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BURDEN OF PSYCHIATRIC COMORBIDITIES AND COGNITIVE DYSFUNCTION IN CHRONIC KIDNEY DISEASE PATIENTS ATTENDING A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: chronic kidney disease (CKD) is a major public health problem associated with substantial physical, psychological, and cognitive morbidity. Psychiatric disorders and cognitive dysfunction are common but often underrecognized among patients with CKD, adversely affecting treatment adherence, quality of life, and clinical outcomes.

Aim: To determine the prevalence of psychiatric comorbidities and cognitive dysfunction among patients with chronic kidney disease attending a tertiary care hospital.

Materials and Methods: A hospital-based cross-sectional study was conducted among 126 patients with CKD who fulfilled the predefined inclusion and exclusion criteria. Data on sociodemographic characteristics, clinical profile and psychiatric history were collected using a structured proforma. Psychological distress, anxiety, depression and cognitive function were assessed using the General Health Questionnaire-12 (GHQ-12), Hospital Anxiety and Depression Scale (HADS) and Addenbrooke's Cognitive Examination-III (ACE-III), respectively.

Results: Of the 126 participants, 69.5% screened positive for psychological distress, indicating a high burden of psychiatric morbidity. Anxiety symptoms were observed in 68.5% of participants, while depressive symptoms were present in 28.3%. Cognitive performance declined with increasing severity of CKD, with patients in Stage 3 demonstrating significantly better cognitive scores than those in Stage 4, whereas individuals receiving haemodialysis exhibited the greatest degree of cognitive impairment.

Conclusion: Psychiatric morbidity and cognitive dysfunction are highly prevalent among patients with CKD and become more pronounced with advancing disease severity. Routine screening for psychological disorders and cognitive impairment, along with integrated mental health care within nephrology services, may facilitate early intervention, improve treatment adherence, and enhance overall patient outcomes.

Keywords: CKD, Psychiatric Disorder, Dialysis, Depression, GHQ-12, AUDIT, ACE-III.

INTRODUCTION

Chronic kidney disease (CKD) is a major global public health problem characterized by a progressive decline in kidney function that ultimately leads to end-stage renal disease (ESRD) if left untreated.[1]

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The prevalence of CKD has increased steadily over the past two decades owing to the rising burden of diabetes mellitus, hypertension, obesity, and population aging. Besides its well-recognized cardiovascular and metabolic complications, CKD is associated with considerable psychological and neurocognitive morbidity that adversely affects patients' quality of life, treatment adherence, healthcare utilization, and mortality. Consequently, there is increasing recognition that the management of CKD should extend beyond preservation of renal function to include assessment of mental health and cognitive functioning.[2]

The chronic and often irreversible nature of CKD imposes significant emotional and psychosocial stress on affected individuals. Patients are frequently confronted with dietary restrictions, multiple medications, repeated hospital visits, financial burden, uncertainty regarding disease progression, and dependence on renal replacement therapies such as hemodialysis. These challenges contribute to the development of psychiatric disorders, particularly depression and anxiety. Depression has been consistently identified as one of the most common psychiatric comorbidities in CKD and is associated with poor medication adherence, reduced participation in dialysis, diminished quality of life, increased hospitalization, and higher mortality rates. Similarly, anxiety disorders are prevalent among patients with CKD and are often related to fear of disease progression, dialysis procedures, transplantation, and uncertainty regarding prognosis. Despite their high prevalence, these psychiatric conditions frequently remain underdiagnosed and undertreated in routine nephrology practice.[3]

Systematic reviews have demonstrated that psychiatric morbidity is substantially higher among patients with CKD than in the general population. A meta-analysis by Palmer et al. reported that the prevalence of interview-based depression in patients with CKD ranged from approximately 21% to 23%, although estimates varied according to disease stage and diagnostic methods. Likewise, Huang et al., in a systematic review and meta-analysis, found that elevated anxiety symptoms affected approximately 43% of patients with CKD, while clinically diagnosed anxiety disorders were present in nearly one-fifth of patients. [3] These findings highlight the considerable psychological burden associated with CKD and underscore the need for routine psychiatric evaluation in this population.

In addition to psychiatric disorders, cognitive dysfunction is increasingly recognized as an important but underappreciated complication of CKD. Cognitive impairment in CKD encompasses deficits in attention, executive functioning, memory, language, and visuospatial abilities. The pathophysiology is multifactorial and includes cerebrovascular disease, chronic inflammation, oxidative stress, endothelial dysfunction, anemia, accumulation of uremic toxins, and metabolic disturbances. Cognitive decline has been shown to worsen with decreasing glomerular filtration rate and is particularly common among patients receiving maintenance hemodialysis.[4] Impaired cognition adversely affects self-management, adherence to complex treatment regimens, decision-making capacity, and overall clinical outcomes, making its early identification an important component of comprehensive CKD care.

Although several studies have independently evaluated depression, anxiety, or cognitive impairment in CKD, relatively few have comprehensively examined the coexistence of psychiatric morbidity and cognitive dysfunction within the same patient population, particularly in low- and middle-income countries. Furthermore, most available studies have focused on patients undergoing dialysis, while limited evidence exists regarding patients across different stages of CKD attending general hospital settings. Sociocultural differences, variations in healthcare access, and differences in disease characteristics may influence the prevalence and presentation of psychiatric disorders, highlighting the need for region-specific data.

Given the significant impact of psychiatric disorders and cognitive dysfunction on disease progression, treatment adherence, and health-related quality of life, early recognition and timely intervention are essential. Routine screening using validated psychiatric and cognitive assessment tools may facilitate prompt diagnosis, appropriate referral, and integration of mental health services into nephrology care [5] However, evidence from Indian tertiary care settings remains limited, warranting further investigation. Therefore, the present study was undertaken to determine the prevalence and pattern of psychiatric comorbidities and cognitive dysfunction among patients with chronic kidney disease attending a tertiary care hospital and to evaluate their association with the severity of CKD.

MATERIALS AND METHODOLOGY

This cross-sectional survey study was conducted in a tertiary care hospital from 1st of January 2025 to 31st December 2025. All patients who are diagnosed and suffering with CKD with at least 6-month duration was included in this study. The patients with the age of more than 20 years of either gender who are willing to provide written informed consent were included in this study. Patients who are already suffering with any of the psychiatric disorder prior to the diagnosis of CKD, patient with acute on chronic kidney disease and patients who are admitted in critical care unit were not included in this study. After screening the patients, a total of 126 patients were identified during study period. General Health Questionnaire-12 (GHQ-12) which screens for common mental disorders, Hospital Anxiety and Depression Scale (HADS) which quantifies symptoms of anxiety and depression and Addenbrooke's Cognitive Examination-III (ACE-III) which screens for cognitive impairment were used as assessment tools in this study.

RESULTS

A total of 146 patients were identified as CKD however only 126 patients met the inclusion criteria

and gave consent to be the part of the study. A total of 126 patients with chronic kidney disease (CKD) were included in the study. Among them, 73 (57.9%) were males and 53 (42.1%) were females. Based on socioeconomic status, 48 (38.1%) patients belonged to the lower socioeconomic class, 65 (51.6%) to the middle socioeconomic class, and 13 (10.3%) to the upper socioeconomic class. Regarding educational status, 86 (68.3%) patients were educated, whereas 40 (31.7%) were uneducated. The age distribution revealed that 8 (6.3%) patients were aged 20–35 years, 88 (69.8%) were in the 36–50 years age group, and 30 (23.8%) were between 51 and 80 years of age.

Among the 126 patients with chronic kidney disease, 86 (68.3%) exhibited psychological distress, as indicated by a General Health Questionnaire-12 (GHQ-12) score >15 as shown in figure 1. Anxiety was identified in 83 (65.9%) patients based on the Hospital Anxiety and Depression Scale (HADS) as shown in figure 2. Depressive symptoms were observed in 48 (38.1%) patients, of whom 16 (12.7%) had mild depression, 28 (22.2%) had moderate depression, and 4 (3.2%) had severe depression. Assessment of cognitive function using the Addenbrooke's Cognitive Examination-III (ACE-III) revealed that 9 (7.1%) patients had mild cognitive decline (Stage 2), 35 (27.8%) had mild cognitive impairment (Stage 3), 77 (61.1%) had moderate cognitive impairment (Stage 4), and 6 (4.8%) had severe cognitive impairment (Stage 5) as shown in figure 3.

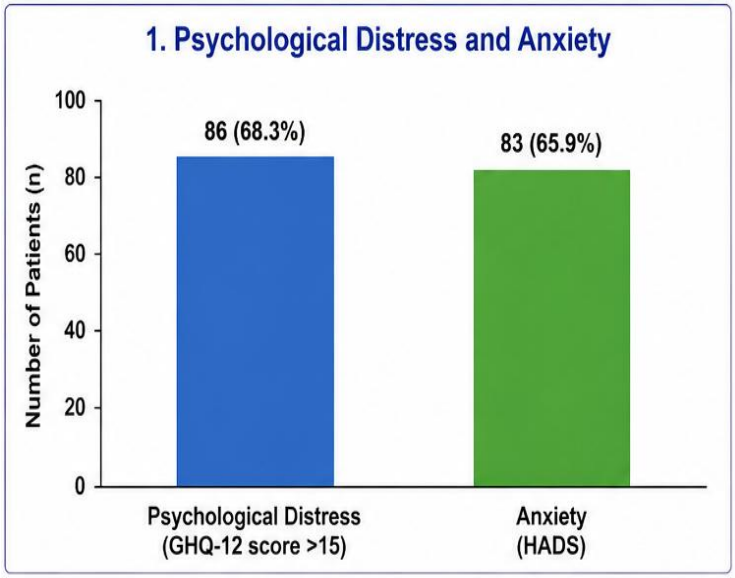

Fig 1: Shows psychological distress and anxiety among CKD patients

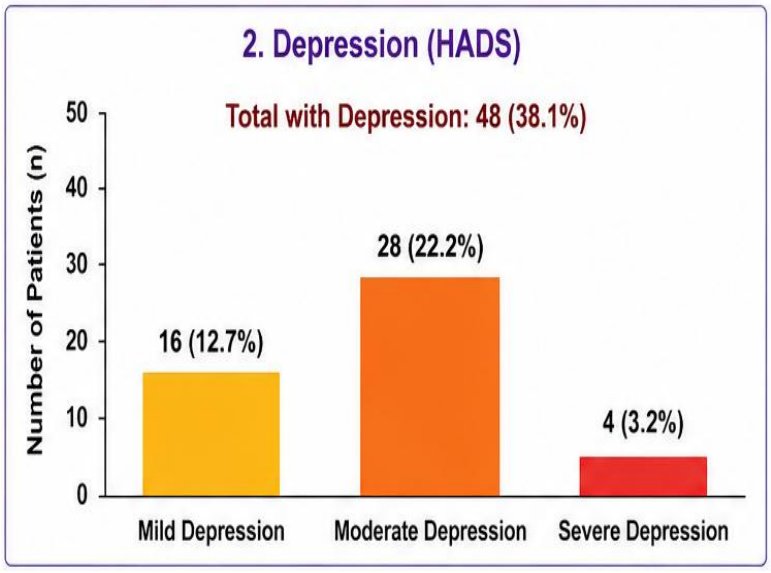

Fig 2: Shows depression among CKD patients

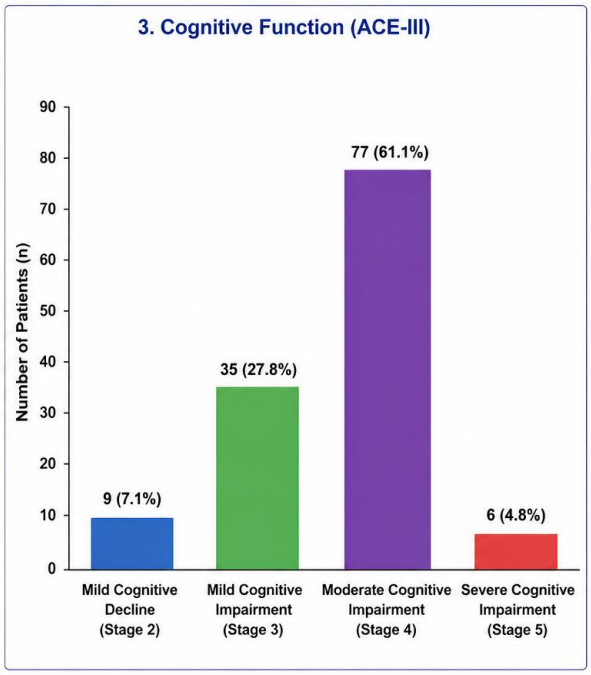

Fig 3: Shows cognitive function (ACE-III)

DISCUSSION

The present study evaluated the prevalence of psychiatric morbidity and cognitive dysfunction among patients with chronic kidney disease (CKD) attending a tertiary care hospital. The findings demonstrate that psychiatric symptoms and cognitive impairment are highly prevalent in patients with CKD, emphasizing the need for routine psychological and cognitive assessment as part of comprehensive nephrology care. These observations are consistent with the growing body of evidence suggesting that CKD affects not only renal function but also psychological well-being and cognitive performance.

In the present study, 86 (68.3%) patients exhibited psychological distress as measured by the General Health Questionnaire-12 (GHQ-12). The high prevalence of psychological distress observed may be attributed to the chronic nature of CKD, repeated hospital visits, financial burden, dietary restrictions, dependence on caregivers, uncertainty regarding disease progression, and the psychological impact of long-term treatment. These findings support previous reports indicating that emotional distress is highly prevalent among individuals with CKD and significantly compromises quality of life and treatment adherence.[6-8]

Anxiety symptoms were identified in 83 (65.9%) patients using the Hospital Anxiety and Depression Scale (HADS), making anxiety the most common psychiatric manifestation in our study. This prevalence is higher than that reported in the systematic review and meta-analysis by Huang et al., which found that approximately 43% of patients with CKD experienced elevated anxiety symptoms and about 19% fulfilled criteria for anxiety disorders. Differences in study populations, disease severity, dialysis status, assessment instruments, and sociocultural factors may account for this variation. Nevertheless, both studies highlight anxiety as an important yet frequently overlooked comorbidity in CKD.[9]

Depressive symptoms were observed in 48 (38.1%) patients in the present study. Although this prevalence is higher than the interview-based prevalence reported by Palmer et al. (approximately 21–23%), it is comparable to studies utilizing screening questionnaires, which generally identify higher rates of depressive symptoms. Screening tools such as HADS detect depressive symptomatology rather than establishing a formal psychiatric diagnosis, which may partly explain the observed difference.[2]

Depression in CKD has significant clinical implications because it has been associated with poor medication adherence, reduced quality of life, increased hospitalization, faster progression of kidney disease, and increased mortality. Palmer et al. further demonstrated that depression independently increases the risk of all-cause mortality among patients with CKD, emphasizing the importance of early recognition and appropriate psychiatric intervention.

Assessment of cognitive function using the Addenbrooke's Cognitive Examination-III (ACE-III) demonstrated varying degrees of cognitive impairment among the study participants. Mild cognitive decline was observed in 9 (7.1%) patients, mild cognitive impairment in 35 (27.8%), moderate cognitive impairment in 77 (61.1%), and severe

cognitive impairment in 6 (4.8%) patients. These findings indicate that cognitive impairment becomes increasingly common among individuals with CKD and represents a substantial clinical burden.[10]

The high prevalence of moderate cognitive impairment observed in our study is supported by previous literature demonstrating that cognitive dysfunction is highly prevalent in CKD, particularly among patients with advanced disease and those receiving dialysis. Sarnak et al. reported that declining kidney function is independently associated with poorer cognitive performance, while Bugnicourt et al. described CKD as a major risk factor for cognitive disorders due to shared vascular pathology and accumulation of uremic toxins.

The mechanisms underlying psychiatric morbidity and cognitive dysfunction in CKD are multifactorial. Chronic inflammation, oxidative stress, cerebrovascular disease, endothelial dysfunction, anemia, electrolyte disturbances, accumulation of uremic toxins, sleep disorders, and polypharmacy have all been implicated in the pathogenesis of neuropsychiatric manifestations. Furthermore, the kidney and brain share similar microvascular architecture, making both organs vulnerable to vascular injury and chronic metabolic insults.[11]

The coexistence of anxiety, depression, and cognitive impairment may substantially impair patients' ability to understand medical advice, adhere to complex medication regimens, participate in shared decision-making, and maintain adequate self-care. Consequently, untreated psychiatric morbidity may adversely influence clinical outcomes and increase healthcare utilization. These observations reinforce the importance of integrating mental health screening into routine nephrology practice.[12]

The findings of the present study have important clinical implications. Routine screening for psychological distress, anxiety, depression, and cognitive dysfunction using validated instruments such as GHQ-12, HADS, and ACE-III may facilitate early identification of vulnerable patients. A multidisciplinary approach involving nephrologists, psychiatrists, psychologists, and clinical psychologists may improve treatment adherence, quality of life, and overall patient outcomes through timely psychosocial interventions.

Overall, the present study adds to the growing evidence that psychiatric morbidity and cognitive dysfunction constitute major but underrecognized complications of CKD. Incorporating routine mental health assessment into standard CKD management may improve holistic patient care and should be considered an essential component of comprehensive nephrology services.

Limitation of the study

Being a single-center, hospital-based cross-sectional study, the findings may not be generalizable to the broader CKD population or to patients receiving care in other healthcare settings. As the study employed a cross-sectional design, causal relationships between CKD severity and neuropsychiatric manifestations could not be established. The potential confounding factors such as duration of CKD, comorbid medical illnesses, biochemical parameters, medication use, dialysis adequacy, socioeconomic stressors, and social support were not evaluated. Longitudinal, multicenter studies with larger sample sizes and comprehensive psychiatric assessments are warranted to better understand the relationship between CKD progression, psychiatric morbidity, and cognitive dysfunction.

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