REVIEW
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# Psychological Impact of Chronic Kidney Disease and Hemodialysis: Narrative Review

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***Abbreviations***
CKD, Chronic kidney disease; AKI, Acute kidney injury; QoL, Quality of life.

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***Abstract***
**Background:** Chronic kidney disease (CKD) patients undergo hemodialysis to treat their condition. But this treatment comes with its own set of problems like psychiatric and mental disorders. Many of these patients experience low self-esteem, stress, depression, and anxiety, making it difficult to cope with their disease. CKD is a global general medical issue. Psychiatric disorders have been reported in more than 50% of end-stage kidney disease patients undergoing hemodialysis. Unfortunately, their attending doctors and nurses often overlook these psychological problems. Furthermore, the non-psychiatric medication prescribed may not help alleviate the symptoms of emotional distress.
**Objective:** The article aimed to explore and review the literature concerning the psychological impact of CKD and hemodialysis on patients with CKD.
**Method:** A literature review based on previous studies and assessments derived from international databases (PubMed, Medline and Scopus) related to people's psychological problems with CKD. The data collection was conducted from 24 November 2021 to 10 February 2022. Also, was used keywords such as hemodialysis, kidney failure, psychological disorders or factors, economic status, social status, and quality of life.
**Conclusion:** Psychiatric disorders in patients with CKD and undergoing hemodialysis are ignored, negatively impacting their quality of life. Awareness of CKD is lacking among physicians and general public health because the worldwide burden increases. The disease's complexity and chronic nature affect patients' quality of life with CKD and their health. Therefore, nephrology nurses play an essential role in ensuring effective nursing intervention and psychological support of patients with CKD during hemodialysis therapy.

**Keywords:** Hemodialysis, chronic kidney disease, psychological disorders, psychiatric disorders

## Introduction

Chronic kidney disease (CKD) is a public health problem, and it tends to take dimensions of an epidemic and seriously impacts the quality of a patient's life. It is mainly due to diabetes, high blood pressure, glomerulonephritis, and multiple kidney diseases. Patients with CKD undergo hemodialysis to treat their condition. But this treatment comes with its own set of problems like psychiatric and mental disorders. Many of these patients experience low self-esteem, stress, depression, and anxiety, making it difficult to cope with their disease. CKD is a global general medical issue. Psychiatric disorders have been reported in more than 50% of patients with end-stage kidney disease and undergoing hemodialysis treatment. Unfortunately, their attending doctors and nurses often overlook these psychological problems.

Furthermore, the non-psychiatric medication prescribed may not help alleviate the symptoms of emotional distress [1]. Psychosocial issues are an understudied yet essential concern in the overall health of hemodialysis patients. Stress is accompanied by chronic diseases and their treatment and can significantly impact the results of psychological and medical care [2].

The International Society of Nephrology Reported that "more than 850 million people around the world are now estimated to have some form of CKD and those on renal replacement therapy (RRT)" (https://ncdalliance.org/the-international-society-of-nephrology-isn 1/5). The prevalence of CKD globally is 10.4% among men and 11.8% among women [3, 4]. Those requiring hemodialysis or transplantation are between 5.3-10.5 million people [5]. However, many patients don't receive these treatments due to financial barriers or lack of resources for CKD, experienced by 13.3 million patients each year, and 85% of these cases are found in low and middle-income countries [6,7]. Centers for Disease Control and Prevention reported that 15% of the U.S. population aged 20 years and older has CKD, which is about 37 million people (https://www.cdc.gov/kidneydisease/pdf/2019_National-Chronic-Kidney-Disease-Fact-Sheet.pdf). Most 9 in 10 adults with CKD do not know they have it, and 1 in 2 people with a deficient renal function who aren't on hemodialysis don't know they have chronic renal failure [8]. In addition, more than 35% of the U.S. population aged 20 years and older with diabetes have a chronic renal disease [9, 10]. Hemodialysis is the most frequent treatment method for chronic renal failure. However, it has been argued that several restrictions and modifications accompany this treatment, which has a detrimental impact on the quality of a patient's life and affects individuals' physical and psychological well-being [11].

Though hemodialysis maintains life, patients face life-long physical, social and psychological problems related to their illness. Hemodialysis can only replace a part, but not all, of the kidney functions. It can't correct complications [12]. Emotional fluctuation, anxiety, depression, fear, and various psychological stresses are most

common amongst patients with CKD, especially at the early stage of treatment. Hemodialysis therapy also causes a significant change in daily living, disruption in work schedule, housing, marriage, and the shift in the social role imposes financial and employment problems. Social adjustment psychological adaptation is a fundamental challenge for patients with renal disease and on hemodialysis treatment [13].

CKD is a psychological process that patients and family members follow in accepting a new image and adapting to a new condition of hemolysis. The quality of life of patients who need hemodialysis is significantly affected because it is related to changes in daily habits and lifestyles of themselves and their families. At the same time, their physical health, functional status, personal relationships, and social and economic status are greatly affected [14] .

Patients with renal failure may show variations of depression and anxiety, which requires proper detection early on to prevent the onset of complications in recovery [15]. Psychiatric comorbidity hurts quality of life (QoL) and response to treatment in renal transplant patients, which is one reason for worse outcomes [11]. It is paramount that you consider your patient's mental health status so that they can be treated appropriately [6]. When people are faced with a chronic disease like renal failure, they are likely to experience increased stress and social isolation, which can lead to depression and anxiety [16].

CKD is a multifaceted problem that affects patients physically and psychologically. The management of these patients often requires a multi-disciplinary team effort. Mental health professionals need to work with nephrologists to manage these patients holistically. Patients suffering from renal failure often present an unusual psychological problem in which the treatment method is different from one to the other. Drug therapy is often needed to manage such issues [17]. Psychological and social issues are a relatively unresearched but important concern for the general health of patients with hemodialysis. Stress is associated with chronic diseases and their treatment and can impact psychological and medical results. This article reviews and explores the impact of psychological, social support, family issues, hemodialysis unit culture, and socioeconomic status on patients with CKD.

## Methodology

A literature review based on previous studies and assessments derived from international databases (PubMed, Medline, Scopus) related to people's psychological problems with CKD. The data collection was conducted from 24 November 2021 to 10 February 2022. Also, was used keywords such as hemodialysis, kidney failure, psychological disorders or factors, economic status, social status, and quality of life.

### Effect of CKD on quality of life

QoL is an essential indicator of the impact of medical treatment [18]. Various problems may affect patients undergoing hemodialysis, including peripheral neuropathy, infection, sleep disorders, cognitive changes, wanness, psychological stress, viscosity reduction, anxiety, depression, and so on [15]. Many studies have shown that physical QoL is lower in CKD patients than in the average population, affecting mortality rates in CKD; however, mental QoL components are unaffected. A person's expectations of their QoL will vary according to factors such as age and past personal experiences [19]. The QoL of CKD patients and their families is strongly associated with the changes in lifestyle and daily habits. At the same time, patients' physical health, functional status, personal relationships, and social and economic prosperity are greatly affected [20]. Studies show that low kidney function, fatigue, and sleep disorders are the most critical factors in reducing the QoL [21].

Mental health issues can be especially prominent in patients suffering from chronic renal failure due to increased stress, social isolation, and fatigue. Doctors often lack knowledge of psychiatric disorders and may not give them proper attention when the patient needs it.

Psychopathology of patients suffering from kidney disease plays a vital role in the eventual result of kidney disease and the occurrence of mental symptoms. The patient's social or family support and the medical staff's support are significant factors affecting the patient's compliance with the disease [12]. In a patient with such a chronic health problem, the strong try to mobilize adaptive strategies for the disease, while the weak lead to the development of mental disorders, non-compliance with treatment and usually leads to disruption of personal and family relationships

### Stressors of Patients Undergoing Hemodialysis

The primary stressors are financial difficulties, changes in social and marital relationships, regular admission to hospital, inability to leave, bringing downtime, fears of disability or death, increasing dependence on artificial renal machines, uncertainty about the future, and physical exhaustion, the most common factors being [22]. These stressors can lead to psychological and physical strain. These stressors may be related to lifestyle or changes in habits due to the condition. Furthermore, according to Girogiani, limiting fluids and foods is the most stressful factor for these patients. The daily fluid intake should not exceed 500ml per day due to the risk of causing pulmonary edema [1].

### Energy

Energy is one of the most essential parts of well-being. For patients with CKD, it's often hard to keep up with all activities, from work to play, and maintain an adequate energy level. CKD can make a patient consistently low in energy, feel tired and look pale [23]. Fatigue, which may significantly influence the capacity of a person to work and participate in numerous activities, is also a vital stressor. Sleep disorders or exhaustion following hemodialysis might induce physical or mental fatigue. Fatigue and decreased energy levels significantly impact patients' lives [24]. The study was conducted from April to July 2016 at the Institute of Medicine, Nursing and Health Sciences, Universiti Sains Malaysia Penang. The sample population involved in this study were patients with CKD and undergoing hemodialysis who registered at the hemodialysis unit of Hospital Raja Perempuan Zainab, which found fatigue is one of the most common symptoms seen in 50% of adults with CKD [25]. Fatigue is caused by inflammation of cytokines, endotoxins, and increased oxidative stress. Fatigue is also a symptom of depression, sleep disorders, and poor quality of life [26].

### Impact on family life

Families with loved ones with CKD experience many different feelings and have specific needs. Chronic disease is a challenge for families and caregivers. CKD is like any other medical crisis in the family [27]. Financial problems and the usual adjustment challenges to limit social and sexual activities are usually present. For the whole family, changes in the personality of CKD and hemodialysis may be more difficult to endure than physical inactivity [28].

The burden facing families of CKD patients is widespread and affects almost all areas of family life. The negative impact of caregiver strain is significant and measurable, resulting in emotional, marital, social, and financial dysfunction, leaving families feeling disempowered to deliver the complex care that patients with CKD require [29]. CKD patients are exposed to an increased risk of depression, unemployment, and sexual dysfunction [28]. Unfortunately, despite enhanced patient survival, the patient's care with chronic renal disease and earlier phases of CKD continues to saddle families with significant psychosocial, emotional, and economic stress [29].

### Mood

After renal failure, most patients experience fast mood changes; biological and psychosocial changes related to hemodialysis therapy increase the risk of developing depression [30]. Mental disorders usually coexist with renal insufficiency diagnosis. Multiple studies have demonstrated that depression is more prevalent in CKD patients and is a potent risk factor for adverse outcomes such as hospitalization

and mortality. However, they are often underdiagnosed or not treated [21]. It is estimated that the incidence of this disease is twice as high as that of other chronic diseases in this population, between two and three times [30]. Depression also increases the risk of aging, worsening clinical outcomes, and increasing mortality [31].

**Personality factors**

The problem in person and emotional response of patients with CKD are common. CKD survivors may seem to be different, showing anger, anxiety, and prudence utterly different from their personalities. The individual may also feel the victim of this and may feel less of a person [32]. Although research studying personality dysfunctions in CKD is limited, according to the study by Koutsopoulou *et al.* about the effect of chronic hemodialysis on the personality of patients found that patients who are on dialysis exhibit considerable psychological personality disorders, such as alexithymia, neuroticism, introversion, and psychoticism [1, 25, 33]. Organ transplant centers globally have reported the incidence of personality disorders to be around 10%–26%, with borderline personality disorders carrying a high risk of post-transplant non-compliance and strained social relationships. Each patient's personality traits and cognitive assessments are strongly associated with depressive symptoms in kidney failure patients. The association between psychological and psychological factors and depression varies depending on gender and age [25].

**Self-Care**

The impact of any chronic disease and long-term condition on patients and their ability to improve self-care can be attributed to many factors, such as understanding and nature of the condition and its impact on the patient's ability. The patient's daily activities, beliefs and expectations, and the patient's participation in self-care and support [34]. Self-care behavior is seen as a problem-oriented response to treatment, influenced by the representation of illness [35]. Patients with CKD may be facing difficulty doing something that is a normal part of their daily life activities resulting from fatigue. Patients may have trouble with several easy activities before the disease, such as exercise and taking self-care. Perception of disease can affect the patient's mental health and disease management and affect their self-care behavior [34].

**Sexual function**

Sexual function is a group of disorders that cause physical and psychological changes, reduced quality of life, and sexual performance satisfaction. In sex, the QoL and sexual dysfunction of women who undergo chronic hemodialysis are significantly lower than healthy women [23]. Also, many men and their partners suffer especially from sexual problems, which negatively influence self-esteem and interpersonal relationships. Sexual dysfunction is a frequent and common condition in CKD patients, with 50% of males living with CKD and 55% of women undergoing hemodialysis having experienced orgasm. A case-control study by Song *et al.* reported that 70% of women suffering from the sexual function of women in Korea with CRF are on hemodialysis. According to this study, women's sexual dysfunction is highest because they lack sexual interest [1]. Also, Ormandy argued that stresses influencing patients' sexual appetite were physical problems after hemodialysis (weight loss, muscle wastage, skin color changes, visual indications of venous percussion). Slightly reduced sexual activities and sexual desire are disturbing and difficult to understand. It can also be hard to talk about, damaging self-esteem and relationships. It can also cause an unpleasant breath and taste in the mouth and anemia. These things can make it challenging to feel good about yourself, especially as a sexual person [23].

**Social role**

CKD's physical and psychological effects can lead to significant changes in the survivor's social position. Almost two-thirds of the respondents felt that their families and social lives were affected somehow. This is especially evident in patients who are seriously restricted by patients with disabilities in their movement [36]. Some survivors believe that their situation has undermined their relationships and extensive social activities, leading to social isolation. To prevent physical disabilities, some people have previously moved, such as driving [37].

**Perception**

Depression is associated with progression to hemodialysis, hospitalization, and death in patients with CKD, irrespective of disease severity and comorbidities. Depression symptoms are common among these patients and may lead to poor medication compliance, increasing the risk of morbidity and mortality [38]. Knowles S, et al. examined perceptions and several measures of psychological well-being, including anxiety and depression, as well as coping strategies in 29 patients with CKD, stage 3b – 4, and 5 hemodialysis patients [39]. The perception of illness directly affects the well-being of the human being, and correlation analysis shows that depression and anxiety are more closely related to the perception of disease than to health status. However, perceptions and psychological well-being in patients with chronic renal disease not requiring renal replacement therapy are under-researched [32].

**Depression**

Depression is the most common psychological consequence and has a significant impact on the QoL of patients undergoing hemodialysis and their caregivers, negatively affecting their health in terms of social, economic, and psychological conditions [40]. Depression is related to essential aspects of clinical practice, including mortality, hospitalization, drug compliance, and low QoL. However, Hedayati et al. report that depression among Pakistan patients is responsible for the highest annual mortality of hemodialysis compared with patients in Western countries. Depression can occur in 73%, and most individuals are in the moderate to a severe group of depression. Depression in chronic renal failure patients is more common, especially from the third to ninth year of therapy, and more often affects women [12]. Depression is also mainly manifested by sadness, anxiety, depression, poor self-assurance, future pessimism, decreased libido, sleep disturbances, and a lack of appetite [41].

**Self-Esteem**

People with severe renal disease have difficulties participating in sports and social work. This harms self-esteem and autonomy. As for the psychosocial image of hemodialysis therapy, self-esteem in patients with interests looks moderate to high for those in good economics and employment. According to the theory of self-determination, autonomy is one of the basic psychological requirements of humanity. It contributes to the happiness of everyday life and the happiness of the mind. When various factors impede the achievement of the needs of autonomy, patients experience a poor sense of self and a bad psychological state.

**Productivity/working**

Increased use of rehabilitation measures in the health and satisfaction of the individual. After CKD, work fulfilling basic human needs, such as financial and community requirements and returning to work, is essential [42]. People with CKD are affected by the disease differently; some people can return to full-time or physically demanding jobs, while others have to modify their working lives considerably to cope. Long-term hemodialysis and low energy levels can be an obstacle to working and require careful planning and thought. As far as physical impairments (especially loss of stamina) are concerned, reducing hours or changing to less demanding work may provide the answer [23].

Consequently, QoL must be constantly monitored, and its variations are considered. A reduction in the QoL of hemodialysis patients can affect various aspects of life. The decrease in QoL from a physical point of view can change the patient's functional state. So, the daily physical activities of the patients are disrupted, and their ability to perform daily activities is decreased [43]. Patients with CKD are

commonly reported to exhibit skeletal muscle wasting, reduced strength and exercise capacity and patients experience fatigue, and loss of power or increased need to rest every day [44], and poor levels of physical functioning, which can contribute to a downward spiral of physical inactivity and deconditioning [45].

Recent studies have confirmed the systemic effects of CKD on physical performance, reporting deterioration in walking ability, muscle strength and fatigue, balance, and fine motor skills with decreased GFR [46]. Padilla *et al.* showed that physical performance and self-reported physical functioning are reduced in patients with mild to moderate CKD [47]. Similar evidence was reported in a Swedish cohort and the African American Study of Kidney Disease and Hypertension (AASK). Hopman *et al.* observed that the physical component is more adversely affected by chronic disease than the mental component [48].

**Physical factors affect patients psychologically**

**Anemia.** The most frequent complication of CKD is anemia. The incidence of anemia in patients in the 3rd Stage of CKD is 5.2%, in patients in the 4th stage is 44.1%, and in end-stage renal disease patients is universal according to existing data from the united state. National Health and Nutrition Examination Survey. In addition, in specific populations of patients, such as African-Americans and diabetes, there is a more significant occurrence of anemia in all phases of kidney disease. Anemia, due to a reduction in kidney excretion of erythropoietin, has clinical effects on stress and depression and has a negative impact on the quality of life of these patients. Critical components of patients' QoL, such as physical activity, sleep, social activity, emotional relationships, anxiety, depression, and mental satisfaction, are positively affected by the correction of anemia.

**Pain.** In patients on hemodialysis, chronic pain is usually between 37% to 50%, while the pain of moderate to severe intensity is present in 82%. The cause of pain is multifaceted and can be caused by hemodynamic surgery (puncture, muscle cramps, headaches) or accompanying systemic diseases and pain syndromes. Pain is the most frequent symptom – patients' discomfort, which significantly affects their quality of life. This is because chronic pain leads to emotional disorders (anxiety, depression), social disorders (separation, negligence), and economic impacts (such as the inability to keep working).

## Conclusion

Psychiatric disorders in patients with CKD and undergoing hemodialysis are underdiagnosed, negatively impacting their quality of life. Awareness of the CKD is lacking among physicians and general public health because the worldwide burden increases. Many patients are prone to numerous psychiatric factors caused by the disease's nature. Providing psychological support to patients undergoing dialysis is of great importance, which can be achieved through a dedicated and continuous assessment and assessment of each patient's needs.

## Recommendation

Increased awareness among nephrologists and psychiatrists is needed about psychiatric disorders in patients with CKD undergoing hemodialysis. Recognizing that mental health issues often go untreated, the American Psychiatric Association created the Practice Guidelines for Psychiatric Disorders for patients with CKD and undergoing hemodialysis. This guideline concisely summarizes current knowledge about psychiatric disorders in such patients and suggests specific diagnostic criteria and treatment strategies that help clinicians identify, treat, monitor, and manage these conditions.

The best time to begin diagnoses would be by psychosocial interventions and adapting them to the development of the disease and focusing on individuals' physical, mental, and social functioning. Psychosocial nursing management aims to facilitate patients' compliance with lifestyle changes and the dialysis process. It includes evaluation, support, and encouragement. Furthermore, the promotion of health programs for chronic renal patients should enhance their self-confidence and self-care capacity and focus more on mental health problems. (anxiety, depression). At the same time, unit intervention and counseling would increase awareness of the disease and the patient through education programs and encourage a biopsychological approach to it.

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