



Prevalence of Psychiatric Morbidity in Patients with Chronic Kidney Disease

Kannan PP¹, Tamilselvi M², Malaiappan M³

¹Associate Professor, Department of Psychiatry, Kilpauk Medical College, Chennai.

²Junior Resident, Department of Psychiatry, Kilpauk Medical College, Chennai.

³Professor & HoD, Department of Psychiatry, Kilpauk Medical College, Chennai.

Corresponding Author: Tamilselvi M, Junior Resident, Department of Psychiatry, Kilpauk Medical College, Chennai, India.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Back ground: Chronic Kidney Disease (CKD) is emerging to be an important chronic disease globally. Chronic kidney disease is a multifaceted problem having both physical and psychological disturbances for the patient. Patients with chronic medical conditions often have to adjust their aspirations, lifestyle, and employment. Many grieve about their predicament before adjusting to it, but others have protracted distress and may develop psychiatric disorders, most commonly depression or anxiety. CKD patients are dependent on procedures and a group of qualified medical professionals for the rest of his/her life. CKD, as a medical condition has such a degree of dependence for the maintenance treatment.

Aim: To assess the prevalence of psychiatric disorders among CKD patients.

Method: Cross sectional study, conducted in Department of Nephrology, Kilpauk Medical College for 6 months from February 2017 to August 2017. Patients in the age group of 18 – 60 years, diagnosed to have Chronic Kidney Disease by Consultant Nephrologist and on various treatment modalities (conservative treatment, hemodialysis and post-renal transplantation) were included

in this study. Patients diagnosed to have mental illness prior to the onset of CKD were excluded.

Results: A total of 110 patients consented to participate in the study. Of the 110 patients, 36.4% (n=40) were in conservative treatment, 31.8% (n= 35) were in hemodialysis, 31.8% (n=35) were post renal transplant patients. The presence of psychiatric illnesses were highest in conservative treatment (52.5%) than in patients undergoing hemodialysis (42.9%) than in patients in post renal transplantation (31.4%). Among the psychiatric illnesses major depressive disorder was the most common in all three groups. Family history of psychiatric illness had no correlation with presence of psychiatric illness. A high prevalence of psychiatric illnesses in patients with chronic kidney disease (42.7%) has been observed in this study and also in previous studies. The presence of psychiatric illnesses in chronic kidney disease needs to be effectively identified and managed.

Keywords: Psychiatric Comorbidity, Chronic Kidney Disease, Depression, Anxiety

Introduction

Patients with chronic medical conditions often have to adjust their aspirations, lifestyle, and employment. Many

grieve about their predicament before adjusting to it. But others have protracted distress and may develop psychiatric disorders, most commonly depression or anxiety. Chronic Kidney Disease is emerging to be an important chronic disease globally. 10% of the population worldwide is affected by CKD In India, it is estimated that prevalence of CKD is around 15 -20%.

Chronic kidney disease is a multifaceted problem having both physical and psychological disturbances for the patient. CKD patients are dependent on procedures and a group of qualified medical professionals for the rest of his/her life. CKD, as a medical condition has such a degree of dependence for the maintenance treatment. (Vikram et al., 2015) There is also a considerable restraint on the selection of foods and fluids. Patients with renal failure often suffer from many other medical conditions and are on many different medications. All these factors play an important role in the emergence of various psychiatric morbidities in CKD patients (A De Sousa et al., 2008).

In previous studies, the mental disorders frequently observed in CKD patients are affective disorders, particularly depression, organic brain diseases (delirium and dementia), substance use disorders, anxiety etc. Depression is an independent factor for non-adherence in patients on maintenance dialysis and suicide is highly linked with depressed state. In previous studies, prevalence of psychiatric illness has been found to be about 32% - 40% in CKD patients (Soykan A et al., 2004). Among psychiatric illness depression ranges from 6.5% to 63%, anxiety disorder 30%, somatoform disorder 32.5% (Mathew A et al., 2005). Prevalence of anxiety disorders in post renal transplantation ranges between 10% to 70% (Fukunishi et al., 2001). Psychiatric comorbidity in CKD is an important factor in determining the treatment outcome and is usually associated with adherence to

treatment also. Therefore, it is important to evaluate the prevalence and severity of psychiatric disorders in people with CKD.

Methods and Materials

Cross sectional study, conducted in Department of Nephrology, Kilpauk Medical College for 6 months from February 2017 to August 2017. Patients in the age group of 18 – 60 years, diagnosed to have Chronic Kidney Disease by Consultant Nephrologist and on various treatment modalities (conservative treatment, hemodialysis, renal transplantation) in department of Nephrology, Kilpauk Medical College Hospital were included in this study. Patients diagnosed to have mental illness prior to the onset of CKD was excluded.

Informed consent obtained from those willing to participate. A semi structured socio demographic proforma and information regarding disease related factors was obtained. Symptom Check List 90 was used to screen for psychiatric disorders. ICD 10 guidelines were used for diagnosis of psychiatric disorders, Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A) were used for assessing the severity of depressive and anxiety disorders respectively. Severity of Alcohol Dependence Questionnaire (SADQ) score was used to assess the severity of alcohol dependence. Ethical approval for the study was obtained from the Ethics committee, Government Kilpauk Medical College, Chennai. Prevalence of psychiatric illness was measured and appropriate statistical measures were used.

Results

A total of 118 patients were approached for our study. Of these, 5 patients did not give consent to participate in the study and 3 were dypnoeic, hence could not be interviewed. The remaining 110 patients consented to participate in the study. Of these 110 patients, 36.4%

(n=40) were in conservative treatment, 31.8% (n= 35) transplant patients. (Table - 1)

were in hemodialysis, 31.8% (n=35) were post renal

Table-1: Socio-demographic profile of the study population

Socio-demographic variable		Conservative treatment N (%)	Hemodialysis N (%)	Post renal transplantation N (%)
Age (years)	18 – 39	1 (2.5)	18 (51.4)	26 (74.3)
	40 -59	17 (42.5)	9 (25.7)	9 (25.7)
	>60	22 (55)	8 (22.9)	-
Sex	Male	20 (50)	20 (57.1)	20 (57.1)
	Female	20 (50)	15 (42.9)	15 (42.9)
Education	Illiterate	6 (15)	4 (11.4)	1 (2.9)
	Primary level	19 (47.5)	14 (40)	3 (8.6)
	Secondary level	15 (37.5)	9 (25.7)	20 (57.1)
	Graduate	-	8 (22.9)	11 (31.4)
Socio-economic status	Upper	-	-	-
	Upper middle	2 (5)	2 (5.7)	7 (20)
	Lower middle	11 (27.5)	9 (25.7)	14 (40)
	Upper lower	17 (42.5)	12 (34.3)	12 (34.3)
	lower	10 (25)	12 (34.3)	2 (5.7)
Religion	Hindu	32 (80)	26 (74.3)	30 (85.7)
	Muslim	1 (2.5)	7 (20)	3 (8.6)
	Christian	7 (17.5)	2 (5.7)	2 (5.7)
Locality	Rural	4 (10)	6 (17.1)	10 (28.6)
	Urban	36 (90)	29 (82.9)	25 (71.4)
Occupation	Unemployed	34 (85)	26 (74.3)	15 (42.9)
	Unskilled	4 (10)	2 (5.7)	7 (20)
	Semi Skilled	1 (2.5)	2 (5.7)	6 (17.1)
	Skilled	1 (2.5)	3 (8.6)	5 (14.3)
	Professional	-	2 (5.7)	2 (5.7)
Marital status	Single	-	6 (17.1)	8 (22.9)
	Married	31 (77.5)	25 (71.4)	27 (77.1)
	Separated	9 (22.5)	4 (11.4)	-
Family type	Nuclear	31 (77.5)	29 (82.9)	26 (74.3)
	Joint	9 (22.5)	6 (17.1)	9 (25.7)

Chronic Kidney Disease Related Factors

Data regarding various chronic kidney disease related factors - age at renal disease diagnosis, cause for renal

failure, renal failure stage, duration of treatment, co-morbid medical illnesses, and serum creatinine level were recorded. (Table – 2)

Table – 2: Chronic kidney disease related factors in the study population

CKD related factors	Conservative Treatment	Hemodialysis	Post renal Transplantation
Age (mean years with s.d)	58.83 ± 8.691	42.31 ± 15	33.51 ± 9.92
Age at renal disease diagnosis (mean years with s.d)	55.10 ± 8.691	39.14 ± 14.7	28.23 ± 9.632
Cause for renal failure n (%)			
Diabetes mellitus	6 (15)	2 (5.7)	4 (11.4)
Systemic hypertension	13 (32.5)	13 (37.1)	11 (31.4)
DM + SHT	9 (22.5)	2 (5.7)	1 (2.9)
glomerulonephritis	5 (12.5)	7 (20)	8 (22.9)
Others	4 (10)	5 (14.3)	5 (14.3)
unknown	3 (7.5)	6 (17.1)	6 (17.1)
Renal failure stage n (%)			
Stage 2	11 (27.5)		2 (5.7)
Stage 3	17 (42.5)		
Stage 4	5 (12.5)		
Stage 5	7 (17.5)	35 (100)	
Duration of treatment n (%)			
Less than 1 year	12 (30)	18 (51.4)	9 (25.7)
1 -2 years	5 (12.5)	15 (42.9)	10 (28.6)
More than 2 years	33 (57.5)	2 (5.7)	16 (45.7)
Sr. Creatinine level (mean value)	2.74 ± 1.352	5.83 ± 2.571	1.51 ± 0.780
Comorbid medical illness			
Present	21 (52.5)	27 (77.1)	5 (14.3)
absent	19 (47.5)	8 (22.9)	30 (85.7)

Prevalence of psychiatric illnesses in the study population

Of the 110 patients who participated in the study, 47 (42.7%) had at least one psychiatric illness. Among groups 21 (52.5%) patients in conservative treatment, 15 (42.9%) patients in hemodialysis, 11 (31.4%) post renal

transplantation patients had psychiatric illness. Depressive disorder was present in 18 (38.3%) patients. 1 patient (2.1%) had depressive disorder with psychotic symptoms, 3(6.4%) had anxiety disorder, 15 (31.9%) had adjustment disorder, 7 (14.9%) had alcohol dependence syndrome, 3 (6.4%) had psychosis (Table 3 & Figure 1)

Figure 1: Profile of Psychiatric Illnesses in Chronic Kidney Disease

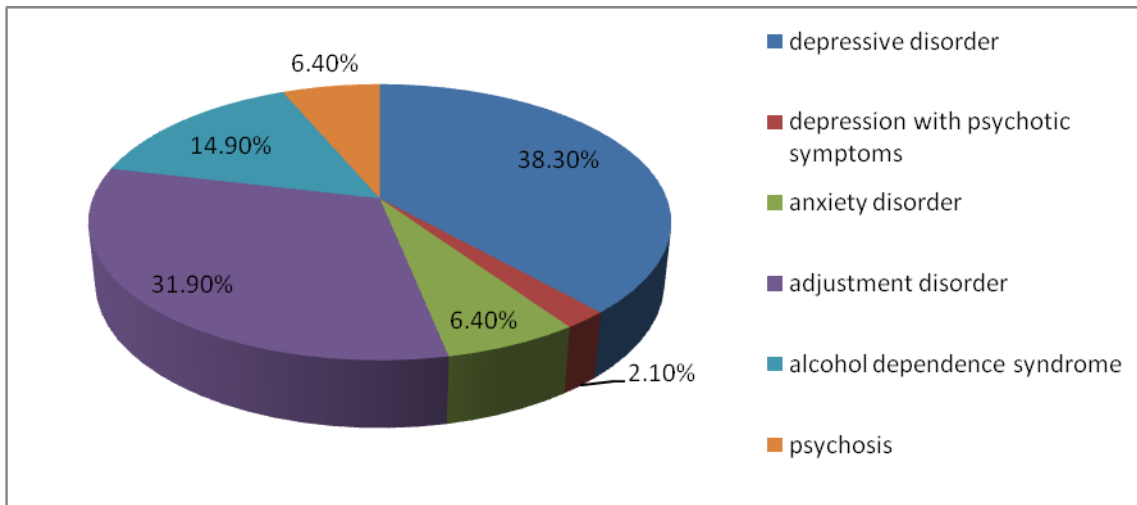


Table - 3: Presentation of Psychiatric Illnesses among Study Population

Psychiatric Illness	Conservative Treatment (N = 21)	Hemodialysis (N = 15)	Post Renal Transplantation (N = 11)
Major Depressive Disorder	8 (38.1)	5 (33.3)	5 (45.5)
Mild	1	0	1
Moderate	6	3	3
Severe	1	2	1
Depression with Psychotic Symptoms	1		
Anxiety Disorder	1 (4.8)		2 (18.2)
Gen. anxiety disorder	1		1
Illness anxiety			1
Adjustment Disorder	4 (19)	8 (53.3)	3 (27.3)
With anxiety symptoms			1
With depressivesymptoms	4	8	2
Alcohol Dependence Syndrome	5 (23.8)	2 (13.3)	0
Mild	0	1	0
Moderate	2	1	0
Severe	3	0	0
Psychosis	2 (9.5)		1 (9)
Family History of			

Psychiatric Illness			
Absent	33 (82.5)	29 (82.9)	29 (82.9)
Present	7 (17.5)	6 (17.1)	6 (17.1)

Association between Socio-Demographic factors and Psychiatric illness

Conservative treatment group: It was observed that patients from rural area had a statistically significant association with psychiatric illness. All other socio-demographic factors like gender, education, socio economic status, marital status, occupation and type of family did not reach statistical significance. **Hemodialysis group:** In hemodialysis group, patients from rural area had statistical significance with psychiatric illness (chi square value = 9.655; P = 0.003). Statistical significance was also found with patients from joint family and presence of psychiatric illness (chi square = 9.655; P = 0.002). No

other variables had statistical significance with psychiatric illness. **Post renal transplantation group:** No statistical significance was observed between various socio demographic factors and presence of psychiatric illness in post renal transplantation patients.

No statistically significant association was observed in the analysis of chronic kidney disease related factors (cause of renal disease, age at diagnosis, duration of treatment, co morbidity) and presence of psychiatric illness. No association was also observed with positive family history of psychiatric illness and presence of psychiatric illness in this study group (Table 4)

Table 4: Chronic Kidney Disease Related Factors and Presence of Psychiatric Illness

Illness Related Factors	Psychiatric Illness		P Value		
	Present	Absent			
Cause of renal failure					
Diabetes mellitus	2	10	6.984	0.072	
Systemic hypertension	18	19			
DM + SHT	8	4			
Others	19	30			
Age at diagnosis of CKD(years)					
Conservative treatment	54.76±9.428	55.47± 8.897	T test = 0.245	0.411	
Haemodialysis treatment	39.60±15.389	38.80±14.533	T test = -.157	0.678	
Post Renal transplantation	26.36± 8.571	29.08± 0.138	T test = 0.771	0.584	
Duration of treatment (years)	4 ± 2.368	4.02 ± 2.479	0.034	0.996	
Co morbid medical illness					
Present	17	15	Pearson chi square test = 1.994	0.158	
Absent	30	48			
Family h/o psychiatric illness					
Conservative	Present	7	20	7.677	0.006

	Absent	14	19		
Hemodialysis	Present	4	2	1.676	0.195
	Absent	11	18		
Post Transplant	Present	2	4	0.012	0.812
	Absent	9	20		

Discussion

The study population was 110 chronic kidney disease patients. Of these 36.4% were in conservative treatment, 31.8% were in hemodialysis, 31.8% were in post renal transplantation treatment. Among them, 42.7% had psychiatric illness.

Conservative treatment: Among the patients in conservative treatment, no difference was observed with gender. Majority were (55%) more than 60 years of age, belongs to upper lower socio economic status (42.5%), from urban background (90%) and 85% were unemployed. Majority were married (77.5%) and from nuclear family (77.5%). Mean age of renal disease diagnosis was 55.10 ± 9.06 years, the most common reported cause for renal disease was systemic hypertension (32.5%), about 42.5% were in stage 3, 57.5% were on treatment for more than 2 years and 52.5% had at least one medical comorbidity. These findings were similar with Andrade et al., (2012).

52.5% had psychiatric illness in conservative treatment. Most common was major depressive disorder 38.1%, results consistent with Andrade et al (2012), who observed 37.3% major depressive disorder in CKD patients with conservative treatment. 23.8% had alcohol dependence syndrome, 19% had adjustment disorder, 9.5% had psychosis, 4.8% had generalized anxiety disorder, and 4.8% had major depression with psychotic symptoms. Among patients undergoing conservative treatment, psychiatric illness was not statistically related to socio

demographic factors and chronic kidney disease related factors except for locality.

Hemodialysis treatment: Among the patients in hemodialysis, 57.1% were males and 42.9% were females; 51.4% were in the age group of 18 – 39 years. Patients with hemodialysis were younger than patients in conservative treatment. Majority belonged to upper lower (34.3%) and lower (34.3%) socio economic status and from urban background (82.9%). About 74.3% were unemployed, 71.4% were married and 82.9% were from nuclear family. Our study socio demographic variables results were similar to previous studies (Vikram et al., 2015, Andrade et al.,2012) except the age of presentation was earlier in our study group.

Mean age of study population was 42.31 ± 15 years. Chronic renal disease diagnosed by 39.14 ± 14.7 years. In this study the most common cause of renal failure among hemodialysis patients was systemic hypertension (37.1%). All were in stage 5 chronic kidney disease. 51.4% had treatment for less than a year, 42.9% had treatment for about 1 -2 years. 77.1% had comorbid medical illnesses. 42.9% (n = 15) patients in hemodialysis had psychiatric illness. This is consistent with the findings of Vikram et al., (2015), who observed 40% prevalence of psychiatric illness among hemodialysis patients.

Most common psychiatric disorder observed was major depressive disorder (45.5%). This is consistent with previous study findings like Ossareh et al., (2014) – 42.7%, Bossola et al., (2010) – 52.5%, Montinaro et al., (2010) – 50%, Keskin et al., (2011) – 40.2%, and Jadhav et

al.,(2014) – 40.69%.In this study among patients undergoing hemodialysis, 27.3% had adjustment disorder. This is in variance with Vikram et al., 2015 study (10% had adjustment disorder) and Jadhav B S et al., 2014 study (49.9% had adjustment disorder). In this study 18.2% had anxiety disorder. Though Chen et al (2010) observed 21% of anxiety disorder, some of the previous studies reported high prevalence (45.7% observed by Cukor et al., 2008; 35% observed by Taskapan et al., 2005; 43% observed by Montinaro et al.,2010). In our study 9% had alcohol dependence. Presence of psychiatric illness was more in patients from rural area (chi square = 9.655; P = 0.003). Joint family type was significantly associated with presence of psychiatric illness (chi square = 9.655; P = 0.002).

Post renal transplantation: Among the patients in post renal transplantation treatment, mean age of study population was 33.51 ± 9.92 years. Mean age of renal disease diagnosis was 28.23 ± 9.632 years, most common cause for renal failure was systemic hypertension (31.4%). Prior to transplantation all were in stage 5 and post transplantation about 5.7% were in stage 2 renal failure. Mean serum creatinine level was 1.51 ± 0.780 . Majority (91.4%) had undergone cadaver kidney transplantation. About 45.7% were in post renal transplantation treatment for more than 2 years. About 14.3% had medical comorbidity.

In this study 31.4% had psychiatric illness in post renal transplantation treatment. Among this 31.4% of patients with psychiatric illness - 45.5% had major depressive disorder, 27.3% had adjustment disorder, 9.1% had generalized anxiety disorder, 9.1% had illness anxiety disorder and 9% had psychosis. Whereas, in a study done by Kalman et al.,(1983) reported 46% of patients had psychiatric illness and study done by Pawar et al., (2006) reported 56.7% major depressive disorder in post renal

transplantation patients.No statistical significance was observed with presence of psychiatric illness and socio demographic factors. In this study chronic kidney disease related factors were not statistically associated with presence of psychiatric illness.

In this study, presence of psychiatric illness was high in conservative treatment (52.5%) than in patients undergoing hemodialysis (42.9%) than in patients in post renal transplantation (31.4%). Among the psychiatric illnesses major depressive disorder was the most common in all three groups. Family history of psychiatric illness had no correlation with presence of psychiatric illness.

Conclusion

A high prevalence of psychiatric illnesses in patients with chronic kidney disease (42.7%) has been observed in this study and also in previous studies. Presence of psychiatric illnesses among chronic kidney disease is traditionally associated with low treatment adherence. Hence it becomes obvious that the presence of psychiatric illnesses in chronic kidney disease need to be effectively identified and managed. Effective liaison services between the physicians treating chronic kidney disease and psychiatric services can improve the outcome of chronic kidney disease and thereby improve the quality of life of patients with chronic kidney disease.

Limitation

Our study is a single center, cross sectional observation study on a modest study population. Longitudinal cohort study design, may provide more information regarding incidence and risk factors for psychiatric illnesses in CKD populations.

References

1. Vikram R, Ponnudurai R, Soundararajan P, Balakrishnan K, Srinivasan B. (2015)Psychiatric morbidity in patients with CKD undergoing

- hemodialysis., *Asian J of Pharmaceutical and Clinical Research*. Vol 8, issue 1, 2015;312-316
2. A De Sousa. Psychiatric illness in renal failure and dialysis. *Indian JNephrology*.2008 Apr;18(2):47-50
3. Soykan A, Boztaş H, Kutlay S, Ince E, Aygör B, Özden A, Nergizoglu G, Berksun O. Depression and its 6-month course in untreated hemodialysis patients: a preliminary prospective follow-up study in Turkey. *International journal of behavioral medicine*. 2004 Dec 1;11(4):243-6
4. Mathew A et al., Psychiatric Aspects of Renal Disease. *Indian J of Peritoneal Dialysis*. 2005: 25-33
5. Fukunishi, I., Sugawara, Y., Takayama, T., Makuuchi, M., Kawarasaki, H., &Surman, O. S. (2001). Psychiatric disorders before and after living-related transplantation. *Psychosomatics*, 42(4), 337-343
6. Andrade C P., and R. C. Sesso. Depression in chronic kidney disease and hemodialysis patients. *Psychology* 3.11 (2012): 974-878
7. Ossareh, S., Tabrizian, S., Zebarjadi, M., &Joodat, R. S. (2014). Prevalence of depression in maintenance hemodialysis patients and its correlation with adherence to medications. *Iranian journal of kidney diseases*, 8(6), 467-470
8. Bossola M, Ciciarelli C, Conte GL, Vulpio C, Luciani G, Tazza L. Correlates of symptoms of depression and anxiety in chronic hemodialysis patients. *General hospital psychiatry*. 2010 Apr 30;32(2):125-31
9. Montinaro, V., et al. Emotional symptoms, quality of life and cytokine profile in hemodialysis patients. *Clinical nephrology* 73.1 (2010): 36
10. Keskin, Gülseren, and EsraEngin. "The evaluation of depression, suicidal ideation and coping strategies in haemodialysis patients with renal failure." *Journal of clinical nursing* 20.19-20 (2011): 2721-2732
11. Jadhav, B. S., Dhavale, H. S., Dere, S. S., &Dadarwala, D. D. (2014). Psychiatric morbidity, quality of life and caregiver burden in patients undergoing hemodialysis. *Medical Journal of Dr. DY Patil University*, 7(6), 722-24
12. Chen CK, Tsai YC, Hsu HJ, Wu IW, Sun CY, Chou CC, Lee CC, Tsai CR, Wu MS, Wang LJ. Depression and suicide risk in hemodialysis patients with chronic renal failure. *Psychosomatics*. 2010 Dec 31;51(6):528-528
13. Cukor D, Coplan J, Brown C, Friedman S, Newville H, Safier M, Spielman LA, Peterson RA, Kimmel PL. Anxiety disorders in adults treated by hemodialysis: a single-center study. *American Journal of Kidney Diseases*. 2008 Jul 31;52(1):128-36
14. Taskapan, H., Ates, F., Kaya, B., Emul, M., Kaya, M., Taskapan, C., &Sahin, I. (2005). Psychiatric disorders and large interdialytic weight gain in patients on chronic haemodialysis. *Nephrology*, 10(1), 15-20
15. Kalman, T. P., Wilson, P. G., & Kalman, C. M. (1983). Psychiatric morbidity in long-term renal transplant recipients and patients undergoing hemodialysis: A comparative study. *Jama*, 250(1), 55-58
16. Pawar, A. A., et al. Cognitive and emotional effects of renal transplantation. *Indian journal of psychiatry* 48.1 (2006): 21 - 25