

Depression and anxiety in patients of chronic kidney disease undergoing haemodialysis: A study from western Rajasthan

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ABSTRACT

Background and Aims: Chronic kidney disease (CKD) is a long standing debilitating medical condition. CKD patients who are undergoing hemodialysis commonly experience depressive and anxiety symptoms because of various physical and psychosocial factors. The present study aimed to assess psychiatric morbidities i.e., depression and/or anxiety in patients with CKD undergoing hemodialysis. The objective of study was to evaluate depressive and anxiety disorders and their relation to socio-demographic factors in patients with CKD. **Materials and Methods:** A cross-sectional study was conducted at Nephrology department of a tertiary care institution on 100 CKD patients undergoing hemodialysis; who fulfilled the inclusion criteria. Diagnosis of depression and anxiety disorder was made as per WHO (ICD-10) criteria. Hospital Anxiety and Depression scale (HADS) was applied to study severity of the disorders. Data collected was subjected to suitable statistical analysis (mean, standard deviation and Chi-square test). **Results:** Majority (54 percent) of the CKD patients belonged to age group of 41 to 60 years, were Hindus, married and had low monthly income. The prevalence of depressive disorder and anxiety disorder among CKD patients was around 66% and 61%, respectively. Depression and anxiety were significantly associated with gender, occupation, income and duration of haemodialysis in these patients. **Conclusion:** Depression and anxiety are highly prevalent in CKD patients and have varying relations with different socio-demographic characteristics of patients. Clinicians should focus on these morbidities while managing such patients and provide holistic treatment using multidisciplinary approaches to improve the overall quality of life.

Keywords: End stage renal disease, psychiatric morbidity, socio-demographic profile

Introduction

Chronic kidney disease (CKD) is progressive renal impairment characterized by glomerular filtrate rate <60 ml/min/1.73 m² for 3 months or more irrespective of the cause.^[1] Up to 10% of adults worldwide have CKD, which is invariably irreversible. The global burden of CKD is rising, and it is projected to become

the 5th most common cause of years of life lost globally by 2040.^[2] If CKD remains uncontrolled and the affected person survives the ravages of systemic complications of the disease, it progresses to endstage renal disease (ESRD), where life cannot be sustained without dialysis therapy or kidney transplantation.^[3,4] In India, given its population >1 billion, the rising incidence of CKD is likely to pose major problems for both healthcare and the economy in future years. Indeed, it has been estimated that the age-adjusted incidence rate of ESRD in India to be 229 per million population and $>100,000$ new patients enter renal replacement programs annually in India.^[5,6]

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Depressive symptoms are among the most frequent co-morbidity among patients with CKD. Early diagnosis of depression is often missed, owing to the similarities between depressive symptoms and uremic symptoms. This might explain the lower prevalence of depressive disorder in the early stages of CKD.^[7] Depression can be affected by some socio demographic factors as well as by individual general condition, and its association with suicide, fatigue, sleep disorder and pain in ESRD patients.^[8] In these patients, depression is up to three times more prevalent than in the general population.^[9] The precise prevalence of anxiety disorders in haemodialysis patients is unclear, but estimates have ranged from approximately 12% to 52% in various studies.^[10] In a recently published Indian study, the prevalence of depression and anxiety was found to be 61.3% and 28% respectively.^[11] As anxiety, depression and related factors are prevalent in patients with CKD undergoing hemodialysis, they significantly affect the sufferer's quality of life and disease outcome.^[11] Medical co-morbid conditions such as, hypertension and diabetes mellitus, are known contributors to CKD. Hence, primary care physicians have a crucial role in both managing the early stages of CKD as well as in providing comprehensive care along with nephrologists in the advanced stages of this disease. Furthermore, brief and timely psychosocial interventions even by primary care physicians can improve overall treatment outcomes.

Studies assessing psychiatric morbidity in CKD patients undergoing haemodialysis are few in India and especially in western Rajasthan. Hence, the present study was planned for evaluation of depression, anxiety and related socio-demographic factors in these patients.

Methods

It was a cross-sectional, observational study, conducted at Nephrology Department of tertiary care institution. Prior approval and permission was taken from the Ethical Committee of the institution 03-11-2017. A total of 150 patients with CKD visiting for haemodialysis were initially selected. Out of these, 100 patients who fulfilled inclusion criteria (diagnosed cases with CKD, undergoing haemodialysis for at least 3 months and aged between 18 and 60 years) were involved in the study. Patients who had psychiatric illness prior to diagnosis of CKD and those having chronic, serious and unstable co-morbid medical/surgical illness were excluded from the study. A written informed consent was taken from each patient before enrolment for the study.

Socio-demographic details and illness characteristics of study participants were taken using specially designed semi-structured performa. Participants underwent physical examination and comprehensive psychiatric evaluation. Diagnosis of depressive and anxiety disorder was made by using standard criteria of World Health Organisation's International classification of disease and related health problem (ICD-10).

Hospital Anxiety and Depression Scale (HADS) was used to assess severity of these disorders. HADS is a

14-items self-report screening scale with 7-items each for depression (HADS-D sub scale) and anxiety (HADS-A sub scale). Score of 0-7 is considered normal; 8-10 indicates mild illness, 11-15 moderate illness and score 16-21 is suggestive of severe illness.^[12] For major depressive disorders, a cut point of ≥ 8 had sensitivity of 0.82 (95% CI, 0.73-0.89) and a specificity of 0.74 (95% CI, 0.60-0.84) and a cut point ≥ 11 gave a sensitivity of 0.56 (95% CI, 0.40-0.71) and a specificity of 0.92 (95% CI, 0.79-0.97). Studies have shown that the HADS is a useful screening tool to identify anxiety & depression in patients having no psychiatric illness.^[13]

Statistical analysis

The data collected using above mentioned tools was analyzed using SPSS version 16.0. Frequencies and percentages were used for categorical variables. Mean and standard deviation were used for quantitative variables. Chi-square test was applied to find relation between socio-demographic and clinical variables. The 'P' value less than 0.05 was considered statistically significant.

Results

The study participants included 100 patients, among whom 70% were males and the remaining were females. The mean age of patients was around 42.22 (± 11.2) years. Age distribution showed around 50% of the patients belonged to the age group of 41-60 years, 44% were in age group of 21-40 years, and 2% were below 20 years of age. Eighty percent of the patients were Hindus while the remaining were Muslims. Thirty four percent of the patients were illiterate while 9% of the patients were unemployed. Forty percent of the patients belonged to joint family and 58% were in nuclear family system. Ninety percent of the patients were married. Eighty eight percent of the patients had CKD for 3 years or less, while 94% of the patients were on haemodialysis for 3 years or less duration [Table 1 and 2].

Of 100 patients, 66 patients had depressive disorder and 61 patients had anxiety disorder. Among patients with depressive disorder, 57.6% had mild depression, 28.8% had moderate depression, whereas 13.6% had severe depression. Further, among patients with anxiety disorder, 59% patients had mild anxiety, 24.6% had moderate anxiety and 16.4% patients had severe anxiety [Table 3].

The prevalence of depression and anxiety varied across age, however, no significant association was found between depression or anxiety and age. Depression was more prevalent in female patients (86%) as compared to male patients (57%) and this difference was statistically significant ($P = 0.005$). Similarly, out of total females, 83.3% experienced anxiety disorder whereas 51% of males had anxiety disorder and this difference was also statistically significant ($P = 0.003$). Religion, domicile, marital status and educational level of patients were not significantly associated with depression or anxiety. The prevalence of depression and anxiety was more in the farmers, in the service class patients, in housewives and in unemployed

patients. Significant association was observed between different occupations and depression or anxiety [Table 1].

Table 2 showed higher prevalence of depression and anxiety in lower income group patients with significant relation between patients' income and both depression and anxiety. Anxiety was less in patients from joint family as compared to patients from nuclear family. The association between type of family and anxiety was statistically significant. No significant relation was found between duration of CKD and depression or anxiety; however, duration of haemodialysis was significantly related to these psychiatric morbidities. Low prevalence of depression and anxiety was observed in patients with lesser duration of haemodialysis.

Discussion

The present study was aimed to study the prevalence and severity of depressive and anxiety disorders in CKD patients undergoing haemodialysis and also to assess relationship between various socio-demographic factors and psychiatric co-morbidity. In our study depressive and anxiety disorders were reported in 66 percent and 61 percent of patients respectively. Similar findings have been described by Hou Y *et al.* from China, where 69.1% and 36.9% of patients with ESRD had depressive and anxiety disorder respectively.^[14] In another study from Iraq, Hamody AR *et al.* reported the prevalence of depression among patients with CKD around 80 percent.^[15] Among depressed patients in our study, 57.6% had mild depression, 28.8% had moderate depression and 13.6% had severe depression. The results are consistent with the

previous Indian study by Kumar *et al.* who found that 33 percent patients had mild depression, 30% had moderate depression, 16% had severe depression and 13% had very severe depression.^[11] Alanazi O *et al.*, in their study from Saudi Arabia, also found that 17.6% of the patients had borderline clinical depression, 30.2% had mild depression, 23.9% had moderate depression and 14.5% patients had severe depression.^[16] It can be inferred from above findings that depression is highly prevalent in patients with CKD across countries. Chronicity and progressive nature of kidney disease and perceived fear of uncertainty about life might be the factors underlying feelings of depression and anxiety.

Majority of CKD patients more than fifty percent of patients were above 41 years of age. Bindoo SJ *et al.* also observed that mean age of the patient in their study was 45.70 years.^[17] We found depressive symptoms in all age group of patients, although the association between depression and age was not statistically significant. Similarly a study from Saudi Arabia by Sheayria F *et al.* in patients on dialysis, also found that depression was not related to age.^[18] High prevalence of depression and anxiety was observed in females than in males which is consistent with study by Sqalli-Houssaini T *et al.*^[19] In a study from Saudi Arabia, Mosleh *et al.* also reported anxiety symptoms were more prevalent among females than males ($P = 0.04$).^[20] On the other hand, Sheayria F *et al.* found depression was not related to gender.^[18] Our findings reiterate the generalized vulnerability of females for depression/anxiety. The study did not find statistically significant association between education and depression. Khaira A *et al.* also reported that depression

Table 1: Depressive and Anxiety Disorder according to socio-demographic variables

Socio-demographic variables		Number of CKD patients (percentage)				
		Total (n=100)	Depressive disorder (n=66) HADS-D ≥8	P	Anxiety disorder (n=61) HADS-A ≥8	P
Age (years)	18-20	2 (2)	2 (100)	0.145	2 (100)	0.367
	21-30	12 (12)	6 (50)		6 (50)	
	31-40	32 (32)	26 (81.25)		23 (71.88)	
	41-50	24 (24)	14 (58.33)		14 (58.33)	
	51-60	30 (30)	18 (60)		16 (53.33)	
Gender	Male	70 (70)	40 (57.14)	0.005*	36 (51.4)	0.003*
	Female	30 (30)	26 (86.6)		25 (83.3)	
Religion	Hindu	81 (81)	53 (65.4)	1.00	48 (78.7)	0.800
	Muslim	19 (19)	13 (68.4)		13 (68.4)	
Education	Illiterate	34 (34)	26 (76.5)	0.057	24 (70.6)	0.057
	Primary	20 (20)	14 (70)		13 (65)	
	Middle	14 (14)	4 (28.6)		4 (28.6)	
	Secondary	16 (16)	10 (62.5)		10 (62.5)	
	Graduation	12 (12)	10 (83.3)		8 (66.6)	
	Post graduation	2 (2)	0 (0)		0 (0)	
	Others	2 (2)	2 (100)		2 (100)	
					0.052	
Occupation	Farming	18 (18)	14 (77.7)	0.001*	14 (77.7)	0.001*
	Self employed	7 (7)	3 (42.8)		3 (42.8)	
	Service	17 (17)	13 (76.4)		11 (64.7)	
	House Wife	26 (26)	22 (84.6)		21 (80.7)	
	Labour	23 (23)	8 (34.7)		6 (26)	
	Unemployed	9 (9)	6 (66.6)		6 (66.6)	

*Statistically significant

Table 2: Depressive and anxiety disorder according to socio-demographic variables

Socio-demographic variables	Number of CKD patients (Percentage)					
	Total (n=100)	Depressive disorder (n=66) HADS-D ≥8	P	Anxiety disorder (n=61) HADS-A ≥8	P	
Monthly income (Rs)	<5000	17 (17)	15 (88.2)	0.024*	14 (82.35)	0.021*
	5000-10000	44 (44)	30 (68.2)		29 (65.9)	
	10000-15000	3 (3)	1 (33.3)		1 (33.3)	
	15000-20000	8 (8)	4 (50)		3 (37.5)	
	>20000	28 (28)	16 (57.14)		14 (50)	
Type of family	Joint	40 (40)	22 (55)	0.119	18 (45)	0.019*
	Nuclear	58 (58)	42 (72.4)		41 (70.7)	
	Living alone	2 (2)	2 (100)		2 (100)	
Domicile	Rural	34 (34)	24 (70.58)	0.513	23 (67.6)	0.390
	Urban	66 (66)	42 (63.6)		38 (57.6)	
Marital Status	Married	90 (90)	58 (64.4)	0.492	53 (58.8)	0.348
	Unmarried	8 (8)	6 (75)		6 (75)	
	Divorced	2 (2)	2 (100)		2 (100)	
Duration of CKD	<1 year	44 (44)	27 (61.36)	0.813	25 (56.8)	0.681
	1-3 years	44 (44)	30 (68.18)		29 (65.9)	
	3-5 years	4 (4)	3 (75)		3 (75)	
	>5 years	8 (8)	6 (75)		4 (50)	
Duration of Hemodialysis	≤1 year	56 (56)	29 (51.78)	0.002*	27 (48.2)	0.010*
	1-3 years	38 (38)	31 (81.57)		30 (78.9)	
	3-5 years	6 (6)	6 (100)		4 (66.6)	

*Statistically significant

Table 3: Prevalence and severity of Depressive and Anxiety Disorder in CKD patients based on HADS-D and HADS-A scores

Disorder	No. of patients (Percentage)	Severity	No. of patients (Percentage)
Depressive disorder HADS-D score ≥8	66 (66)	Mild (8-10)	38 (57.6)
		Moderate (11-15)	19 (28.8)
		Severe (16-21)	9 (13.6)
Anxiety disorder HADS-A score ≥8	61 (61)	Mild (8-10)	36 (59)
		Moderate (11-15)	15 (24.6)
		Severe (16-21)	10 (16.4)

in patients were not associated with literacy level.^[21] Mosleh *et al.*, in their study on CKD patients found that depression and anxiety symptoms were not significantly associated with their education level and employment status.^[20] The present study revealed that depression was more prevalent in farmers, service-holders, house-wives and in unemployed patients, whereas it was less present in self-employed and labourer patients. Multiple (yet poorly understood) factors might be responsible for this finding and further research is indicated to explore them. More patients from lower income group having depression demonstrated that it was more prevalent in such group as also reported from other Indian study.^[22] Perceived financial strain and its ramifications might explain this finding. Similar to our findings, G. Garcia-Garcia *et al.* also found that poverty-related factors continue to play an important role in

the development of CKD in low-income countries.^[23] Low prevalence of anxiety in patients from joint family may be attributable to the protective effect of support offered by joint family system. Both depression and anxiety were more prevalent in patients who were on haemodialysis for longer duration, which may be explained by the perceived burden of this complex procedure and chronic dependence on it for supporting functions of diseased kidneys.

It can be summarized that depression and anxiety are highly prevalent in CKD patients, particularly, among females and those from lower income group. Thus the bio-psychosocial approach including psychological interventions may be added along with the drug treatment which can improve the overall disease in the susceptible population group.

The results of the current study should be interpreted in the background of following limitations: The study population was relatively small and limited to single centre only hence results might not be generalized.

Our study concluded that depressive and anxiety disorders are highly prevalent in CKD patients undergoing haemodialysis, and thus replicated findings of previous studies. The study also adds to the existing literature by throwing light on relationship between depression or anxiety and various socio-demographic factors and possible underlying reasons thereof in this patient population. These patients should undergo psychiatric evaluation in early phase of illness so that timely and appropriate interventions can be done and their quality of life can be enhanced by reducing disease burden. Future studies should explore the

other psychiatric co-morbidities in CKD patients and also bio psycho social impact of these symptoms and their effect on disease progression.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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