



Measuring the Impact of Changes in Quality of Life in Elderly People After Hemodialysis in Indonesia: Quantitative Analysis of Physical, Psychological, Functional and Social Aspects

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ABSTRACT

The increasing number of elderly people in Indonesia brings new challenges to the health sector, especially related to degenerative diseases such as chronic kidney disease (CKD). Elderly people with CKD undergoing hemodialysis face various changes in quality of life in physical, psychological, functional, and social aspects. Although hemodialysis can extend life expectancy, its impact on the quality of life of elderly patients often receives less attention. The purpose of this study was to use quantitative methodology to evaluate the effect of changes in quality of life in elderly people after hemodialysis in Indonesia. The four main dimensions of this analysis are physical, psychological, functional, and social. The method used in this study was a cross-sectional design with quantitative methods. The study sample consisted of 135 elderly patients undergoing hemodialysis at PKU Muhammadiyah Hospital, Yogyakarta. Data was collected using a structured questionnaire that measured quality of life based on four aspects. Data analysis was carried out using the

regression method with the SmartPLS approach to assess each aspect's effect on patients' quality of life. The results showed that all aspects studied significantly affected the quality of life of elderly people after hemodialysis. Social aspects had the most significant influence ($p = 0.004$), followed by psychological ($p = 0.048$), functional ($p = 0.038$), and physical ($p = 0.030$) aspects. Elderly people undergoing hemodialysis experience limitations in physical activity, emotional stress, decreased body function, and social isolation that affect their overall well-being.

Keywords: Health-related quality of life; hemodialysis; older persons

ABSTRAK

Meningkatnya jumlah penduduk usia lanjut di Indonesia membawa tantangan baru bagi sektor kesehatan, terutama terkait dengan penyakit degeneratif seperti penyakit ginjal kronis (PGK). Lansia dengan PGK yang menjalani hemodialisis menghadapi berbagai perubahan kualitas hidup baik dari aspek fisik, psikologis, fungsional, maupun sosial. Meskipun hemodialisis dapat memperpanjang harapan hidup, dampaknya terhadap kualitas hidup pasien usia lanjut sering kali kurang mendapat perhatian. Tujuan dari penelitian ini adalah untuk menggunakan metodologi kuantitatif guna mengevaluasi pengaruh perubahan kualitas hidup pada lansia pasca-hemodialisis di Indonesia. Empat dimensi utama analisis ini adalah fisik, psikologis, fungsional, dan sosial. Metode dalam penelitian ini menggunakan desain cross-sectional dengan metode kuantitatif. Sampel penelitian terdiri dari 135 pasien usia lanjut yang menjalani hemodialisis di RS PKU Muhammadiyah Yogyakarta. Pengumpulan data dilakukan dengan menggunakan kuesioner terstruktur yang mengukur kualitas hidup berdasarkan empat aspek. Analisis data dilakukan dengan menggunakan metode regresi dengan pendekatan SmartPLS untuk menilai pengaruh masing-masing aspek terhadap kualitas hidup pasien. Hasil penelitian menunjukkan bahwa semua aspek yang diteliti berpengaruh signifikan terhadap kualitas hidup lansia pasca hemodialisis. Aspek sosial memiliki pengaruh terbesar ($p = 0,004$), diikuti oleh aspek psikologis ($p = 0,048$), fungsional ($p = 0,038$), dan fisik ($p = 0,030$). Lansia yang menjalani hemodialisis mengalami keterbatasan dalam aktivitas fisik, stres emosional, penurunan fungsi tubuh, dan isolasi sosial yang memengaruhi kesejahteraan mereka secara keseluruhan.

Kata kunci: Kualitas hidup terkait kesehatan; hemodialisis; orang lanjut usia

INTRODUCTION

Indonesia is experiencing a substantial increase in its geriatric population as a result of global demographic changes (Anugrah et al., 2024). The proportion of the population aged 60 years and older is anticipated to continue to rise in the future decades, as indicated by data from the Indonesian Central Statistics Agency (BPS) (Elmaghfuroh et al., 2022). This phenomenon not only reflects success in increasing life expectancy but also raises new challenges in the health sector, especially related to degenerative and chronic diseases (Asseggaf & Ulfah, 2022). One of the health conditions often experienced by the elderly is chronic kidney disease (CKD), which in the final stages requires kidney replacement therapy such as hemodialysis (Saxon et al., 2021). Hemodialysis is a medical procedure that is designed to supplant the kidneys' role in the filtration of blood. However, this procedure frequently has a substantial effect on the quality of life of patients, particularly those who are elderly (Galaviz et al., 2018).

Quality of life (QoL) is a multidimensional concept that includes physical, psychological, functional, and social aspects (Xu et al., 2022). In elderly people undergoing hemodialysis, changes in quality of life can occur due to various factors, including physical limitations, psychological burden, decreased body function, and changes in social interactions (Liu et al., 2018). Previous studies have shown that hemodialysis patients often experience decreased quality of life due to physical symptoms such as fatigue, pain, and sleep disturbances, as well as psychological impacts such as depression and anxiety (Damanik, 2020). In addition, functional limitations and changes in social roles can also affect the ability of older adults to participate in daily activities and maintain social relationships (Perissinotto et al., 2019).

In Indonesia, the challenges in providing optimal hemodialysis care to the elderly are increasingly complex (Faisal, 2022). The patient's condition may be exacerbated by factors such as limited access to health facilities, high treatment costs, and a lack of social support (Garini, 2019). Although hemodialysis can extend life expectancy, its impact on the quality of life of the elderly is often overlooked (Faridah, 2020). In fact, increasing life expectancy without being accompanied by increasing quality of life can create additional burdens for patients, families, and the health system as a whole (Carmel, 2019). Consequently, it is crucial to gain a comprehensive understanding of the impact of hemodialysis on the quality of life of the elderly in Indonesia, particularly in the context of physical, psychological, functional, and social aspects.

Several previous studies have examined the impact of hemodialysis on patients' quality of life. For example, a study by Ayumi Ishiwatari and Shingo Yamamoto et al., conducted in Japan, found that hemodialysis patients experienced a significant decline in physical and mental aspects compared to the general population (Ishiwatari et al., 2020). Another study by Rasheeda K. Hall et al. showed that hemodialysis patients had higher levels of depression and anxiety, which had a direct impact on their quality of life (Hall et al., 2020). Nevertheless, these studies frequently concentrate on a single or two aspects of quality of life, such as somatic and psychological, without incorporating a thorough examination of functional and social factors. Additionally, the majority of the studies were conducted in developed countries, which means that the results may not be applicable to the Indonesian context, which is characterized by distinct social, cultural, and health system variables.

This study aims to fill the literature gap by conducting a comprehensive quantitative analysis of four dimensions of quality of life, namely physical, psychological, functional, and social, in elderly people after hemodialysis in Indonesia. The novelty of this study lies in the holistic approach that combines these four aspects, as well as focusing on the elderly population, which is often less considered in previous studies. In addition, this study also considers the local context of Indonesia, including factors such as limited access to health facilities, social support, and unique cultures, which can affect the quality of life of elderly people after hemodialysis.

The primary objective of this study is to examine the effects of changes in the quality of life of the elderly in Indonesia following hemodialysis, with a particular emphasis on four primary aspects: physical, psychological, functional, and social. This study is anticipated to establish an empirical foundation for the development of more effective programs and policies to enhance the welfare of the elderly in Indonesia by comprehending the impact of hemodialysis on their quality of life. Furthermore, the results of this investigation may serve as a benchmark for subsequent investigations that seek to investigate comparable concerns in a more comprehensive manner or within a distinct context.

In conclusion, this investigation is exceedingly pertinent to Indonesia's public health landscape. Due to the growing elderly population and the prevalence of chronic kidney disease, it is becoming increasingly crucial to have a comprehensive comprehension of the impact of hemodialysis on the quality of life of the elderly. This study is anticipated to offer novel insights that can be applied to enhance the quality of life of the elderly following hemodialysis in the areas of physical, psychological, functional, and social well-being through a comprehensive quantitative approach. Consequently, this investigation is not only of academic significance, but also has substantial practical implications for the enhancement of the health system and the welfare of the elderly in Indonesia.

METHOD

Study Design

The research method used is quantitative. In quantitative research, the main objective is to research a certain population or sample using structured research instruments (Subagyo, 2020). The data obtained were analyzed statistically to test the established hypothesis. The method used in this study was cross-sectional, which allows data to be collected at a certain time. This approach is relevant to see the Impact of Changes in Quality of Life in the Elderly Post-Hemodialysis in Indonesia.

Settings and Respondents

this study was conducted at the PKU Muhammadiyah Yogyakarta Hospital. PKU Muhammadiyah Yogyakarta was chosen as the research location because in has elderly patients with chronic kidney disease who are undergoing hemodialysis and can be research subjects. this study lasted for two month, namely from October 2024 to January 2025. Respondents were recruited. A total of 135 elderly patients with hemodialysis agreed to participate informed consent. This study received approval from the Hospital Research Ethics Committee (number 00093/KT.7.4/III/2024).

The Variable, Instrument, and Measurement

The variables employed in this investigation are classified into two primary categories: dependent variables and independent variables. The dependent variable is the quality of life of the elderly after hemodialysis, which is assessed according to four primary dimensions: physical, psychological, functional, and social. In the interim, the independent variables encompass variables that affect the quality of life of the elderly in Indonesia following hemodialysis.

Data collection techniques

Data collection techniques in this study were carried out through several methods to ensure the validity and reliability of the results obtained. The main method used was a quantitative survey through a questionnaire distributed to elderly patients with chronic kidney disease. Data management in this study used software Processed with the help of Smart-pls statistical software through the stages of editing, coding, tabulation, and assessment. To test the correlation between research variables and prove the hypothesis on the impact of Changes in Quality of Life in the Elderly Post-Hemodialysis in Indonesia: Quantitative Analysis of Physical, Psychological, Functional and Social Aspects. Regression tests were conducted to obtain valid data on the questionnaire score indicators using the Likert scale approach (1. Strongly disagree, 2. Disagree, 3. Neutral, 4. Agree, and 5. Strongly agree).

RESULTS AND DISCUSSION

Respondent Characteristics

Table 1. Characteristics of Respondents

Characteristics	N	(%)
Age		
< 45 year or > 60 year	24	15,9
> 65 year	111	84,1
Entire	135	100

Education		
Elementary school	1	0,7
Junior high school	18	13,6
Senior High School	77	56,8
Diploma/Bachelor	38	28,9
Entire	135	100

Source: Primary data after processing, 2025

The characteristics of the respondents in this study reflect a diverse distribution of age and education levels. The majority of respondents were over 65 years old, which covers the majority of the study population, while a small proportion were under 45 years old or over 60 years old. This shows that the elderly dominate the study group, which is relevant to the focus of the study on the impact of hemodialysis on the quality of life of the elderly.

In terms of education, the respondents' backgrounds also show variations. Most respondents have a secondary education level, which covers more than half of the total sample. Others have higher education, such as a diploma or bachelor's degree, while the group with elementary and junior high school education has a smaller number. This composition illustrates that most respondents have sufficient educational background to understand medical information related to hemodialysis. However, there are groups with lower levels of education who may face challenges in understanding the management of their disease. Research Variable Reliability.

Table 2. Results of Composite Reliability and Cronbach Alpha Examination

Construction	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Physical Aspects	0.758	0.917	0.717	0.568
Psychological	0.870	0.885	0.752	0.564
Functional	0.863	0.723	0.768	0.791
Social	0.826	0.821	0.838	0.899
Changes in Quality of Life in the Elderly Post Hemodialysis in Indonesia	1.000	1.000	1.000	1.000

Source: Processed from primary data using SmartPLS tools, 2025

According to the reliability analysis conducted using Composite Reliability and Cronbach's Alpha, all constructs in this investigation exhibit satisfactory reliability. The physical, psychological, functional, and social aspects show a fairly high Cronbach's Alpha value, indicating good internal consistency. In addition, the Composite Reliability value of each aspect is above the recommended threshold, indicating that the indicators in each construct are able to reflect the measured variables well. The social aspect has the highest reliability value compared to other aspects, which can be seen from the

higher Composite Reliability and Average Variance Extracted (AVE) values, indicating that this construct is more stable in measurement. Meanwhile, the functional aspect also shows strong reliability, with the highest AVE value compared to other aspects. Overall, changes in quality of life in the elderly after hemodialysis in Indonesia have perfect reliability values, indicating that the measurement instruments in this study are very strong and reliable for analyzing changes in quality of life in the elderly undergoing hemodialysis therapy.

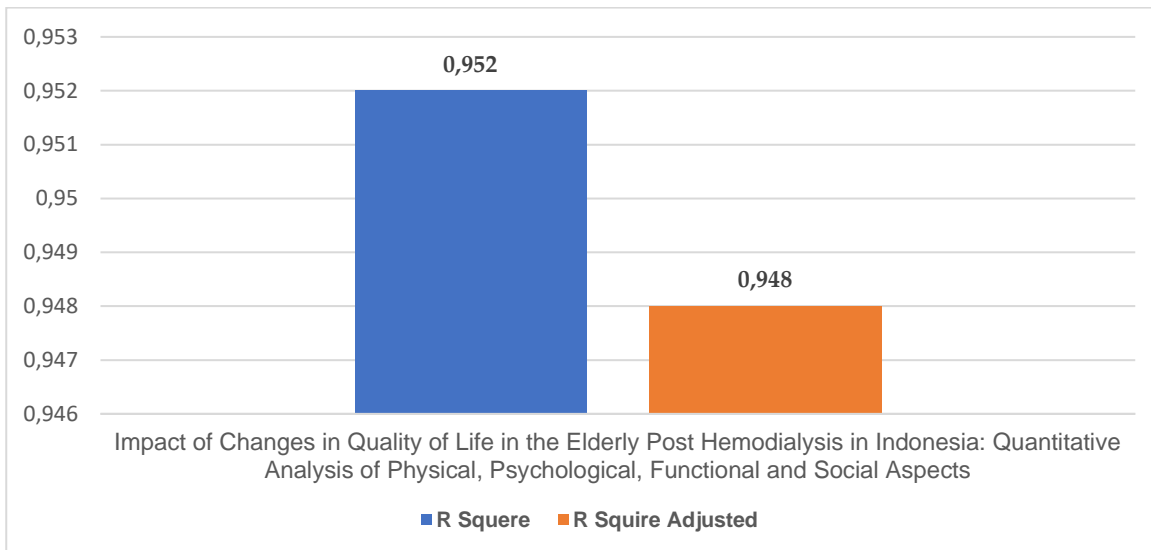


Figure 1. Regression results of the influence of the application of health education technology to improve nutritional literacy and prevent anemia in pregnant women.

(Source: Processed from primary data using SmartPLS tools, 2025)

The results of the analysis show that the research model is very suitable for explaining changes in the quality of life of the elderly post-hemodialysis. The R Square value, which is almost 1, indicates that the variables in the study are able to explain very large variations in changes in the quality of life of the elderly. In addition, the Adjusted R Square value, which is also close to the figure, shows that the model remains robust even though it has been adjusted for the number of variables used. This strengthens the validity of the findings that physical, psychological, functional, and social aspects have a significant influence on the quality of life of post-hemodialysis elderly in Indonesia.

Hypothesis testing

Table 3. Results of hypothesis testing on the impact of changes in quality of life in the elderly after hemodialysis in Indonesia

Variable	Original Sample (O)	Sample Mean (M)	STDEV	T-Statistics (O/STDEV)	P value	Hypothesis
Physical Aspects	0.252	0.251	0.093	2.580	0.030	Accepted
Psychological	0.344	0.193	0.101	2.959	0.048	Accepted
Functional	0.257	0.232	0.078	2.859	0.038	Accepted
Social	0.357	0.471	0.154	2.841	0.004	Accepted

Source: Processed from primary data using SmartPLS tools, 2025

The results of the study showed that hemodialysis has a significant impact on the quality of life of the elderly in various aspects, including physical, psychological, functional, and social. From a physical aspect, this therapy causes changes in body conditions that can limit daily activities and increase patient dependence on others. The psychological impact is also quite large, where the elderly who undergo hemodialysis tend to experience stress, anxiety, and emotional distress due to lifestyle changes and dependence on repeated medical procedures.

In addition, decreased body function due to hemodialysis also affects the level of patient independence in carrying out daily activities. Fatigue and limited mobility are the main challenges faced, reducing their ability to participate in social life or perform routine tasks independently. The social impact is no less significant, where limited mobility and dependence on therapy schedules cause social isolation and reduced interaction with the surrounding environment.

These findings reinforce that changes in the quality of life of the elderly after hemodialysis need special attention from various parties, including medical personnel, families, and policymakers. A holistic approach is needed that focuses not only on medical aspects but also on psychosocial support and improving care facilities that can help patients adapt to the changes that occur. Thus, the quality of life of the elderly undergoing hemodialysis can be better maintained, and their well-being can be optimally improved.

The results of this study suggest that hemodialysis has a substantial impact on the quality of life of the elderly in a variety of ways, such as mental, physical, functional, and social. The cross-sectional analysis conducted using quantitative methods revealed that the significant challenges encountered by the elderly post-hemodialysis are reflected in the changes in their quality of life. From a physical aspect, this therapy causes changes in body condition that can limit daily activities and increase patient dependence on others. This decline in physical condition is in line with the findings of Magfira Rizkilillah et al., who found that hemodialysis patients experienced a significant decline in physical capacity compared to the general population (Rizkilillah et al., 2023).

The psychological impact of hemodialysis is also quite large. Elderly people who undergo this therapy tend to experience stress, anxiety, and emotional distress due to lifestyle changes and dependence on repeated medical procedures. A study by Ishiwatari et al. found that hemodialysis patients have higher levels of depression and anxiety than other populations (Ishiwatari et al., 2020). The results of this study confirm that the psychological condition of hemodialysis patients needs special attention, especially because poor emotional conditions can worsen overall physical health.

In addition, in terms of function, decreased body function due to hemodialysis also affects the level of patient independence in carrying out daily activities. Fatigue and limited mobility are the main

challenges faced, reducing their ability to participate in social life or carry out routine tasks independently. This is consistent with research by Agustina Nila Yuliawati et al., which shows that hemodialysis patients often experience social isolation due to limited mobility (Yuliawati et al., 2022).

This study also considers social impacts, which are equally significant. Social isolation and decreased interaction with the encompassing environment are the result of limited mobility and dependence on therapy schedules. These findings corroborate the results of a study conducted by Mujais et al., which demonstrated that hemodialysis patients experience a decrease in the quality of social interactions, which can ultimately impact their overall well-being (Cunningham et al., 2020).

The regression analysis results indicated that the quality of life of the elderly after hemodialysis was most significantly influenced by social aspects (p -value = 0.004), psychological aspects (p = 0.048), functional aspects (p = 0.038), and somatic aspects (p = 0.030). This demonstrates that the well-being of hemodialysis patients is significantly influenced by psychosocial factors in addition to physical health aspects. Consequently, in order to enhance the quality of life of the elderly receiving this therapy, a more comprehensive care strategy that encompasses social and psychological support is required.

Overall, this investigation substantiates the notion that the quality of life of the elderly following hemodialysis is a multifaceted concern that necessitates a comprehensive strategy. Interventions are required that not only address medical aspects but also enhance the quality of care facilities and provide psychosocial support to assist patients in adapting to the changes that occur. Consequently, the elderly who are undergoing hemodialysis can have their quality of life optimally maintained and their well-being enhanced.

CONCLUSIONS

The results of this study suggest that hemodialysis has a substantial impact on the quality of life of the elderly in Indonesia, particularly in the areas of physical, psychological, functional, and social well-being. Various challenges, such as emotional tension, decreased body function, social isolation, and limited physical activity, are experienced by elderly individuals who are undergoing hemodialysis. In particular, this investigation demonstrated that the social aspect has the most significant influence on the quality of life of patients, with psychological, functional, and somatic aspects following in that order. These results verify that hemodialysis therapy has an impact on the total well-being of patients, in addition to their medical conditions. Consequently, in order to guarantee that geriatric individuals who are undergoing hemodialysis maintain an optimal quality of life, a more comprehensive care approach is required. Numerous suggestions may be implemented in accordance with the findings of this investigation.

First, social support-based interventions, such as community programs or patient support groups, are needed to reduce the isolation experienced by elderly patients after hemodialysis. Second, health services need to provide a multidisciplinary approach that includes psychological support for the elderly to reduce the stress and anxiety that arise from dependence on this therapy. Third, health workers and families need to improve patients' understanding of self-management strategies that can help them adapt to the functional limitations that arise. Finally, policymakers need to consider providing more affordable and accessible long-term care facilities for elderly patients with chronic kidney disease to ensure they receive adequate support in undergoing hemodialysis therapy. With the

right strategy, it is hoped that the quality of life of the elderly undergoing hemodialysis can be better maintained and they can live a more prosperous life.

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