





Quality of Life of Hemodialysis Patients during COVID-19 Pandemic in Gatoel Hospital, Mojokerto City

Darsini Darsini^{1,2*}, Hari Basuki Notobroto³, Raden Khairiyatul Afyah⁴ , Eko Agus Cahyono⁵, Hani Puspita Aryani⁵, Firman Suryadi Rahman¹ 

¹Doctoral Program of Public Health, Faculty of Public Health, Universitas Airlangga, Mulyorejo, Surabaya, East Java, Indonesia;

²Department of Nursing, Nursing and Midwifery Faculty, STIKES Husada Jombang, East Java, Indonesia; ³Departement of Biostatistics and Population Study, Faculty of Public Health, Universitas Airlangga, Mulyorejo, Surabaya, East Java, Indonesia;

⁴Department of Nursing, Nursing and Midwifery Faculty, Universitas Nahdlatul Ulama Surabaya, East Java, Indonesia;

⁵Department of Nursing, Nursing Academy, Akademi Keperawatan Dian Husada, East Java, Indonesia

Abstract

AIM: The purpose of this study was to analyze the quality of life of hemodialysis patients during the COVID-19 pandemic.

METHODS: This study used a descriptive design. The sample in this study was hemodialysis patients at the Gatoel Hospital, Mojokerto City, as many as 122 respondents who were determined using simple random sampling technique. The sample criteria in this study were hemodialysis patients at Gatoel Hospital, Mojokerto City, undergoing hemodialysis therapy <2 years, and willing to participate in research activities. The research instrument used was adopted from the WHOQOL-BREF questionnaire.

RESULTS: From the results of the study, it was found that more than half of the respondents had poor physical health dimensions as many as 62 respondents (50.8%), more than half of respondents had poor mental health dimensions as many as 68 respondents (55.7%), more than half of respondents had social health dimensions. Bad as many as 62 respondents (50.8%) and most respondents have poor functional health dimensions as many as 74 respondents (60.7%).

CONCLUSION: It was found that more than half of the respondents in this study had poor quality of life. More than half of the respondents had physical health dimensions in the poor category, more than half of the respondents had mental health dimensions in the bad category, more than half of the respondents had social health dimensions in the bad category and most of the respondents had functional health dimensions in the bad.

Edited by: Sasho Stoileski
Citation: Darsini D, Notobroto HB, Afyah RK, Cahyono EA, Aryani HP, Rahman FS. Quality of Life of Hemodialysis Patients during COVID-19 Pandemic in Gatoel Hospital, Mojokerto City. Open Access Maced J Med Sci. 2022 Jan 28; 10(E):293-302.
<https://doi.org/10.3889/oamjms.2022.7583>

Keywords: Quality of life; Hemodialysis patients; COVID-19 pandemic

***Correspondence:** Dr. Darsini Darsini, Faculty of Public Health, Universitas Airlangga, Mulyorejo, Surabaya, East Java, Indonesia.

E-mail: darsini-2018@fkm.unair.ac.id

Received: 12-Oct-2021

Revised: 14-Jan-2022

Accepted: 18-Jan-2022

Copyright: © 2022 Darsini Darsini, Hari Basuki Notobroto, Raden Khairiyatul Afyah, Eko Agus Cahyono, Hani Puspita Aryani, Firman Suryadi Rahman

Funding: This research did not receive any financial support

Competing Interests: The authors have declared that no competing interests exist

Open Access: This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0)

Introduction

At the end of 2019, the world was in an uproar with the discovery of a new virus capable of infecting humans quickly. This makes the world community feel restless and anxious about the incident [1]. COVID-19 has become a widespread epidemic and has an impact on all people in the world [2].

One of the communities affected by the COVID-19 pandemic was chronic renal failure patients who have to undergo hemodialysis in Gatoel Hospital, Mojokerto. To comply with the health protocols, these patients must undergo swab tests and polymerase chain reaction (PCR) tests more regularly and independently as a requirement to use hemodialysis facilities in hospitals. This indirectly affects the economy of chronic kidney failure patients who must undergo hemodialysis. Apart from having to spend more money to pay for swab test and PCR test, chronic renal failure patients who must undergo hemodialysis should also be able to survive with the health protocols

implemented in Indonesia as well as the pain they have to experience [3].

Hemodialysis is the process of blood cleaning through the accumulation of waste discharge. Hemodialysis is used for patients suffer from end-stage renal disease who require long-term or permanent therapy. Research on quality of life in patients with chronic kidney failure undergoing hemodialysis found that the tendency experienced by patients with kidney failure is a decrease in quality of life [4]. Quality of life in individuals has four main dimensions; those are physical capacity, social relations, psychological state, and environment. In terms of physical capacity, chronic renal failure patients will feel pain and discomfort, be dependent on medical substances and medical aids, fatigue of having regular hemodialysis therapy, experiencing disturbances in daily life activities, and experiencing sleep and rest disorders due to pain and anxiety. In psychological conditions, chronic kidney failure patients who must undergo hemodialysis may experience impaired personal relationships, impaired social support, and decreased respects from the others.

In the psychological dimension, patients with chronic kidney failure are at risk for decreased body image, self-esteem, positive thinking, as well as memory and concentration [5].

Decreased quality of life in patients suffering from chronic kidney failure who must undergo hemodialysis is possible because they have not been able to accept their disease condition and the consequences they have to undergo due to the disease. Withdrawal, apathy and feeling useless often appear in patients with chronic kidney failure undergoing hemodialysis. This is because they are no longer able to carry out activities as before they experienced the disease. Patients with chronic renal failure who must undergo hemodialysis therapy are often found to be depressed. This limits the amount of food and water intake consumed by people with chronic kidney failure and forces them to reduce all activities that require a lot of energy. A patient with chronic renal failure will depend on regular hemodialysis therapy throughout his life and no longer able to perform regular activities they usually do. These patients often look lethargic, tired, and look sad due to their condition. This makes justification for chronic kidney failure patients to withdraw from the environment and activities they have been doing. Several studies that have been conducted have shown that it is important for a patient with chronic kidney failure to be able to maintain their quality of life to be able to live well and not be a burden to their family, especially with the current state of the COVID-19 pandemic [4], [5], [27], [35], [36], [42].

During the COVID-19 pandemic, various policies were implemented by the government to break the chain of the spread of COVID-19. The hospital management responded to this policy by implementing a policy of limiting the number of visits to health service centers available in hospitals, including hemodialysis polyclinics. The hemodialysis poly at Gatoel Hospital, Mojokerto City applies strict health protocols which are carried out by limiting the number of patient companions during hemodialysis sessions, requiring every patient and patient companion to apply strict health protocols and every hemodialysis patient must show the results of the COVID-19 swap examination (maximum 24 h before hemodialysis). The implementation of this policy will indirectly create a separate burden on hemodialysis patients because apart from having to feel uncomfortable due to the buildup of residues in the body, they also have to spend some money to do a COVID-19 swap at least 2 times in 1 week which of course creates a separate burden for patients and the patient's family. Strict implementation of health protocols, issuing financing for swaps for COVID-19 to be able to undergo hemodialysis therapy, as well as limiting food, drink, and activity intake indirectly risk triggering a decrease in quality of life in hemodialysis patients. The purpose of this research was to analyze the quality of life in patients undergoing hemodialysis

during COVID-19 pandemic in hemodialysis room, Gatoel Hospital, Mojokerto.

Methods

The type of research used is descriptive. The population in this study were all patients with chronic kidney failure who had to undergo hemodialysis in the hemodialysis room of the Gatoel Hospital, Mojokerto City as many as 175 patients. The number of samples in this study was 122 respondents who were determined using simple random sampling technique. The patient selected from the list using Random Picker. The patient This research was conducted in the hemodialysis room of Gatoel Hospital, Mojokerto City. The research instrument used was adopted from the WHOQOL-BREF questionnaire. During research data collection, researchers implemented health protocols to prevent transmission of COVID-19 because this research was conducted during the COVID-19 pandemic. The sample criteria in this study were hemodialysis patients at Gatoel Hospital, Mojokerto City, undergoing hemodialysis therapy <2 years, and willing to participate in research activities. Before the respondent participates in the research activity, the researcher provides information about the research activity to be carried out and the respondent's right to resign. After the respondent agreed to participate in the research activity, the researcher submitted the respondent's consent sheet and the research questionnaire to fill in the data. The research data was filled in by the respondents themselves. After the data are filled in completely, the researcher then analyzes the data using the Statistical Package for the Social Sciences application.

The research questionnaire used in this study has been tested for validity and reliability so that it is feasible to be used as a research instrument. Validity and reliability score is mentioned in Table 1.

Ethical clearance

This study follows the ethical principles for research involving human subjects outlined in the Declaration of Helsinki. The Ethics Committee of Dian Husada School of Health Sciences has given approval for the research to be carried out with the ethical approval code number: 201-KEPK/DH. All respondents in this study voluntarily agreed to participate in research activities and gave their consent before filling out the research questionnaire. The research procedure has been clearly conveyed by the researcher and the research respondent can resign from the research activity if during the research activity the research respondent feels disturbed or uncomfortable. The fulfillment of the research questionnaire was done

Table 1: List of questions adapted to conduct research on the quality of life of hemodialysis patients during the COVID-19 pandemic (World Health Organization, 2004)

S. No.	Adapted WHOQOL-BREF Questionnaire	Validity score	Reliability score
1.	What do you think about your quality of life during the COVID-19 pandemic?	0.847	0.968
2.	How satisfied are you with your health during the COVID-19 pandemic?	0.862	
3.	How much does your physical pain prevent you from doing what you need to do during the COVID-19 pandemic?	0.745	
4.	How often do you need medical therapy to function in your daily life during the COVID-19 pandemic?	0.762	
5.	How much have you enjoyed your life during the COVID-19 pandemic?	0.745	
6.	How much do you feel your life means during the COVID-19 pandemic?	0.762	
7.	How far can you concentrate during the COVID-19 pandemic?	0.640	
8.	In general, how safe do you feel in your daily life during the COVID-19 pandemic?	0.659	
9.	How healthy is the environment you live (in terms of facilities and infrastructure) during the COVID-19 pandemic?	0.846	
10.	Do you have enough vitality to carry out daily activities during the COVID-19 pandemic?	0.863	
11.	Can you accept the appearance of your body during the COVID-19 pandemic?	0.754	
12.	Do you have enough money to meet your needs during the COVID-19 pandemic?	0.773	
13.	How far is the availability of information for your daily life during the covid-19 pandemic?	0.754	
14.	How often do you have the opportunity to have fun/recreation during the covid-19 pandemic?	0.773	
15.	How good are your social skills during the COVID-19 pandemic?	0.662	
16.	How satisfied are you with your sleep during this COVID-19 pandemic?	0.685	
17.	How satisfied are you with your ability to perform your daily activities during the COVID-19 pandemic?	0.846	
18.	How satisfied are you with your ability to work during the COVID-19 pandemic?	0.863	
19.	How satisfied are you with yourself during the COVID-19 pandemic?	0.754	
20.	How satisfied are you with your personal/social relationships during the COVID-19 pandemic?	0.773	
21.	How satisfied are you with your sex life during the COVID-19 pandemic?	0.754	
22.	How satisfied are you with the support you have received from your friends during the COVID-19 pandemic?	0.773	
23.	How satisfied are you with the conditions where you are currently living during the COVID-19 pandemic?	0.685	
24.	How satisfied are you with your access to health services during the COVID-19 pandemic?	0.647	
25.	How satisfied are you with the transportation you have to take during the COVID-19 pandemic?	0.564	
26.	How often do you have negative feelings such as loneliness, hopelessness, anxiety and depression during the COVID-19 pandemic?	0.583	

online considering that this research activity was carried out during the COVID-19 pandemic where in this condition a health protocol was applied to reduce the risk of COVID-19 exposure or transmission.

Results

Demographic characteristics

The study involved 122 respondents who are chronic kidney failure patients who must undergo hemodialysis in hemodialysis room of Gatoel Hospital, Mojokerto (Table 2).

Based on the results of research on the respondents' demographic data, it was found that most of the respondents were male by 82 respondents

(67.2%), almost half of the research respondents were aged 35–50 years old by 49 respondents (40.2%), more than half of the respondents had done hemodialysis for 1–2 years by 48 respondents (39.3%), most of the respondents had a secondary education background by 90 respondents (73.8%), almost half of the respondents did not work by 47 respondents (38.5%), and most of the respondents have married status by 79 respondents (64.8%).

Quality of life of hemodialysis patients during the COVID-19 pandemic

The quality of life of the respondents in this study consisted of four domains, namely physical health, mental health, social health, and functional health (Table 3). Physical health consists of daily activities, dependence on drug substances and medical aids, energy and fatigue, mobility, pain and discomfort, sleep and rest, and work capacity. Mental health consists of body image and appearance, negative feelings, positive feelings, self-esteem, spirituality/religion/personal beliefs, thinking, learning, memory and concentration. Social health consists of personal relationships, social support, and sexual activity. Functional health consists of financial resources, freedom, security and physical safety, health and social care, including accessibility and quality, the home environment, the opportunity to obtain various new information and skills, and got a chance for recreation and fun activities in leisure time, physical environment including pollution/noise/traffic/climate, as well as transportation [6].

Based on the results of research on the quality of life of hemodialysis patients during the COVID-19 pandemic in the hemodialysis room of Gatoel Hospital, Mojokerto City, it was found that more than half of the respondents had physical health dimensions in the poor category, by 62 respondents (50.8%), more than half of the respondents had a mental health dimension in poor category by 68 respondents (55.7%), more than half of respondents had a social health dimension in poor category by 62 respondents (50.8%), and the majority of respondents had a functional health dimension in poor category by 74 respondents (60.7%).

Discussion

Hemodialysis is a medical therapy action taken by health workers to individuals who are diagnosed with impaired kidney function so that it requires medical therapy action. This therapy aims at replacing the function of kidney which involves the processes of diffusion, osmosis, and ultrafiltration. In its application, the use of hemodialysis machines is intended to remove metabolic wastes in the blood such as water,

Table 2: Demographic characteristics of respondents on their quality of life during the COVID-19 pandemic

Demographic Characteristics	Frequency	Percentage
Gender		
Male	82	67.2
Female	40	32.8
Age		
<21 years old	2	1.6
21–35 years old	26	21.3
35–50 years old	49	40.2
>50 years old	45	36.9
Length of time on hemodialysis		
<1 year	39	32.0
1–2 years	48	39.3
3–5 years	23	18.9
>5 years	12	9.8
Last education		
Basic education	21	17.2
Middle education	90	73.8
Higher education	11	9.0
Occupation		
Does not work	47	38.5
Retired	22	18.0
Government employees	10	8.2
Private sector employee	32	26.2
Entrepreneur	11	9.0
Marital status		
Married	79	64.8
Divorced	43	35.2

sodium, potassium, hydrogen, urea, creatinine, uric acid, and other substances through a semi-permeable membrane as a separator between blood and dialysate fluid in hemodialysis machines [7].

Table 3: Quality of life of hemodialysis patients during the COVID-19 pandemic

Quality of Life	Frequency	Percentage
Dimension of physical health		
Good	12	9.8
Moderate	48	39.3
Poor	62	50.8
Dimension of mental health		
Good	13	10.7
Moderate	41	33.6
Poor	68	55.7
Dimension of social health		
Good	21	17.2
Moderate	39	32.0
Poor	62	50.8
Dimensions of functional health		
Good	18	14.8
Moderate	30	24.6
Poor	74	60.7

Hemodialysis is the process of cleaning the blood by accumulating the waste. Hemodialysis is used for patients suffering from end-stage kidney failure or acutely ill patients who require short-term dialysis. In patients with chronic kidney failure, hemodialysis will prevent death. Hemodialysis does not cure or restore kidney disease and is unable to compensate for the loss of metabolic or endocrine activity carried out by the kidneys and the impact of kidney failure and its therapy on the patient's quality of life [8]. The main goal of hemodialysis is to restore the extra and intracellular fluid atmosphere which is actually a normal function of the kidneys. Dialysis is done by moving some solutes such as urea from the blood to the dialysate and by removing other solutes such as bicarbonate from the dialysate into the blood. The solute concentration and molecular weight are the main determinants of the diffusion rate. Meanwhile, small molecules, such as urea, diffuse quickly, as well as large molecules, such as phosphate, 2-microglobulins, and albumin, and protein-bound solutes such as cresol, are slower to

diffuse. The dissolving is carried out through small holes (pores) in the membrane with the aid of the convection process that is determined by hydrostatic and osmotic pressure gradient - a process called ultrafiltration [9]. Ultrafiltration does not cause any change in the solute concentration. The main purpose of this ultrafiltration is to remove excessive body fluids completely. For each dialysis session, the patient's physiological status should be checked so that the dialysis prescription can be adjusted to the goals for each session. This can be done by combining the separated but related components of the dialysis prescription to achieve the desired overall rate and amount of fluid and solute removal. Dialysis is intended to eliminate the complex of symptoms, known as uremic syndrome, although it is difficult to prove that a particular organ or cell dysfunction is a cause of particular solute accumulation in uremic case [10].

Hemodialysis is usually done 3 times/week for about 4 h at a time of therapy. People who choose to have hemodialysis at home may have more frequent dialysis treatments of 4–7 times/week for shorter hours each time [11]. Based on data from the Indonesian Renal Registry, the hemodialysis procedure of 3–4 h duration is the highest duration of hemodialysis in Indonesia. This is still below the standard duration of hemodialysis which should be 5 h for a frequency of 2 times a week. Studies have shown that getting the right amount of dialysis improves the patient's overall health, keeps patients out of the hospital, and allows them to live longer. The dialysis care team for patients undergoing hemodialysis will monitor their treatment with monthly laboratory tests to ensure the patient is getting the right amount of dialysis [12]. One of the steps of the dialysis care team in these patients is to use the urea reduction ratio (URR). Other measurements can use Kt/V. There are several indicators to ensure that patients hemodialysis get enough dialysis: 1) Kt/V should be at least 1.2; or 2) the ratio of URR should be at least 65% [13].

Complications of dialysis therapy include hypotension, air embolism, chest pain, impaired dialysis balance, and pruritus. Each of these complications (hypotension, air embolism, chest pain, impaired dialysis balance, and pruritus) is caused by several factors. Hypotension occurs during dialysis therapy when fluids are drained. The occurrence of hypotension is possible due to the use of dialysate acetate, low dialysis sodium, heart disease, atherosclerosis, autonomic neuropathy, and fluid overload. Air embolism occurs when air enters the patient's vascular system [14]. Chest pain can occur because the PCO₂ decreases along with the circulation of blood outside the body, while the dialysis balance disorder occurs due to the displacement of cerebral fluid and appear as seizures. There is a possibility that these complications become more severe if there are symptoms of severe uremia. Pruritus occurs during dialysis therapy when metabolic end products leave the skin [15]. Furthermore, therapy hemodialysis can

also lead to complications syndrome of disequilibrium, reaction dialyzer, arrhythmia, tamponade heart, intracranial hemorrhage, seizures, hemolysis, neutropenia, as well as complement activation due to dialysis and hypoxemia, but these complications rarely occur [16], [17], [18], [19].

Hemodialysis is proven to be effective in removing fluids, electrolytes, and waste from the body's metabolism, thus indirectly aiming to prolong the patient's life. The hemodialysis procedure does not work without risks. Although hemodialysis is safe and beneficial for patients, it also has side effects. Various problems and complications can occur in patients undergoing hemodialysis. Intradialytic complications are common in patients undergoing hemodialysis. The intradialytic complications commonly experienced by patients while undergoing hemodialysis are hypotension, hypertension, cramps, nausea, vomiting, headache, chest pain, sore back, fever, and chills. Intradialytic complications can cause discomfort, increased stress and affect the patient's quality of life. In addition, various intradialytic complications can occur from the start of hemodialysis to the end, from the first hour to the last hour [20], [21].

Hemodialysis performed on patients with chronic kidney failure, apart from being able to help patients survive, also has an impact on the quality of life of the patients themselves. Research found that the tendency experienced by hemodialysis patients is a decrease in quality of life. The decrease in quality of life in hemodialysis patients is due to the hemodialysis therapy that must be carried out by the patients throughout their life. Chronic kidney failure patients who have undergone hemodialysis, throughout their lives, will rely on and depend on hemodialysis therapy to remove toxic nitrogen substances from their bodies. If this substance is not removed, it will cause severe pain sensations in patients [22], [23].

Hemodialysis therapy is the main choice and is a common treatment for patients with chronic kidney failure to replace their damaged kidney function. Hemodialysis therapy which is carried out 2 times a week requires patients with chronic kidney failure to make hemodialysis therapy as a regular activity that must be carried out every week. The hemodialysis therapy process lasts 3–4 h and the impact of hemodialysis therapy will affect the quality of life of patients with chronic kidney failure. Quality of life is the extent to which a person enjoys the important possibilities in his life. Quality of life of patients with chronic kidney failure undergoing hemodialysis therapy is still a problem that attracts the attention of health professionals. Patients can survive by undergoing hemodialysis therapy, but there are still important problems caused by this hemodialysis therapy. Achieving quality of life requires a fundamental change in the patient's perspective on chronic kidney failure itself [24], [25]. Characteristics of a person greatly affect the pattern of a person's

life. Characteristics can be seen from several points of view including age, gender and level of education of a person. Besides, the seriousness of a person in maintaining his health greatly affects the quality of life whether in activities, rest, or psychologically. Many people assume that people affected by kidney disease will experience a decrease in quality of life. This shows that the characteristics of a person greatly affect the quality of life of a person, especially those who have chronic kidney failure and must undergo hemodialysis to be able to maintain their health condition. Quality of life itself has four main dimensions, namely, the dimensions of physical health, mental health dimensions, social health dimensions and functional health dimensions [3], [5].

Dimensions of physical health

The first dimension in quality of life is the dimension of physical health. From the results of research conducted on the quality of life of hemodialysis patients during the COVID-19 pandemic in the hemodialysis room of Gatoel Hospital, Mojokerto City, it was found that more than half of the respondents had physical health dimension in the poor category, by 62 respondents (50.8%). Dimension of physical health is related to physical conditions that can affect an individual's ability to carry out activities. Activities carried out by individuals will provide new experiences which are developmental capital to the next stage. Physical health includes activities of daily living, dependence on drugs, energy and fatigue, mobility, pain and discomfort, sleep and rest, as well as work capacity. This is related to private self-consciousness, namely, directing behavior to covert behavior, where other individuals cannot see what the individual feels and thinks subjectively [26].

Patients with chronic kidney failure before undergoing dialysis will be very disturbed in their activities both for work and socializing, and it is possible to have difficulty in sleeping because of the pain they feel. In addition, various physical complaints that patients suffer depend on the severity of the disease and the accompanying complications that are different from one patient to another. This is consistent with the theory that patients with chronic renal failure who have to undergo hemodialysis will feel any discomfort, tightness, edema, chest pain, nausea or even vomiting, and muscle cramps that result in severe pain. For this reason, chronic kidney failure patients are highly dependent on dialysis therapy to improve their quality of life. After hemodialysis, the patient's physical condition tends to experience significant improvement, although not all patients say so. Patients who have undergone hemodialysis therapy appear to be less short of breath and more relaxed. This change is due to the toxic substances in the blood and fluid in the body of the patients which have been removed according to

the clinical condition of the patient. This condition will allow respondents to sleep and rest and be able to carry out their usual routine activities. In general, it can be concluded that hemodialysis therapy undertaken by patients with chronic kidney failure will be able to make patients experience an increase in quality of life. However, during the COVID-19 pandemic, chronic kidney failure patients who must undergo hemodialysis tend to have a poor quality of life. This is natural to happen considering that during the COVID-19 pandemic, in health facilities, rules are also given to ensure the safety of every user of health services and health workers so that they are not exposed to COVID-19. On the other hand, this rule makes patients with chronic kidney failure burdened with the implementation of the regulation. Every time they have to do hemodialysis therapy, patients with chronic kidney failure must show the results of a swab test or PCR test as one of the requirements to continue to be able to use the hemodialysis facilities in the hospital at their own expense. The results of the examination are only valid for 7 days from the time the examination is carried out. This indirectly makes chronic kidney failure patients burdened because they have to undergo the hemodialysis process between 1 and 2 times every week and because of the implementation of this rule, they have to do a swab test or PCR test once a week [42].

Pain, fatigue, difficulty in resting, and restriction of food and fluid intake that can be consumed by chronic kidney failure patients who must undergo hemodialysis have an impact on their quality of life. This condition is further exacerbated by the implementation of the rules for the swab test or PCR test to continue to utilize the hemodialysis facilities at the hospital. In general, it can be concluded that the physical health dimension of the quality of life of chronic kidney failure patients who must undergo hemodialysis during the COVID-19 pandemic is in poor condition. This should be a concern and focus of all parties considering the low or poor quality of life in patients with chronic kidney failure who must undergo hemodialysis will reduce their physical health condition and potentially trigger other health problems due to decreased physical health [43].

Dimensions of mental health

The second dimension of quality of life is the mental health dimension. From the results of research conducted on the quality of life of hemodialysis patients during the COVID-19 pandemic in the hemodialysis room of Gatoel Hospital, Mojokerto City, it was found that more than half of the respondents had mental health dimensions in the poor category, by 68 respondents (55.7%). This psychological dimension is related to the mental state of the individual. The mental state refers to whether or not the individual is able to adapt to various developmental demands according to his abilities, both demands from within and from outside himself. The

psychological aspect is also related to the physical aspect, where individuals can perform an activity well if the individual is mentally healthy. The wellbeing of psychological covers body image and appearance, positive feelings, negative feelings, self-esteem, personal beliefs, thinking, learning, memory and concentration, appearance, and physical description. When related to private self-consciousness, the individual feels what is inside him without anyone else knowing, for example, thinking about what he lacks in appearance [27].

Mental health or often considered as a psychological dimension of quality of life, is one of the important factors that must be considered. This is because it will relate to the mental or psychological condition of patients with chronic kidney failure. Patients with chronic kidney failure who have to undergo hemodialysis process often found experience anxiety every time they will do dialysis, especially respondents who still use temporary access, both double lumen through the subclavian vein and femoral access. Besides pain during insertion, there are also risks that are often posed by insertion procedures such as hematoma, subclavian vein thrombosis, or infection that will cause high fever during dialysis. Anxiety on patients with chronic renal failure undergoing hemodialysis process also appears during the beginning of the hemodialysis procedure, where there are many nurses who carry out the therapy for the patients. This is because it is a phase of rejection of chronic kidney failure patients against the disease they are experiencing and anxiety about the action they will receive, especially in chronic kidney failure patients who still use temporary access because the fistula installation action is considered to be very painful for the patients [28]. However, after the patients undergo the hemodialysis patient, patients with chronic renal failure often satisfied over the comfort they feel. Patients with chronic kidney failure who have to undergo hemodialysis after the first hour of hemodialysis usually have started to calm down with the medical measures taken. This is indicated by the patient having a sound sleep or just talking to the hemodialysis officer/nurse, talking to fellow patients, family, or other patients' families. This condition occurs mainly in patients who have permanent access installed and patients with temporary access but in the implementation of dialysis there are no obstacles or side effects during the dialysis process. In the patient, there will be a change in the process of the normal grieving stage from depression which will be followed by a stage of acceptance to receive regular medication in order to live. In this phase, patients generally do not have negative feelings, can still think, remember, and concentrate well [29].

During the implementation of the health protocol to reduce the transmission of the spread of COVID-19, people are forced to stay at home and reduce their mobility. This is also applied to sufferers of chronic kidney failure. The implementation of health protocols

makes people with chronic kidney failure spend more of their time at home and doing activities from home. This makes people with chronic kidney failure tend to no longer pay attention to their appearance considering that interactions with other people are increasingly limited. Some respondents in this study felt that the limitation of mobility made them not need to pay attention to their physical condition so that they tend to appear as they are and do not have negative feelings that other people will correct their appearance. This condition has a positive impact on the body image of patients with chronic kidney failure. However, the implementation of health protocol also makes patients with chronic kidney failure also have the potential to reduce their memory function because during the COVID-19 pandemic, almost every community only tries to prevent themselves from being exposed to the COVID-19 virus so that they reduce interactions with other people. For some people with chronic kidney failure, they have the assumption that there are people who think they have COVID-19 and have to stay away from them on the grounds that people with chronic kidney failure must regularly visit hospital and have the potential to be infected with COVID-19 [30].

Dimension of health and social

The third dimension of quality of life is the social health dimension. From the results of research conducted on the quality of life of hemodialysis patients during the COVID-19 pandemic in the hemodialysis room of Gatoel Hospital, Mojokerto City, it was discovered that more than half of the respondents had social health dimensions in the poor category, by 62 respondents (50.8%). Dimension of social relations is the relationship between two or more individuals where the behavior of these individuals will mutually influence, change, or improve the behavior of other individuals. Considering that humans are social creatures, in this social relationship, humans can realize life and can develop into fully human beings. Social relationships include personal relationships, social support, and sexual activity. Social relations related to public self-consciousness, namely, how individuals can communicate with others [31].

Quality of life on the social health dimension before undergoing hemodialysis depends on the social support received by the respondent, both emotional support from family and social groups in the respondent's environment, as well as instrumental and informational support. In this study, all respondents were financed by the insurance company in hemodialysis therapy, but to obtain this service, other costs were still required, such as transportation costs, the swab test or PCR test cost once a week, and several other costs related to the hemodialysis therapy they have to undergo. This is a burden for some respondents considering that during the implementation of the health protocol, some

of the respondents in this study were unable to work and their incomes also decrease. This certainly can have an impact on their health conditions because, on the one hand, they have to think about how to access hemodialysis services, and, on the other hand, they also have to think about ways to still get income that they can use to finance other hemodialysis costs [42].

In this dimension, their sexual needs/activities are also impaired. It was suggested that patients undergoing hemodialysis may experience a decrease in sexual function (libido). In male patients, impotence often occurs which may occur because of their illness or side effects of the drugs they must take, while in female patients, during the hemodialysis process it is possible not to experience menstruation due to the influence of immunosuppressive drugs. Disorders of sexual function that hemodialysis patients have should be aware of their partners. If their partner is not aware of this, it is possible that hemodialysis patients will experience a decrease in quality of life because they have the perception that they are no longer able to meet the sexual needs for both the patient and his partner. This inability to fulfill sexual needs can trigger problems in the family and in the end can result in the quality of the marital relationship they have [32].

One of the needs that are no less important in the social health dimension is the spiritual care obtained by patients with kidney failure who must undergo hemodialysis. Hemodialysis patients said that during the hemodialysis process, none of them received spiritual care from nurses. Spiritual care is one of the important needs for hemodialysis patients considering that hemodialysis patients are patients with terminal conditions where at any time they are at risk of dying from their chronic kidney failure disease. As with the late great nurse in a hospital in Indonesia do not yet understand about the spiritual care of itself. In addition, nurses with spiritual care specialists or ability to provide spiritual care are still limited. This condition is also exacerbated by the perception that spiritual needs are identical with religious needs so that some spiritual care practices tend to be identical with the practice of fulfilling religious needs. Spiritual care basically has a broader concept than religious care. However, this condition cannot be faulted, considering that the background of the nurse's environment in Indonesia is identical to the influence of religion, making nurses have the perception that spiritual care is a treatment that focuses on fulfilling religious needs [33].

Nurses and medical personnel are to whom the hemodialysis patients depend on. They expect these nurse and medical personnel to provide direct help and assistance during hemodialysis. It can also be described as a form of direct relationship that occurs between nurses or medical personnel with hemodialysis patients. On the one hand, hemodialysis patients tend to ask for help from nurses or medical personnel in dealing with their health complaints, including in this

case telling every complaint they feel. On the other hand, nurses or medical personnel also have limitations in the form of professional ethics where nurses and medical personnel are not possible to be deeply involved in the personal affairs of patients. In addition, the large number of patients who need treatment is also one of the other obstacles faced by nurses/medical personnel to be able to maintain effective communication with hemodialysis patients. To be more involved with patients, nurses or medical personnel can have direct contact with hemodialysis patients or with hemodialysis patients' families. This can be done through homecare visits [43].

Dimension of functional health

The fourth and final dimension of quality of life is the functional health dimension. From the results of research conducted on the quality of life of hemodialysis patients during the COVID-19 pandemic in the hemodialysis room of the Gatoel Hospital, Mojokerto City, it was found that most of the respondents had functional health dimension in the poor category, by 74 respondents (60.7%). The environmental dimension, which is the individual's residence, includes the situation, the availability of a place to live to carry out all life activities, as well as suggestions and infrastructure that can support life. Relationship with the environment includes a source of financial, freedom, security and physical safety, healthcare and social support in accessibility and quality, the house environment, the opportunity to get various new formation or skills, participation and the chance to recreational and fun activities at leisure time, physical environment including pollution, noise, traffic, and climate; as well as transportation. This dimension focuses on public self-consciousness where individuals have awareness and concern for the environment around their place of residence [34], [35].

During the COVID-19 pandemic, people's lives have experienced various kinds of disruptions. Mobility restrictions through the application of health protocols indirectly reduce all aspects of hemodialysis patients. Hemodialysis patients are often no longer able to work or generate income that can be used to meet their needs. In addition, during the COVID-19 pandemic, families will prioritize family shopping to fulfill the need for personal protective equipment or other household needs. This indirectly affects the hemodialysis patients themselves. On average, hemodialysis patients in this study were the head of the household, having the responsibility to meet the family's shopping needs. This certainly will become increasingly difficult considering that during the pandemic, health protocols and regional restrictions are applied in all sectors, especially the economic sector, must carry out operational restrictions to reduce the risk of crowding and transmission of COVID-19. Indirectly, this has an impact on the ability of hemodialysis

patients to be able to get some money to meet the needs of their families. In the income subdomain, it can be concluded that during the pandemic, there was financial disruption in hemodialysis patients. The next is the subdomain of physical security and safety. During the COVID-19 pandemic, no one is able to guarantee their physical security and safety so they are not exposed to COVID-19. One of the efforts that can be done is to comply with the application of health protocols where one of the impacts of this compliance is the reduced ability to fulfill other needs. In an effort to ensure physical security and safety, what can be done is to comply with every policy made by the government while hoping that the COVID-19 pandemic will end soon [36].

One of the important things that are often forgotten by family members of hemodialysis patients is the existence of hemodialysis patients themselves. In some cases, hemodialysis patients who are the heads of households often feel that they are not needed in the family. This is because the hemodialysis patients were often not involved during the decision making process in the household affair. From the results of interviews conducted, it was found that hemodialysis patients are often considered not to have the ability to carry out activities, especially at work, including in this case also in expressing opinions. Hemodialysis patients are rarely consulted and rarely involved in decisions within family. Such conditions will indirectly reduce the confidence and abilities of hemodialysis patients because they have the perception that they are no longer needed by their families. If this condition continues, it is possible that there will be a decrease in the quality of life in hemodialysis patients and will further aggravate their health conditions [37].

Quality of life is one of the important factors that must be owned by hemodialysis patients. This is because the quality of life can affect every aspect and health condition of hemodialysis patients. The non-fulfillment of one of the domains in quality of life has the potential to trigger a decrease in the quality of life of hemodialysis patients. During the COVID-19 pandemic, various rules were put in place to ensure that there was no transmission of COVID-19 transmission in the community [38]. However, this also affects the hemodialysis patients themselves. In order to ensure that the quality of life in hemodialysis patients is maintained, it is necessary to have an active role from all parties to ensure that every domain of quality of life in hemodialysis patients can be maintained and fulfilled properly. Nurses/medical personnel can carry out homecare visits as a method of nursing care where in this homecare visit nurses/medical personnel can provide nursing services and identify the care needs required by hemodialysis patients, although this consequence will lead to increased costs that must be incurred by the hemodialysis patients or relatives of hemodialysis patients. Next is about the family of

hemodialysis patients. Families must be able to realize that hemodialysis patients are patients with terminal conditions where at any time the patient is at risk of dying. Families must be able to meet every need of hemodialysis patients so that hemodialysis patients have a good quality of life. Families must understand that hemodialysis patients are patients who face death in front of them. Families must start working so that hemodialysis patients are able to live well and dying well. By holding onto this concept, the hemodialysis patient's family will be ready with every risk that may be experienced by hemodialysis patients and will not regret the worst risks that hemodialysis patients can experience [39], [40], [41].

The limitation of this study, this study only involved hemodialysis patients in the hemodialysis room at the Gatoel Hospital, Mojokerto City so that the results of the study cannot be considered as generalizations of the overall quality of life of hemodialysis patients during the COVID-19 pandemic.

Conclusion

From the results of research on the quality of life of hemodialysis patients during the COVID-19 pandemic in the hemodialysis room of Gatoel Hospital, Mojokerto City, it was found that more than half of the respondents had physical health dimensions in the poor category by 62 respondents (50.8%), more than half of the respondents had mental health dimensions in the bad category by 68 respondents (55.7%), more than half of the respondents had social health dimensions in the bad category by 62 respondents (50.8%), and most of the respondents had functional health dimensions in the bad category by 74 respondents (60.7%).

To improve the quality of life of hemodialysis patients during the COVID-19 pandemic, positive family support is needed for hemodialysis patients with the aim of improving the quality of life of hemodialysis patients themselves. In addition, the implementation of health service policies in hospitals that make it easier for hemodialysis patients to get health services and hemodialysis therapy will indirectly reduce the burden that must be borne by hemodialysis patients or their families, especially during the current COVID-19 pandemic.

References

- Rathore JS, Ghosh C. Severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2), a newly emerged pathogen: An overview. *Pathog Dis.* 2020;78(6):ftaa042. <https://doi.org/10.1093/femspd/ftaa042>
- Wang C, Wang D, Abbas J, Duan K, Mubeen R. Global financial crisis, smart lockdown strategies, and the COVID-19 spillover impacts: A global perspective implications from Southeast Asia. *Front Psychiatry.* 2021;12:643783. <https://doi.org/10.3389/fpsy.2021.643783>
- Rudiansyah M, Nur'amin HW, Lubis L, Bandiara R, Roesli RM, Rachmadi D. COVID-19 and kidney diseases in Indonesia. *Syst Rev Pharm.* 2020;11(7):435-42.
- Mwai HN. A Retrospective Study on the Outcomes of Peritoneal Dialysis Among Pediatric Patients with Acute Kidney Injury at the Kenyatta National Hospital (Doctoral Dissertation, University of Nairobi); 2018.
- Lin MY, Liu MF, Hsu LF, Tsai PS. Effects of self-management on chronic kidney disease: A meta-analysis. *Int J Nurs Stud.* 2017;74:128-37. <https://doi.org/10.1016/j.ijnurstu.2017.06.008>
- Sullivan GB, Sagala S. Quality of life and subjective social status after five years of Mount Sinabung eruptions: Disaster management and current sources of inequality in displaced, remaining and relocated communities. *Int J Disaster Risk Reduct.* 2020;49(101629):1-6.
- Levin A, Tonelli M, Bonventre J, Coresh J, Donner JA, Fogo AB, et al. Global kidney health 2017 and beyond: A roadmap for closing gaps in care, research, and policy. *Lancet.* 2017;390(10105):1888-917. [https://doi.org/10.1016/S0140-6736\(17\)30788-2](https://doi.org/10.1016/S0140-6736(17)30788-2)
- Azar AT, Canaud B. Hemodialysis system. In: *Modelling and Control of Dialysis Systems.* Berlin, Heidelberg: Springer; 2013. p. 99-166.
- Health Services. Mental Health Administration. *Hemodialysis Manual, 1971.* United States: US Government Printing Office; 1971.
- Olbricht C, Lonnemann G, Koch KM. 12.3 haemodialysis, haemofiltration. In: *Oxford Textbook of Clinical Nephrology.* Vol 3. Oxford: Oxford University Press; 2005. p. 1927.
- Blaydon DC, Biancheri P, Di WL, Plagnol V, Cabral RM, Brooke MA, et al. Inflammatory skin and bowel disease linked to ADAM17 deletion. *N Engl J Med.* 2011;365(16):1502-8. <https://doi.org/10.1056/NEJMoa1100721>
- Leypoldt JK, Jaber BL, Zimmerman DL. Predicting treatment dose for novel therapies using urea standard Kt/V. *Semin Dial.* 2004;17(2):142-5. <https://doi.org/10.1111/j.0894-0959.2004.17212.x>
- Vassalotti JA, Centor R, Turner BJ, Greer RC, Choi M, Sequist TD, National Kidney Foundation Kidney Disease Outcomes Quality Initiative. Practical approach to detection and management of chronic kidney disease for the primary care clinician. *Am J Med.* 2016;129(2):153-62.e7. <https://doi.org/10.1016/j.amjmed.2015.08.025>
- Dunne N, Campbell M, Fitzpatrick M, Callery P. Comparison of Kt/V and urea reduction ratio in measuring dialysis adequacy in paediatric haemodialysis in England. *J Ren Care.* 2014;40(2):117-24. <https://doi.org/10.1111/jorc.12059>
- Zwang NA, Nigwekar SU, Steele DJ. Hemodialysis complications. In: *Core Concepts in Dialysis and Continuous Therapies.* Boston, MA: Springer; 2016. p. 39-51.
- Kopriva D, McCarville DJ, Jacob SM. Distal revascularization and interval ligation (DRIL) procedure requires a long bypass for optimal inflow. *Can J Surg.* 2014;57(2):112-5. <https://doi.org/10.1007/s11864-013-0212-2>

- org/10.1503/cjs.000613
PMid:24666449
17. Song JH. Complications of hemodialysis. In: *The Essentials of Clinical Dialysis*. Singapore: Springer; 2018. p. 105-26.
 18. Özkan G, Ulusoy S. Acute complications of hemodialysis. In: *Technical Problems in Patients on Hemodialysis*. London: IntechOpen; 2011.
 19. Özkan G, Ulusoy Ş, Penido MG. Acute complications of hemodialysis. In: *Technical Problems in Patients on Hemodialysis*; 2011. p. 251-94.
 20. Man NK, Zingraff JJ, Jungers P. *Long-term Hemodialysis*. Berlin, Germany: Springer Science & Business Media; 2012.
 21. Himmelfarb J. Hemodialysis complications. *American Journal of Kidney Diseases*. 2005 Jun 1;45(6):1122-31.
 22. Jofré R, López-Gómez JM, Moreno F, Sanz-Guajardo D, Valderrábano F. Changes in quality of life after renal transplantation. *American Journal of Kidney Diseases*. 1998 Jul 1;32(1):93-100.
 23. van Gelder MK, Jong JA, Folkertsma L, Guo Y, Blüchel C, Verhaar MC, *et al.* Urea removal strategies for dialysate regeneration in a wearable artificial kidney. *Biomaterials*. 2020;234:119735. <https://doi.org/10.1016/j.biomaterials.2019.119735>
PMid:31958714
 24. Muehrer RJ, Becker BN. Life after transplantation: New transitions in quality of life and psychological distress. *Semin Dial*. 2005;18(2):124-31. <https://doi.org/10.1111/j.1525-139X.2005.18214.x>
PMid:15771656
 25. Jager KJ, Korevaar JC, Dekker FW, Krediet RT, Boeschoten EW, Netherlands Cooperative Study on the Adequacy of Dialysis (NECOSAD) Study Group. The effect of contraindications and patient preference on dialysis modality selection in ESRD patients in The Netherlands. *Am J Kidney Dis*. 2004;43(5):891-9. <https://doi.org/10.1053/j.ajkd.2003.12.051>
PMid:15112180
 26. Traouda V, Mpogiatzidis P. Dialysis and medical tourism. Investigating patients' perceptions in Greece. *Int J Hum Rights Healthc*. 2021;14(5):411-25.
 27. Dekkers W, Uerz I, Wils JP. Living well with end stage renal disease: Patients' narratives interrupted from a virtue perspective. *Ethical Theory Moral Pract*. 2005;8(5):485-506. <https://doi.org/10.1007/s10677-005-8242-9>
PMid:16538760
 28. Malm C, Jakobsson J, Isaksson A. Physical activity and sports-real health benefits: A review with insight into the public health of Sweden. *Sports (Basel)*. 2019;7(5):127. <https://doi.org/10.3390/sports7050127>
PMid:31126126
 29. Ginieri-Coccosis M, Theofilou P, Synodinou C, Tomaras V, Soldatos C. Quality of life, mental health and health beliefs in haemodialysis and peritoneal dialysis patients: Investigating differences in early and later years of current treatment. *BMC Nephrol*. 2008;9:14. <https://doi.org/10.1186/1471-2369-9-14>
PMid:19014597
 30. Belasco A, Barbosa D, Bettencourt AR, Diccini S, Sesso R. Quality of life of family caregivers of elderly patients on hemodialysis and peritoneal dialysis. *Am J Kidney Dis*. 2006;48(6):955-63. <https://doi.org/10.1053/j.ajkd.2006.08.017>
PMid:17162150
 31. Feroze U, Noori N, Kovesdy CP, Molnar MZ, Martin DJ, Reina-Patton A, *et al.* Quality-of-life and mortality in hemodialysis patients: Roles of race and nutritional status. *Clin J Am Soc Nephrol*. 2011;6(5):1100-11. <https://doi.org/10.2215/CJN.07690910>
PMid:21527646
 32. van Klaveren CW, de Jong PG, Hendriks RA, Luk F, de Vries AP, van der Boog PJ, *et al.* Topics, delivery modes, and social-epistemological dimensions of web-based information for patients undergoing renal transplant and living donors during the COVID-19 pandemic: Content analysis. *J Med Internet Res*. 2020;22(10):e22068. <https://doi.org/10.2196/22068>
PMid:32946412
 33. García-Llana H, Remor E, Del Peso G, Selgas R. The role of depression, anxiety, stress and adherence to treatment in dialysis patients health-related quality of life: A systematic review of the literature. *Nefrologia*. 2014;34(5):637-57. <https://doi.org/10.3265/Nefrologia.pre2014.Jun.11959>
PMid:25259819
 34. Sousa H, Ribeiro O, Costa E, Frontini R, Paúl C, Amado L, *et al.* Being on hemodialysis during the COVID-19 outbreak: A mixed-methods' study exploring the impacts on dialysis adequacy, analytical data, and patients' experiences. *Semin Dial*. 2021;34(1):66-76. <https://doi.org/10.1111/sdi.12914>
PMid:32939844
 35. López Revuelta K, García López FJ, de Alvaro Moreno F, Alonso J. Perceived mental health at the start of dialysis as a predictor of morbidity and mortality in patients with end-stage renal disease (CALVIDIA study). *Nephrol Dial Transplant*. 2004;19(9):2347-53. <https://doi.org/10.1093/ndt/gfh392>
PMid:15252167
 36. Frutuoso M, Castro R, Oliveira L, Prata C, Morgado T. Quality of life in chronic kidney disease. *Nefrologia*. 2011;31(1):91-6. <https://doi.org/10.3265/Nefrologia.pre2010.Jul.10483>
PMid:21270919
 37. Besarab A, Bolton WK, Browne JK, Egrie JC, Nissenson AR, Okamoto DM, *et al.* The effects of normal as compared with low hematocrit values in patients with cardiac disease who are receiving hemodialysis and epoetin. *N Engl J Med*. 1998;339(9):584-90. <https://doi.org/10.1056/NEJM199808273390903>
PMid:9718377
 38. Cavanaugh KL, Osborn CY, Tentori F, Rothman RL, Ikizler TA, Wallston KA. Performance of a brief survey to assess health literacy in patients receiving hemodialysis. *Clin Kidney J*. 2015;8(4):462-8. <https://doi.org/10.1093/ckj/sfv037>
PMid:26251719
 39. Bell D. *Well-Being and Quality of Life: Measuring the Benefits of Culture and Sport: A Literature Review and Thinkpiece*, Scottish Executive Social Research; 2005.
 40. Belasco AG, Sesso R. Burden and quality of life of caregivers for hemodialysis patients. *Am J Kidney Dis*. 2002;39(4):805-12. <https://doi.org/10.1053/ajkd.2002.32001>
PMid:11920347
 41. Fukuhara S, Lopes AA, Bragg-Gresham JL, Kurokawa K, Mapes DL, Akizawa T, *et al.* Health-related quality of life among dialysis patients on three continents: The dialysis outcomes and practice patterns study. *Kidney Int*. 2003;64(5):1903-10. <https://doi.org/10.1046/j.1523-1755.2003.00289.x>
PMid:14531826
 42. Janitra FE, Melastuti E, Yusuf A, Fadhilah H, Wibawa YA. Perceived stigma, psychological response, and nurse coping in the COVID-19 pandemic in Indonesia. *Padjadjaran Nursing J*. 2021;9(1):10-7.
 43. Fathiariani L, Nassimbwa J. Investigating the burden of mental distress among nurses at a provincial COVID-19 referral hospital in Indonesia: A cross-sectional study. *BMC Nurs*. 2021;20(1):1-8.