47.7±36.2 (0,100)
Total score	227.3±109.5 (48,400)

PCS=Physical Component Summary; MCS=Mental Component Summary; SD=standard deviation

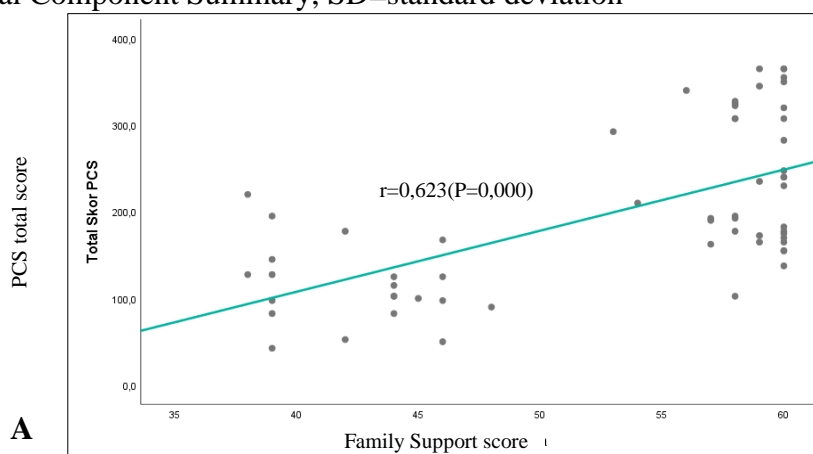
*Correlation of Family Support with PCS and MCS*

Bivariate analysis of family support with PCS and MCS showed in Table 3. There is a significant positive correlation of family support with all domain of PCS which is physical function (p=0,000), role limitation caused by physical (p=0,000), pain (p=0,001) and general health (p=0,002). The higher score of family support, the higher total score of PCS. (Figure 1) There is a significant positive correlation of family support with all domain of MCS which is energy (p=0,000), role limitation caused by emotional (0,000), emotional well-being (p=0,000), and social function (p=0,000) (Table 3). The higher score of family support, the higher total score of MCS. (Figure 1)

Table 3. Correlation of Family Support Score and Quality of Life Based on SF-36 Score (n=60)

Variable	Family Support	
	r <sup>a</sup>	P
<b>PCS</b>		
Physical Function	0,614	<b>0,000</b>
Role Limitation Caused by Physical	0,437	<b>0,000</b>
Pain	0,402	<b>0,001</b>
General Health	0,391	<b>0,002</b>
<b>MCS</b>		
Energy	0,517	<b>0,000</b>
Role Limitation Caused by Emotional	0,500	<b>0,000</b>
Emotional Well-being	0,460	<b>0,000</b>
Social Function	0,504	<b>0,000</b>

r=coefficient; <sup>a</sup>Pearson correlation test; PCS=Physical Component Summary; MCS=Mental Component Summary; SD=standard deviation



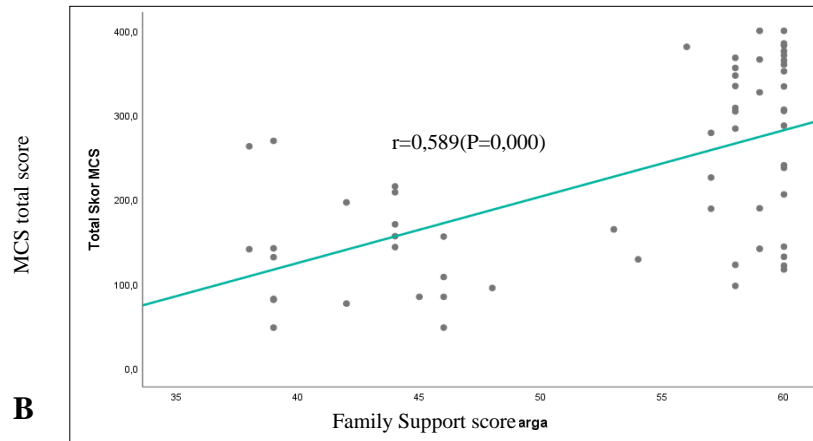


Figure 1. Correlation of family support with (A) PCS and (B) MCS total score

#### 4. DISCUSSION.

The results of this study showed a positive and significant correlation between family support and all domain of the PCS and MCS of CKD on HD patients. People known to have CKD have physical, psychological, and social limitations that affect their standard of living and quality of life.<sup>8</sup> CKD could be characterized as a 'family disease' because of its emotional impact on the whole members of the family. Every family has to adapt to some problems such as the daily movement to and from the dialysis unit, the possible need for a change of residence to the nearest dialysis centre, or any financial restrictions and requirements.<sup>13</sup>

When encountering stressful situations, people could look at the events positively by using their defence mechanisms better if they can receive the required social support from the people around, especially from their family.<sup>14</sup> The QoL of patients suffering from chronic kidney disease is shaped through social and family relationships. Not only family but also good social relationships are of great importance and are the source of positive feelings and self-esteem and improve the QoL. On the other hand, a lack of support and acceptance from family and friends has a negative influence on patients' health through lower self-esteem, and feelings of hopelessness and helplessness, all of which causes lower mood, depression, feelings of resignation, and a sense of life meaninglessness.<sup>15</sup>

The support of patients with renal disease from family, friends, and their carers is associated with increased compliance to the regimen.<sup>16</sup> Study by MIMOZA et al using SF-36 questionnaire showed that poor family support scored significantly worse in quality of life on dialysis patient.<sup>17</sup> Bestari et al using the Indonesian version of WHOQOL-BREF questionnaire also found that CKD patients' quality of life is influenced by family support.<sup>18</sup>

#### 5. CONCLUSION

Quality of life based on SF-36 in patient with CKD on HD at Wahidin Sudirohusodo Hospital Makassar was significantly correlated to family support. Quality of life assessment should be applied periodically to monitor the alteration of patient's QoL. It is very important to include psychosocial intervention as part of the holistic treatment of patient with CKD on HD.

*Study strength and limitations.* This is the first study about quality of life in Wahidin Sudirohusodo Hospital in the CKD population whether or not undergoing HD treatment. To

the best of our knowledge, this is also the first study to see the correlation of family support and quality of life of CKD on HD patients using the SF-36 questionnaire in Indonesia. This study was done with a limited sample size. Not all the CKD patient was involved and only a single time measurement was done.

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