

Characteristics and quality of life of chronic kidney disease patients undergoing hemodialysis in Surabaya

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Background: Quality of life is a complex concept that includes an individual's physical, mental, social, and environmental health. Chronic Kidney Disease (CKD), a degenerative condition affecting kidney function, can greatly influence the quality of life of patients.

Objective: To characterize the quality of life among CKD patients receiving hemodialysis in Surabaya.

Methods: The study sample consisted of 96 participants meeting the inclusion criteria in Surabaya. This research employed a descriptive observational approach utilizing a multistage random sampling method. Public health centers were selected using a cluster sampling technique, and respondents were sampled through a simple random sampling method. The quality of life questionnaire from WHOQOL-BREF was used as the data collection instrument.

Results: Findings indicate that CKD patients undergoing hemodialysis in Surabaya predominantly fall within the 55-64 age group (31 respondents, 32.3%), with 50 female respondents (52.1%), 52 respondents having completed senior high school (54.2%), and 56 respondents not currently employed (58.7%). The majority of CKD patients undergoing hemodialysis reported a good quality of life (62 respondents, 64.6%). However, in the physical domain, 20 respondents (20.8%) experienced a decline in quality of life, reaching the moderate category.

Conclusion: This study concludes that CKD patients undergoing hemodialysis in Surabaya generally exhibit a good quality of life, particularly among individuals aged 55-64, predominantly women, with a senior high school education level, and not currently employed.

Keywords: Chronic Kidney Disease, Hemodialysis, Multidimensional, Quality of Life.

INTRODUCTION

Chronic Kidney Disease (CKD) is a long-term condition affecting the kidneys' structure or function, lasting for a minimum of three months and significantly impacting one's health. The diagnosis of CKD involves various criteria such as the presence of kidney damage markers like albuminuria, abnormalities in urine sediment, electrolyte imbalances, histological findings, structural anomalies visible on imaging, or a history of kidney transplant. Additionally, a reduction in Glomerular Filtration Rate (GFR) below 60 ml/minute/1.73 m² is a key indicator of CKD.¹

Chronic Kidney Disease (CKD) is a global health issue.² Based on the Global Burden of Disease study (2020), in 2017 globally there were 1.2 million individuals who died due to CKD.³ According to 2018 *Riset Kesehatan Dasar* (RISKESDAS) data, the number of CKD sufferers reached 713,783 people. The prevalence of CKD in Indonesia

in the population aged fifteen years and over diagnosed by a doctor reached 0.38%.⁴ In East Java, the prevalence of CKD reached 0.29%.⁴

One of the treatment options available for Chronic Kidney Disease (CKD) patients is hemodialysis (HD). Hemodialysis involves the removal of metabolic waste products and excess fluids from the body of CKD patients through passive diffusion across a semipermeable membrane, thereby reducing the concentration gradient from the bloodstream into the dialysate. The aim is to reduce albumin secretion, relieve symptoms of uremia, and improve the clinical picture of CKD patients.⁵ In 2017, the number of hemodialysis procedures reached 1,694,432 and increased to 2,754,409 in 2018. In East Java, there were 9,607 new patients undergoing hemodialysis.⁶ CKD patients with hemodialysis having two to three times a week with a mean pf duration of four to five hours.⁷ Hemodialysis in CKD patients can generally have an impact on aspects

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of daily life, such as financial problems, pain, discomfort, difficulty maintaining work, loss of sexual desire, frustration, feelings of hopelessness, and even suicide attempts.⁵

Quality of life encompasses how individuals evaluate their life circumstances, encompassing physical health, psychological well-being, social relationships, and environmental conditions. This assessment is influenced by various cultural backgrounds, belief systems, personal goals, hopes, anticipations, and benchmarks, making it a complex and nuanced concept.⁸ Quality of life is influenced by two main categories of factors. The first category comprises socio-demographic factors such as gender, age, level of education, and occupation. The second category includes medical factors like the duration and frequency of hemodialysis sessions, as well as the efficacy of the hemodialysis procedure.⁹ A study conducted by Wu et al demonstrates that age, education, and employment significantly impact quality of life, whereas gender does not exhibit a significant influence on quality of life.¹⁰ Meanwhile, research conducted by Hidayah (2015) shows that there is no significant influence between age, educational status and marital status on quality of life.¹¹ However, research conducted at RSA Bandar Lampung found the most in the age range 59 – 66 years were 17 people (30%).¹²

The objective of this study was to assess the quality of life of Chronic Kidney Disease (CKD) patients receiving hemodialysis in Surabaya.

MATERIAL AND METHODS

This study is a descriptive observational investigation employing a cross-sectional design. The research was carried out at multiple health centers including Tambak Rejo Health Center, Wall Dukuh Health Center, Gading Health Center, Pucang Sewu Health Center, Rangkah Health Center, Medokan Ayu Health Center, Made Health Center, Bangkingan Health Center, Sememi Health Center, Simomulyo Health Center, South Krembangan Health Center, East Perak Health Center, Kenjeran Community Health Center, Sidotopo Wetan, Puskesmas Putat Jaya, Puskesmas Kebonsari, Puskesmas Wiyung, Puskesmas Ngagel Rejo, and Puskesmas Sidosermo during the period of September to November 2023. The population in this study were chronic kidney disease patients aged over 18 years who were undergoing hemodialysis in Surabaya. The hemodialysis process is carried out in hospitals that have HD facilities where every HD patient takes a referral to the public health center. Sampling used the Multistage Random Sampling method. First, taking a sample of community health centers using a cluster sampling technique resulted in 19 public health centers. Second, sampling respondents from each health center used a simple random sampling technique with the

Lemeshow formula so that a total sample of 96 respondents was obtained which was used to describe the quality of life of CKD patients undergoing hemodialysis. The inclusion criteria for this study were CKD patients who had requested a hemodialysis referral at a public health center in Surabaya, had previously undergone hemodialysis, were aged 18 years or above, and possessed good communication and literacy skills.

The data collection instrument in this research is the Quality-of-Life questionnaire which has been translated into Indonesian and has gone through a validation process, namely WHOQOL-BREF.¹³ The survey is organized into four domains: physical, psychological, social relationships, and environmental domains. Data analysis in this research involved frequency distribution using SPSS software version 27 to characterize the quality of life among CKD patients receiving hemodialysis. This research has been declared ethically sound by the Health Research Ethics Committee, Faculty of Medicine, Ciputra University with number 061/EC/KEPK-FKUC/VII/2023.

RESULTS

The results of the research will be explained in subchapter tables including respondent characteristics, frequency distribution of quality of life in general, and frequency distribution of quality of life based on dimensions.

Based on the research results, [table 1](#) above shows that the total number of respondents who were willing to take part in this research was 96 respondents. Based on the age of the respondents, the age range was 55-64 years as many as 31 respondents (32.3%), age 45-54 years as many as 18 respondents (18.8%), age 35-44 years as many as 15 respondents (15.6%), age 65-74 years as many 15 respondents (15.6%), 7 respondents aged 25-34 years (7.3%), 5 respondents aged 18-24 years (5.2%), and 5 respondents aged > 75 years (5.2%). Based on gender, 50 respondents (52.1%) were female, while 46 respondents (47.9%) were male. Based on the latest education, 52 respondents (54.2%) completed senior high school, 21 respondents (21.9%) completed diploma/college, 16 respondents (16.7%) completed elementary school, and 7 respondents (7.3%) completed junior high school. Based on job, 56 respondents (58.7%) did not work and 40 respondents (41.3%) worked.

According to the findings presented in [Table 2](#), the overall assessment of the quality of life among CKD patients undergoing hemodialysis indicates that most respondents, 62 individuals (64.6%), fall into the “good” category, while 33 respondents (33.3%) are classified as “very good,” and only 2 respondents (2.1%) are categorized as “moderate.”

Based on the research results in [table 3](#) below, it shows that the quality of life of CKD patients undergoing



Table 1. Distribution of Respondent Characteristics Based on Age, Gender, Last Education, Job

Respondent Characteristics	Frequency (n=96)	Percentage (%)
Age		
18 – 24	5	5.2
25 – 34	7	7.3
35 – 44	15	15.6
45 – 54	18	18.8
55 – 64	31	32.3*
65 – 74	15	15.6
>75	5	5.2
Gender		
Female	50	52.1*
Male	46	47.9
Last Education		
Completed Elementary School	16	16.7
Completed Junior High School	7	7.3
Completed Senior High School	52	54.2*
Completed Diploma/ College	21	21.9
Job		
Unemployed	56	58.7*
Employed	40	41.3

Table 2. General Description of Quality of Life in CKD Patients Undergoing Hemodialysis

Quality of Life	Frequency (n=97)	Percentage (%)
Severe	0	0
Moderate	2	2.1
Good	62	64.6*
Very good	32	33.3

hemodialysis based on dimensions is in the good category, namely the physical dimension of 60 respondents (62.5%), the psychological dimension of 57 respondents (59.4%), the social dimension of 56 respondents. (58.3%), and environmental dimensions were 55 respondents (57.2%). Quality of life is in the moderate category, namely the physical dimension of 20 respondents (20.8%), the social dimension of 13 respondents (13.5%), the psychological dimension of 6 respondents (6.3%), and the environmental dimension of 3 respondents. (3.1%).

DISCUSSION

Based on the demographic data, it is observed that the average age of the research participants ranged from 55 to 64 years, comprising a total of 31 respondents, which accounts for 32.3%. This is in line with research conducted at RSA Bandar Lampung, the most in the age range 59 – 66 years were 17 people (30%).¹² Age is closely related to the prognosis of the disease and the life expectancy of those aged over 55 years, the tendency to experience various complications that worsen

kidney function is very large when compared to those aged under 40 years.¹⁴

In this study, the number of women was greater than men, namely 50 respondents (52.1%). This is the same as research conducted at RSUD dr. Moewardi has more women than men, namely 26 patients (70%).¹⁵ This research is in line with the concept of Budiarto & Anggraeni (2002) which states that every disease can attack humans, both men and women. This can be attributed in part to variations in work routines, lifestyle choices, genetic factors, or physiological conditions.¹⁶ The latest education frequency distribution was mostly patients with an education level completed senior high school, there were 52 respondents (54.2%). This is the same as research conducted at the Prof. Central General Hospital. Dr. R.D. Kandou Manado stated that the highest level of education was high school/vocational high school with 57 (61.3%) respondents and the lowest was elementary school with 2 (2.2%).¹⁰ The frequency distribution based on work was mostly patients who did not work as many as 56

**Tabel 3. Description of the Quality of Life of CKD Patients Undergoing Hemodialysis Based on Dimensions**

Dimensions	Frequency (n=97)	Percentage (%)
Physical Dimension (D1)		
Severe	0	0
Moderate	20	20.8
Good	60	62.5*
Very Good	16	16.7
Psychological Dimension (D2)		
Severe	0	0
Moderate	6	6.3
Good	57	59.4*
Very Good	33	34.4
Social Dimension (D3)		
Severe	0	0
Moderate	13	13.5
Good	56	58.3*
Very Good	27	28.1
Environmental dimension (D4)		
Severe	0	0
Moderate	3	3.1
Good	55	57.3*
Very Good	38	39.6

respondents (58.7%). This is the same as research conducted at the Ciamis District Hospital in 2018, which showed that the highest frequency of patients who did not work was 48 people (66.7%) and the lowest was in the working category, 24 people (33.3%).¹⁴

Overall, the majority of CKD patients receiving hemodialysis reported their quality of life as good, with 62 participants (64.6%). In line with research conducted at RSA Bandar Lampung, the majority were in the good category with 46 respondents (81%).¹² The quality of life of CKD patients undergoing hemodialysis can be influenced by a number of factors. These factors involve the level of knowledge, support from family, motivation, and Body Mass Index (BMI) in CKD patients who are undergoing hemodialysis therapy.¹⁷

Quality of life based on physical, social, welfare and environmental dimensions is all in the good category. This line with the results of a study by Musniati et al. in 2023, which indicated that all four dimensions were rated as being in the favorable category.¹⁸ However, the physical dimension has a more moderate quality of life than other dimensions. The quality of life of respondents, which is mostly in the moderate category, can be caused by respondents' assessment that they are less or dissatisfied with their current health and not many respondents think that their illnesses are very difficult to cure, especially those that have lasted a long time. Adherence to managing proper nutrition, activity patterns,

and sleep behavior can improve the quality of life of CKD patients undergoing hemodialysis therapy. Apart from that, fluid restriction factors also affect the physical health of CKD patients undergoing hemodialysis therapy.¹²

Individuals who have poor health conditions and feel dissatisfied with their health conditions do not necessarily rate their quality of life as poor. This description supports the definition and concept of quality of life, which is multidimensional, not only about a person's health, but broader because it includes a person's function and role socially, their relationship to the environment and their spirituality.¹⁹ Positive social interactions and supportive relationships can provide satisfaction and happiness, even if physical challenges are present. These dimensions are interrelated and influence each other, creating a complex picture of a person's quality of life. Research conducted at the Raden Mattaher Jambi Regional Hospital stated that with family support, patients felt supported and were always ready to provide help and assistance if needed.¹⁷ Therefore, the four dimensions in the concept of quality of life must be considered and if possible improved. Ways to improve physical dimensions include maintaining a healthy lifestyle and managing stress.

The study's limitations comprise a relatively small sample size from a specific region, potentially constraining the generalizability of findings to a wider population of CKD patients undergoing hemodialysis. Furthermore, the

utilization of a cross-sectional design offers a momentary view of quality of life, potentially restricting the capacity to capture changes in quality of life longitudinally. Moreover, the dependence on self-reported data may introduce response bias or reporting inaccuracies, potentially affecting the overall validity of the results.

CONCLUSION

The study finds that the majority of chronic kidney disease (CKD) patients undergoing hemodialysis are in their mid-50s to mid-60s, mainly female, with a significant portion having completed senior high school and not currently employed. Despite reporting a generally good quality of life, physical health is often rated lower, highlighting the importance of factors such as nutritional management and activity patterns. This suggests a need for holistic intervention strategies focusing on physical health to enhance the overall well-being of CKD patients on hemodialysis.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ETHICS CONSIDERATION

This study has been approved by the Health Research Ethics Committee of the Faculty of Medicine, Ciputra University, letter number 061/EC/KEPK-FKUC/VII/2023.

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AUTHOR CONTRIBUTION

ABL contributed to the conception and design of the paper. Authors ABL, YS, and HTHS drafted the article, critically reviewed the text, and approved the final version for publication.

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