



# Depression and Anxiety in Chronic Kidney Disease Patients Undergoing Hemodialysis Therapy at Hemodialysis Installations General Hospital Dr. Moewardi Surakarta

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<p><b>Track Record Article</b></p> <p>Accepted: 15 May 2023 Revised: 20 October 2023 Published: 27 December 2023</p> <p><b>How to cite :</b> Putri, D. D. H., &amp; Nugroho, I. (2023). Depression and Anxiety in Chronic Kidney Disease Patients Undergoing Hemodialysis Therapy at Hemodialysis Installations General Hospital Dr. Moewardi Surakarta. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 5(4), 1478–1488.</p>	<p style="text-align: center;"><b>Abstract</b></p> <p><i>This study is an analytical descriptive study with a cross-sectional design that aims to determine the proportion and level of depression and anxiety of patients, as well as the relationship between the length of hemodialysis therapy with depression and anxiety of patients with Chronic Kidney Disease undergoing hemodialysis therapy at the Hemodialysis Installation of Dr. Moewardi Surakarta Regional General Hospital. Samples in this study were taken by purposive sampling. The sample in this study amounted to 31 research subjects. The specified data analysis is a Chi-square test analysis to test the relationship between variables. The percentage of anxiety among Chronic Kidney Disease patients receiving hemodialysis treatment at Dr. Moewardi Surakarta Regional General Hospital's Hemodialysis Facility is 29%, while the percentage of depressed patients with Chronic Kidney Disease undergoing hemodialysis therapy at the same facility is 41.9%. It has been determined that there is no discernible correlation between the duration of hemodialysis therapy and the emergence of anxiety and depression in patients with Chronic Kidney Disease at this specific healthcare center. To gain a more comprehensive understanding, additional research is warranted to investigate other factors linked to anxiety and depression in patients with chronic kidney disease undergoing hemodialysis therapy. Furthermore, there is a pressing need for the implementation of a screening program for Chronic Kidney Disease patients undergoing hemodialysis therapy at hospitals, with a potential referral to the Department of Psychiatry for the assessment and management of any mental symptoms that may arise.</i></p> <p><b>Keywords :</b> <i>Anxiety, Chronic kidney disease, Depression</i></p>
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## INTRODUCTION

Kidney disease is one of the diseases that cause high distress in sufferers due to the chronicity of the disease and its long-term treatment (Hawamdeh et al., 2017). Chronic kidney disease is a global public health problem with increasing incidence and prevalence. Chronic kidney disease is the discovery of abnormal kidney structure or function abnormalities >3 months, classification of CKD including healthy individuals based on etiology, glomerular filtration rate category and albuminuria category. Chronic kidney disease is the presence of kidney damage detected albumin excretion > 30 mg / day or equivalent to decreased renal function estimated glomerular filtration rate / eGFR < 60 ml / min for 3 months or more or other markers (Rosyanti et al, 2023). Based on data released by Riskesdas in 2013, as many as 2 per 1000 people or 499,800 Indonesians suffer from chronic kidney disease, while data from the Indonesian Nephrology Association (Pernefri) in 2006 obtained a prevalence of chronic kidney disease of 12.5% (Utarayana et al, 2023). Patients with chronic kidney disease must undergo hemodialysis treatment for life and experience various problems that arise due to

malfunctioning kidneys that can appear at any time until the end of life. This situation becomes a stressor that can cause physical weakness and helplessness and lack of self-acceptance, which can lead patients to conditions of stress, anxiety, and even depression (Mutiarra et al, 2018).

Anxiety and depression are known causes of morbidity among patients with chronic diseases; and mental disorders are common in chronic kidney disease (Karaminia et al., 2007). Although hemodialysis is a lifesaving therapy for people suffering from chronic kidney disease, evidence has shown that people on hemodialysis have a poor quality of life (Feroze et al., 2012). One study has observed that many people on hemodialysis experience anxiety before and during therapy (Feroze et al., 2012). Underestimated and untreated anxiety and depression can lead to a decrease in the patient's quality of life (Gerogianni et al., 2019).

The etiology of depression in people with kidney disease is complex. Kidney disease causes exposure to many physical and psychological stressors, ranging from severe symptoms of internal organs, pain, insomnia, the need to adhere to a certain diet, and others. Cronies also suffer for years of discomfort and disruption as they have to spend hours on dialysis during their lives and common psychiatric complications are depression, anxiety, dementia, delirium, coping difficulties, and marital or family problems. The development of depression adversely affects the general state of health of the sufferer as well as the cooperation between doctors and patients in their care and can lead to the discontinuation of hemodialysis therapy itself. Studies prove that depression worsens their perception of well-being, which ultimately affects their adherence to the treatment regimen (Hawamdeh et al., 2017)(Valsaraj et al., 2016)

Depression is the most common psychosocial factor seen in chronic kidney disease and has been linked to poor *outcomes* (RI, 2017). Depression is just as debilitating as kidney disease itself and should be given equal attention. Interestingly, treatment for people with chronic kidney disease today tends to focus on the biological dimensions of the disease or other technical problems associated with hemodialysis machines and usually underestimates the mental symptoms that appear (Gerogianni et al., 2019). At Dr. Moewardi Surakarta Regional General Hospital, there are around 250 patients with Chronic Kidney Disease who undergo hemodialysis therapy every month, and of these, it is not yet known the proportion who experience depression and anxiety, the level of depression and anxiety, and the long relationship of undergoing hemodialysis therapy with depression and anxiety experienced by sufferers.

Previous research conducted by Gadia et al (2020) stated that CKD patients undergoing hemodialysis generally experience symptoms of depression and anxiety due to various physical and psychosocial factors. The prevalence of depressive disorders and anxiety disorders in CKD

patients is around 66% and 61%, respectively. Depression and anxiety were significantly associated with gender, occupation, income and duration of hemodialysis in these patients.

The novelty of this study is to examine and compare several previous research results regarding depression and anxiety in chronic kidney disease patients undergoing hemodialysis therapy. The importance of research on the factors that cause depression and anxiety in chronic kidney disease patients is to be able to handle it early if something similar happens to the closest family. Thus, the purpose of this study is to determine the level of depression and anxiety in patients with chronic kidney disease who undergo hemodialysis therapy at Hemodialysis Installations General Hospital Dr. Moewardi Surakarta.

## **METHODS**

This study is observational or non-experimental with a quantitative approach, which uses a *cross-sectional* design (cross-section), where measurements are carried out at one time, where the research subject is only observed once and the measurement of subject variables is carried out at the time of the examination. Data processing is done in a descriptive-analytic manner (Sutantio, 2021). The study was conducted at the Hemodialysis Installation Dr. Moewardi Surakarta Regional General Hospital in the period November-December 2020. The samples in this study were people suffering from Chronic Kidney Disease who received hemodialysis therapy at the Hemodialysis Installation Dr. Moewardi Surakarta Regional General Hospital and who met the inclusion criteria. The inclusion criteria in this study are patients with Chronic Kidney Disease who routinely undergo hemodialysis therapy two to three times/week at the Hemodialysis Installation of Dr. Moewardi Hospital Surakarta, adult age according to WHO criteria (20-60 years), and can read and write in Indonesian. The exclusion criteria in this study were patients with Chronic Kidney Disease with a history of mental disorders who were under psychiatric treatment, and patients with Chronic Kidney Disease who refused to participate in the study. Samples in this study were taken by purposive sampling. The sample in this study amounted to 31 research subjects.

The instrument used in this study is the Hospital Anxiety and Depression Scale (HADS). This instrument assesses anxiety (HADS-A) and depression (HADS-D), which generally appear together. The questionnaire consisted of seven questions for anxiety and seven questions for depression. Questions for anxiety and depression were criss-crossed in questionnaires, and assessed separately. A score of 8-10 means mild symptoms, a score of 11-14 means moderate symptoms, and a score of 15-21 means severe symptoms (Snaith, 2003).

The software used for data processing analysis is SPSS to input the data that has been collected. After that, a careful data cleaning and validation process was carried out to ensure reliable data quality. This validation process aims to eliminate invalid or irrelevant data so that the analysis results are more accurate. The specified data analysis is a Chi-square test analysis to test the relationship between variables.

## RESULTS

**Table 1. Characteristics of Respondents**

Characteristic	Frequency	%
<b>Gender</b>		
Man	20	64.5
Woman	11	35.5
<b>Total</b>	<b>31</b>	<b>100</b>
<b>Marital Status</b>		
Marry	25	81
Unmarried	6	19
<b>Total</b>	<b>31</b>	<b>100</b>
<b>Education</b>		
SD	8	27
SMP	4	12
SMA	13	42
D3/S1	5	16
S2/S3	1	3
<b>Total</b>	<b>31</b>	<b>100</b>
<b>Profession</b>		
Does not work	12	38.7
Odd Bumps	1	3.2
Now	3	9.7
Housewives	1	3.2
Self-employed/merchant	9	29
Private employees	2	6.5
Active Civil Servant	1	3.2
Retired civil servants	2	6.5
<b>Total</b>	<b>31</b>	<b>100</b>

Based on Table 1 above, it was found that the more dominant research subjects were male subjects (64.5%). In addition, it can also be seen from Table 1 that the majority of research subjects did not work (38.7%).

**Table 2. Long Period of Hemodialysis Therapy Research Subjects**

Long Duration of Hemodialysis Therapy	Frequency	%
<3 months	3	9.7
3-12 months	7	22.6
>12 months	21	67.7
<b>Total</b>	<b>31</b>	<b>100</b>

Based on Table 2 above, it can be seen that the majority of study subjects had a duration of undergoing hemodialysis therapy for >12 months (67.7%), followed by the duration of undergoing hemodialysis therapy for 3-12 months (22.6%).

**Table 3. Anxiety and Depression of Research Subjects**

<b>Factor</b>	<b>Frequency</b>	<b>%</b>
No anxiety	22	71
Light	4	12.9
Keep	4	12.9
Heavy	1	3.2
<b>Total</b>	<b>31</b>	<b>100</b>
Not depressed	18	58.1
Light	9	29
Keep	3	9.7
Heavy	1	3.2
<b>Total</b>	<b>31</b>	<b>100</b>

Based on Table 3 above, it can be seen that the study subjects experienced mild and moderate anxiety as much as 12.9% each, followed by severe anxiety as much as 3.2%. Research results were also obtained, it can be seen that the study subjects experienced mild depression as much as 29%, then moderate depression as much as 9.7%, and finally major depression as much as 3.2%.

**Table 4. Chi-Square Test Between Long Hours of HD Therapy with Anxiety and Depression**

	<b>P</b>	<b>Value</b>	<b>Df</b>
Anxiety	0,506	5,301	6
Depression	0,380	6,397	6

Based on the results of the Chi-Square test conducted, it was found that there was no significant relationship between the duration of undergoing hemodialysis therapy with anxiety and depression in patients with Chronic Kidney Disease at the Hemodialysis Installation of Dr. Moewardi Surakarta Regional General Hospital.

Data analysis starts with an assessment of the characteristics of research subjects consisting of gender, marital status, education level, and occupation. In this study, it was found that the majority of research subjects were male (64.5%) and not working (38.7%). This is to the consensus reported by Infodatin PGK which reports that the prevalence of Chronic Kidney Disease is higher in men than women and in individuals who do not have jobs and/or livelihoods as laborers, farmers, & fishermen, as well as in individuals who do not attend school (do not have education). This is also by a study conducted by Hawamdeh et al. (2017) which reported that patients with Chronic Kidney Disease were male (51.3%) more than female (48.6%) and

mostly did not work (76.5%). A study reported 60.2% of patients on dialysis were unable to maintain their jobs/professions and 36.7% had to retire after starting dialysis therapy.

## DISCUSSION

In this study, it was found that 29% of research subjects experienced anxiety and 41.9% of research subjects experienced depression. This is not much different from the study reported by Feroze (2012) which states that the prevalence of anxiety and depression in patients undergoing hemodialysis therapy is high. The study by Feroze (2012) reported that the prevalence of anxiety in the population undergoing routine hemodialysis therapy was 30%-45% and the prevalence of depression in the population undergoing routine hemodialysis therapy was 20%-30%.

The kidneys play an important role in the excretion of toxic substances or toxins, maintaining the balance of fluids and other substances in the body. The kidneys excrete metabolic waste from the end result of protein 4 ureum, creatinine, and ammonia (Aditya et al, 2018). The overall function of the kidneys is based on the function of the nephrons and their impaired function is caused by the decreased work of the nephrons (Verdiansah, 2016).

Chronic renal failure is progressive kidney damage characterized by uremia (urea and other wastes circulating in the blood and its complications if dialysis or kidney transplantation is not performed). Chronic renal failure (GGK) is a clinical symptom due to a chronic decline in kidney function, kidney failure also causes death if replacement therapy is not carried out, due to the failure of kidney function to maintain metabolism and electrolytes (Damanik, 2020).

Hemodialysis as an act of transferring functions and roles that were originally carried out by the kidneys. Where this action is assisted by a machine called a dialyzer. Hemodialysis therapy is usually scheduled 1 to 3 times a week with the time required in 1 hemodialysis is 3-5 hours (Amaludin et al, 2023). Hemodialysis is one of the most common renal replacement therapies chosen by patients with CKD. In the hemodialysis process, the machine removes blood from the body, filters it through a dialyzer as an artificial kidney and returns the cleaned blood to the body (Tambunan & Siagian, 2023).

The state of dependence on hemodialysis machines results in changes in the lives of patients with terminal renal failure who carry out hemodialysis therapy (Wakhid et al, 2018). The period of time patients undergo hemodialysis can affect the depression experienced by patients. Hemodialysis therapy 2 to 3 times a week can affect the physical and psychological conditions of patients. Fear and worry about various consequences in the future can arise in patients because they always depend on hemodialysis therapy forever (Nurfajri et al, 2022).

Chronic kidney failure can be classified as a stressor, which is an event that causes stress in a person. Chronic renal failure patients who experience anxiety cause drastic changes not only physically but also psychologically in patients. Patients with chronic renal failure who will perform hemodialysis often experience anxiety (Rahman et al., 2022).

In this study, the highest level of anxiety of research subjects was mild and moderate anxiety, which was 12.9% each, and then followed by severe anxiety as much as 3.2%. According to Caninsti (2013) there are 5 possible predisposing factors or factors that can potentially cause individuals to experience anxiety, including: 1) Genetic inheritability (genetic inheritance) Heredity factors affect whether or not the autonomic nerves are receptive to stimulation. In other words, someone with a family history of anxiety disorders tends to show more anxiety when faced with a worrisome situation; 2) Physical disease states (physical illness) The cognitive view says that physical disease factors can make individuals experience anxiety; 3) Psychological trauma / mental trauma (Mental Trauma) Individuals will become more easily anxious when they are faced with situations that are similar to previous experiences that have caused trauma, where the situation is like a learned scheme; 4) Absence of coping mechanisms Individuals who experience anxiety often show a deficit in self-adjustment responses to anxiety itself. They feel powerless to find strategies to cope with the anxiety. As a result, individuals allow themselves to be in situations that can potentially make them anxious; 5) Irrational thoughts, assumptions and cognitive processing errors (Irrational thoughts, assumptions and cognitive processing errors).

In this study, it was also found that the highest level of depression of the study subjects was mild depression, which was as much as 29%, followed by moderate depression as much as 9.7%, and the last was severe depression as much as 3.2%. This is not much different from the results of the study reported by Gerogianni (2014). namely, the highest level of anxiety of research subjects in the study was mild anxiety (64%), followed by moderate anxiety as much as 18.8%, and the last is severe anxiety as much as 17.1%; And the highest level of depression of the study subjects was mild depression (70.5%), then followed by moderate depression as much as 17.1%, and the last was severe depression as much as 12.3%. This is also by a study conducted by Hawamdeh (2017) which reported that 28.3% of study subjects experienced mild depression, followed by moderate depression as much as 25.6%, and finally major depression as much as 14.56%. The results of research on the prevalence of anxiety and depression in patients undergoing hemodialysis therapy are consistent with previous studies.

Depression, which is a psychological reaction in the form of mood disorders due to illness, is experienced by patients with GJK who undergo hemodialysis. Various signs and symptoms

of depression are shown by patients such as sadness, uselessness, guilt and hopelessness (Pardede et al, 2020). Depression is one of the major mood disorders. Depression is a feeling of loss of energy and interest, feelings of guilt, difficulty concentrating, loss of appetite, and thoughts of death or suicide. Other signs and symptoms of mood disorders are changes in activity level, cognitive ability, speech and vegetative functions such as sleep, appetite, sexual activity and other biological rhythms. These changes almost always lead to impaired interpersonal, social and occupational functioning (Riskal et al, 2020). These depressive symptoms are associated with increased mortality and decreased quality of life of patients undergoing hemodialysis (Amalia et al, 2015).

Depression in chronic renal failure patients is divided into 4 factors, namely demographic factors (education and economy), social factors (family support), chemical factors (treatment program) and internal factors (self-efficacy, motivation and compliance) (Pratiwi, 2022). The depression is due to not being able to adapt to his health which must carry out hemodialysis therapy for life, anxiety about complications of the disease suffered, feeling a burden on the family, the large costs required, and freedom that must be limited so that it can make quality of life poor (Azwardi et al, 2021).

According to many studies, depression in patients with Chronic Kidney Disease is related to several factors such as the patient's reaction to the diagnosis and the nature of therapy that must be lived for life; As well as the long-term effects of therapy such as decreased quality of life, job loss, and financial burden for sufferers and families. Patients who experience depression also increasingly show their inability to carry out daily activities. The depressive symptoms experienced by these sufferers further aggravate their disease condition, affecting their adherence to therapeutic procedures, and their ability to cope with problems (Hawamdeh et al., 2017). According to Rustina (2012) the highest level of depression in patients with chronic renal failure undergoing hemodialysis in July 2012 was mild depression, then moderate depression and severe depression. Family support is assistance provided by the family to family members who need help. Forms of family support can be in the form of informational, instrumental, appreciation, and total family support. Family support is very influential on the mental health of patients (Tartum et al, 2016).

This study, based on the results of the Chi-square test analysis conducted showed no significant relationship between the length of hemodialysis therapy with anxiety and depression of patients, with  $p > 0.05$  (0.506 and 0.380). In this study, the majority of study subjects had a duration of hemodialysis therapy for >12 months (67.7%). According to the



period of adjustment theory in patients undergoing hemodialysis therapy, patients who have undergone hemodialysis therapy for >12 months are at the long-term period of adjustment. This stage is characterized by partial acceptance by patients of all the limitations they experience due to undergoing hemodialysis therapy; Unlike the previous two phases where they experienced fear & anxiety, sleep disturbances, depressive symptoms, frustration, sadness, anger, and fatigue. Further research is needed to determine other factors associated with anxiety and depression in patients undergoing hemodialysis therapy.

## CONCLUSIONS

Patients with chronic kidney disease who undergo hemodialysis therapy experience anxiety and depression in varying degrees from mild to severe. The proportion of anxiety of patients with Chronic Kidney Disease undergoing hemodialysis therapy at the Hemodialysis Installation of Dr. Moewardi Surakarta Regional General Hospital is 29% and the proportion of depressed Chronic Kidney Disease patients undergoing hemodialysis therapy at the Hemodialysis Installation of Dr. Moewardi Surakarta Regional General Hospital is 41.9%. There is no relationship between the duration of hemodialysis therapy with the onset of anxiety and depression in patients with Chronic Kidney Disease at the Hemodialysis Installation of Dr. Moewardi Surakarta Regional General Hospital.

Further research is needed to assess other factors associated with anxiety and depression in patients with chronic kidney disease undergoing hemodialysis therapy. There is a need for a screening program for patients with Chronic Kidney Disease undergoing hemodialysis therapy in hospitals and if necessary consult the Department of Psychiatry to assess the mental symptoms that appear and treatment.

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