Cross Sectional Study of Anxiety Disorder in Patients with Chronic Kidney Disease Undergoing Hemodialysis in a Tertiary Care Hospital

Pankaj Kumar[1], Bajrang Lal[2], Siddharth Rathore[3], Hemant Kumar[4], Tushar Jagawat[5]

[1]Assistant Professor, Department of Psychiatry, National Institute of Medical Sciences and Research Jaipur Rajasthan, Department of Psychiatry
[2]Associate Professor, Department of Psychiatry, National Institute of Medical Sciences and Research Jaipur Rajasthan.
[3]Assistant Professor, Department of Psychiatry, RD Gardi Medical College Ujjain
[4]Assistant Professor, Department of Psychiatry, GMC Bettiah
[5]Professor and HOD, Department of Psychiatry, National Institute of Medical Sciences and Research, Jaipur Rajasthan

Abstract

Background: Chronic kidney disease (CKD) is one of the major world-wide public health problems, with adverse outcome of kidney failure, cardiovascular disease (CVD), and premature death. Haemodialysis is the most common method used to treat advanced and permanent kidney failure. In recent years more advances such as compact and simpler dialysis machines have made dialysis increasingly attractive. But even with all the advances, haemodialysis is still a complicated and inconvenient therapy. Patients on Haemodialysis experienced a range of symptoms, with considerable variation in the frequency, severity of symptoms experienced. Scarcity regarding the prevalence and impact of anxiety disorders in patients with ESRD treated with HD; however, many of the seemingly irrational behaviours of patients, or behaviours which place them in conflict with staff and physicians, such as behavioural non-compliance, may be the outcome of an underlying anxiety disorder.

Aims And Objectives: To describe socio demographic characteristics of CKD patients undergoing haemodialysis. To determine prevalence and severity of anxiety disorder in CKD patients undergoing haemodialysis.

Methodology: This study was conducted in the Department of Psychiatry and Department of Nephrology of NIMS&R Medical College and Hospital, Jaipur, Rajasthan. The sample of the study was constituted of 100 patients suffering from CKD who underwent a dialysis procedure in the dialysis unit of Nephrology department of NIMS Hospital. The diagnosis of anxiety disorder was made according to ICD 10. Severity was assessed using HAM- A.

Results: 33% of the patients were found to have anxiety disorder undergoing Haemodialysis Conclusion: This study concludes that patients undergoing haemodialysis can have anxiety disorder. Early identification of anxiety disorder and management can improve the life quality of Haemodialysis patients.

Keywords: Anxiety disorder, Chronic Kidney Disease (CKD), Haemodialysis.

Introduction

Chronic kidney disease (CKD) is the progressive loss in renal function over a period of months or years. It is a world-wide public health problem, with adverse outcome of kidney failure, cardiovascular disease (CVD), and premature death. Diseases of the kidney and urinary tract contribute to the global burden of diseases, with approximately 850,000 deaths every year and 15,010,167 disability-adjusted life years, they are the 12th cause of death and the 17th cause of disability as per the World Health Report 2002 and Global Burden of Disease (GBD) project respectively. A survey conducted by National kidney foundation in India found that the kidney diseases rank third amongst life-threatening diseases and estimates approximately 200,000 people in India go into terminal kidney failure annually and millions more suffer lesser forms of kidney disease. Another survey conducted by the national health and nutrition, states that, prevalence rate of an estimated 11.5 per cent of adults ages 20 or older (23 million adults) have physiological evidence of chronic kidney disease. Adjusting for age, gender, race, comorbidity, and prior hospitalizations, mortality among CKD patients in 2010 is 59 per cent greater than among non-CKD patients. The Most common method used to treat advanced and permanent kidney failure is Haemodialysis. In recent years more compact and simpler dialysis machines have made dialysis increasingly attractive but still with all the advances it is a complicated and inconvenient therapy. Patients undergoing Haemodialysis, experience a range of symptoms, with considerable variation in the frequency and in the severity with which the symptoms affected the individuals. Symptoms manifestation is significantly associated with sleep problems, fatigue and poor physical functioning.

Anxiety disorders have been a complicating co-morbid diagnosis in many patients with medical illness. According to the World Health Organization (WHO), the major cause of years lost to disability is anxiety in the United States. It is a common yet frequently overlooked psychiatric symptom in patients with ESRD treated with haemodialysis (HD). Disruptive feelings of uncertainty, dread, and fearfulness are characteristics of anxiety. Another various common medical manifestation of an anxiety disorder, including palpitations, tremors, indigestion, numbness/tingling, nervousness, shortness of breath, diaphoresis, and fear. So, it becomes essential for the clinician to rule out specific medical conditions, including cardiovascular, pulmonary, and neurologic diseases, before ascribing these symptoms to an anxiety disorder. Additionally, there is considerable overlap between the symptoms of anxiety and those of depression and uraemia. Patient's perception of quality of life is significantly affected by anxiety. Little is known regarding the prevalence and impact of anxiety disorders in patients with ESRD treated with HD; however, many of the seemingly irrational behaviours of patients, or behaviours which place them in conflict with staff and physicians, such as behavioural noncompliance, may be the outcome of an underlying anxiety disorder. In HD patients' Clinical depression has an estimated prevalence of 10% to 30%. However, there is paucity of data about rates of anxiety in this population. One Turkish study applied the Primary Care Evaluation of Mental Disorders as a diagnostic tool and found a 30% rate of anxiety disorders in HD patients. In patients with end-stage renal disease (ESRD) full impact of anxiety is unknown. So due to the lack of knowledge of rates and impact of anxiety disorders on US patients with

ESRD, effective instruments that screen for anxiety disorders in this population have not been identified. Previous data on psychopathology in an urban population, with 71% having a psychiatric diagnosis and 27% having a diagnosis of anxiety disorder. Taking note of above literature, it can be inferred that Anxiety is widespread in CKD patients undergoing haemodialysis therapy but there is scarcity of data in developing countries like India and specially in Jaipur region, such type of study had Not been conducted adequately previously on haemodialysis patients.

Aims and Objectives

- To describe socio-demographic characteristics of patients with CKD undergoing haemodialysis.
- To determine prevalence and severity of anxiety disorder in patients with CKD undergoing haemodialysis

Material and Methods

In order to achieve the above aims and objectives a study was conducted in Department of Psychiatry and Nephrology NIMS&R Medical College and Hospital, Jaipur, Rajasthan. It is a cross-sectional study. 100 patients suffering from CKD who underwent Haemodialysis procedure in the dialysis unit of Nephrology department of NIMS Hospital were taken as study sample. After receiving consent,

patients were included in the study on the basis of inclusion and exclusion criteria. A semi-structured proforma was used especially for the study was used to collect data. B.G Prasad Scale was used to evaluate Socioeconomic status The Anxiety disorder diagnosis was made according to ICD 10. Severity of Anxiety disorder was assessed using HAM-A. Mini Mental Status Examination was done to rule out organicity

Inclusion Criteria

1. Patients with CKD (chronic kidney disease) and are undergoing haemodialysis in Nephrology department of NIMS&R Hospital.
2. Patients, who gave informed consent for the study.

Exclusion Criteria

1. Previously diagnosed patients for psychiatric illness prior to the onset of CKD.
2. Patients with mental retardation.
3. Patients, who refused to give consent to the study.
4. Patients having other serious and unstable co-morbid medical illness than renal disease.
5. Patients scoring less than < 24 on Mini-Mental State Examination (MMSE)

Observations

Table 1: Distribution of Socio-demographic and Clinical Variables in Study Sample

Gender	No.	%
Male	67	67.0
Female	33	33.0
Age groups		
Less than<20 Years	05	5.0
21- 40 Years	43	43.0
41 - 60 Years	41	41.0
More than> 60 Years	11	11.0
Domicile		
Urban	70	70.0
Rural	30	30.0
Marital status		
Married	86	86.0
Unmarried	14	14.0

Education		
Illiterate	35	35.0
Primary	10	10.0
Secondary	08	8.0
Sr. secondary	15	15.0
Graduate	08	8.0
Postgraduate	20	20.0
Other	04	4.0
Income per capita		
More than 6277	17	17.0
3139-6276	14	14.0
1883-3138	13	13.0
942-1882	21	21.0
Less than 942	35	35.0
Family type		
Joint	22	22.0
Nuclear	51	51.0
Extended nuclear	27	27.0

Duration of haemodialysis		
Less than 1 year	55	55.0
1-3 years	34	34.0
3-5 years	09	09
More than 5 years	02	02

Table 2: Prevalence of Anxiety disorder in study Sample

Disorder	Prevalence of anxiety disorder
anxiety disorder	33%

Table 3: Distribution of severity of anxiety disorder according to HAM-A scale

Severity of Anxiety disorder (HAMA score)	Number of patients	%
Normal (0-13)	67	67%
Mild (14-17)	21	21%
Moderate (18-24)	10	10%
Sever (25 or more)	02	02%
Total	100	100%

Table 4: Relationship between Socio-demographic and clinical variables of anxiety disorder patients

Socio-demographic variables	Anxiety Disorder		P- value
	N	%	
Gender Male Female	16 17	48.5 % 51.5%	0.006
Age <20years 21-40 years 41-60 years >60 years	00 13 18 02	00% 39.4% 54.5% 6.1%	0.116
Domicile Urban	25	75.8%	0.378

Rural	08	24.2%	
Marital Status			
Married	30	90.9%	0.321
Unmarried	03	9.1%	
Education			
Illiterate	12	36.4%	
Primary	07	21.2%	0.308
Secondary	06	18.2%	
Sr. Secondary	03	9.1%	
Graduate	01	03%	
Postgraduate	03	9.1%	
other	01	03%	
Income			
More than 6277	01	03%	
3139-6276	04	12.1%	0.047
1883-3138	04	12.1%	
942-1882	11	33.3%	
Less than 942	13	39.4%	
Family Type			
Joint	04	12.1%	
Nuclear	16	48.5%	0.080
Extended nuclear	13	39.4%	
Duration of hemodialysis			
(Less than) <1 year	20	60.6%	
1-3 years	10	30.3%	0.750
3-5 years	02	06.1%	
More than >5 years	01	03%	

Results and discussion

The present study was aimed at understanding various socio-demographic factors, psychiatric morbidity in terms of prevalence and severity of anxiety disorder in chronic renal disease patients undergoing haemodialysis.

Table 1 Shows the distribution of subjects according to their sociodemographic variables. which reveals that Males comprised 67% of study population whereas Females comprised 33% of study population. This finding was supported by the study of Bindoo S Jadhav, et al (2014) who found that Males (68%) were predominately affected over female patients. A study by Virendra C Patil, et al. (2015) found that amongst patients with CKD, 33 (64.70%) were males and 18 (35.29%) were female out of total 51 patients.

It was evident that 5% of CKD patients were below age 20 years, 43% between 21-40 years, 41% between 41-60 years and 11% above 60 years. Mean age(+/- S.D.) was 42.71(+/-14.30) which was similar to the findings by Bindoo S Jadhav, et al (2014) who found Mean age to be 45.70 years and forty-two percent of the patients were in age group of 46-60 years, followed by (34%) of the patients in age group of 31-45 years which also correlated with study by Sqalli-Houssaini T et al. (2005) where mean (+/-SD) age was 42(+/-15.5) and EssmatGemeay et al (2012) also found that near half [48%] of subject were in age group of 30-49(productive age). We found that 70% of CKD patients belonged to urban background and 30% to rural background. This finding was supported by Sidy Mohamed Seck, et al (2014) who included 1037 adults ≥ 18 years of age,

found that majority of participants lived in urban areas (55.3%).

In our study more than 2/3rd (86%) of CKD patients were Married whereas rest of patients were Unmarried (14%). Study by Bindoo S Jadhav, et al (2014) had similar finding where majority (78%) of the patients were married similarly 66% of patients were married in Dumitrescu AL et al (2009) study.

Thirty five percent of CKD patients were illiterate as per results of our study, 10% educated up to primary level, 8% up to secondary level, 15% up to sr. secondary level, 8% were graduate, and 20% had post graduate degree. It revealed that 65% patients were educated in our study, this is in line with study done by Sidy Mohamed Seck, et al (2014) where majority of participants (65.6%) were educated.

In our findings 17% of CKD patients had income more than 6277 Rs per capita, 14% had between 3139-6276 Rs per capita and 13% between 1883-3138 Rs per capita, which came out to be as 56% who had per capita income < 1882 so, belonged to class 4 and 5. This was supported by the study of G. Garcia-Garcia, et al (2015) who observed that Poverty-related factors continue to play an important role in the development of CKD in low-income countries. In Mexico, CKD prevalence among the poor is two to three-fold higher than the general population.

It was evident that 22% of CKD patients had nuclear family type, which was in accordance to increase trend of nuclear family in our society, 27% had extended nuclear family and 22% belonged to joint family.

Our study showed that (55%) of CKD patients had undergone haemodialysis for <1 year of duration, (34%) for 1-3 years, (9%) had 3-5 years and 2% for more than 5 years. This was in line with the study of EssmatGemeay et al (2012) who observed years of dialysis and found that 48% of patients either had < 3 years or from 3- 6

years treated with dialysis. While only 4% undergone dialysis for more than 6 years.

Table 2. shows the Prevalence of anxiety disorder in CKD patients undergoing haemodialysis. It was evident that 33% patients undergoing Haemodialysis suffered from anxiety disorder. This finding was supported by the study of Hou Y et al (2014) who found that 36.9 % patients had anxiety symptoms (SAS score ≥ 50). Daniel Cukor, et al (2007) found that 27% had a current major anxiety disorder.

Table 3: Shows the Distribution of severity of anxiety disorder according to HAMA scale. It was observed that 67 % of CKD patients had not anxiety disorder (0-13), 21% mild (14-17),10% Moderate (18-24), 2% Sever anxiety disorder (25 or more), respectively.

Table 4 : Shows the relationship between socio-demographic and clinical variables of CKD Patients undergoing Haemodialysis and Anxiety disorder. It resulted as (48.50%) of anxiety disorder patients were Males and (51.50%) Females, which was statistically significant (P-Value< 0.050). It was evident that 39.40% of anxiety disorder patients belonged to age group of 21 to 40 years, 54.50% 41to 60 years and 6.1% more than 60 years, respectively which was statistically not significant (P-Value > 0.050). It was found that 75.80% of anxiety disorder patients were belonged to Urban and 24.20% to rural area, which was statistically not significant (P-Value > 0.050). (90.90%) of Anxiety Disorder patients were Married and Unmarried were (9.10%), which was statistically not significant (P-Value > 0.050). Result also showed that 36.40% of anxiety disorder patients were Illiterate, 48.50% Educated up to Sr. Secondary, 3.0% graduate, and 9.1% postgraduate, respectively, which was statistically not significant (P-Value> 0.050). It shows that 39.40% anxiety disorder patients had Income Less than 942 per capita, 33.30% 942-1882 per capita, 12.10% 1883-3138, 12.10% 3139-6276 and

3.0% more than 6277, respectively, which was statistically significant (P-Value <0.050). It was evident that 48.50% of anxiety disorder patients belonged to nuclear family, 39.40% to Extended Nuclear family and 12.1% to joint family, respectively, which is statistically not significant (P-Value >0.050). It was found that 60.60% of CKD patients who undergoing haemodialysis for less than 1 year had anxiety disorder, while 1-3years, 3-5 years and more than 5 years duration of haemodialysis had 30.30% 6.10% and 3.0% anxiety disorder, respectively which was statistically not significant (P-Value>0.050).

Summary and conclusion: There are no gender preponderance as both male and female CKD patients equally suffered from anxiety disorder. 54.50% patients diagnosed to have anxiety disorder belonged to the age group of 41-60years followed by 39.40% among 21-40 years age group. 3/4th of the CKD patients (75.80%) suffering from anxiety disorder belonged to urban background. Majority of the CKD patients (90.90%) suffering from anxiety disorder were married. Approx. half of the CKD patients suffering from anxiety disorder were educated up to sr. secondary (48.50%) and approx. 1/3rd illiterate (36.40%). Majority of the CKD patients (72.70%) suffering from anxiety disorder belonged to low socioeconomic status (class 4 & 5).48.50% of the CKD patients suffering from anxiety disorder belonged to nuclear family. (60.60%) that is more than half of the CKD suffering from anxiety disorder were undergoing hemodialysis for less than 1 year. 21% of the CKD patients undergoing hemodialysis had mild anxiety disorder followed by 10% moderate anxiety disorder. The prevalence of psychiatric morbidity in CKD patients is very high which further deteriorate the existing quality of life and also increases the mortality of CKD patients. So, patients who are undergoing haemodialysis should undergo psychiatric evaluation in early phase and treated in time so that overall quality of life of such patients can be improved and mortality could be reduced.

Limitation of the Study

1. Our study is single hospital based hence the data obtained may not generalized in general population.
2. As the sample size was small it might have affected the ability to detect statistically significant results.
3. In this study self-answered questionnaires to collect data was used, so there may be subjective exaggerations or minimizations from patient's part regarding their problems.
4. Patient's refusal to answer few questions of questionnaires (e.g.: sexual function) had limited the study's potential to collect information's on sensitive areas of dysfunction.

Financial Support and Sponsorship:

NIL

References

1. Levey AS, Eckardt KU. Definition and classification of chronic kidney disease: apposition statement from kidney disease: Improving Global Outcomes (KDIGO). Kidney Int. Jun 2005; 67(6):2089-100.
2. Gerasimoula K, Lefkothea L, *et al*. Quality of life in hemodialysis patients. Mater Sociomed; 2015; 27(5):305-9.
3. Aggarwal HK, Jain D, *et al*. Prevalence of depression, anxiety and insomnia in chronic kidney disease patients and their correlation with the demographic variables. Contributions. Sec. of Med. Sci., 2017; XXX VIII 2:35-44.
4. Prasad BG. Social classification of Indian families. J Indian Med Assoc. 1961; 37:250-1.
5. The ICD-10 classification of mental and behavioral disorders Clinical descriptions and diagnostic guidelines. Geneva: World Health Organization. 1992.

6. The Mini-Mental State Examination. A comprehensive review. Journal of the American Geriatrics Society. 1975; 40(9): 922–935.

7. HouY, LiX *et al*. Factors associated with depression and anxiety in patients with end-stage renal disease receiving maintenance hemodialysis. International Urology and Nephrology. 2014 Aug; 46(8):1645-9.

8. Bindoo S Jadhav, Hemangee S Dhavale, Shubhangi S Dere, Dimple D Dadarwala Psychiatric morbidity, quality of life and caregiver burden in patients undergoing hemodialysis. 2014; 7(6):722-72

9. Cukor D, Cohen SD, Peterson RA, Kimmel PL. Psychosocial aspects of chronic disease: ESRD as a paradigmatic illness. J Am Soc Nephrol 2007 Dec;18(12):3042-55

10. Cukor D, Coplan J, Brown C, Friedman S, Cromwell-Smith A, Peterson RA, et al. Depression and anxiety in urban hemodialysis patients. Clin J Am Soc Nephrol 2007 May; 2 (3):484-90.

11. Daniel Cukor, Jeremy Coplan, Clinton Brown, Steven Friedman, Allyson Cromwell Smith, Rolf A. Peterson, Paul L. Kimmel, Depression and Anxiety in Urban Hemodialysis Patients (May 2007)

12. Dumitrescu AL, Gârneață L, Guzun O. Anxiety, stress, depression, oral health status and behaviours in Romanian hemodialysis patients. 2009; 47(2):161-8

13. Essmat Gemeay, Sahar Gaber, Amal Kanona and Abdullah A. A. Alshebel. Impact of hemodialysis on the psychosocial state of patients with end-stage renal disease, Life Science Journal 2012;9(4).

14. G. Garcia-Garcia, V. Jha, Chronic kidney disease in disadvantaged populations. Braz J Med Biol Res. 2015 May; 48(5):377-81

15. Hou Y, Li X, Yang L, Liu C, Wu H, Xu Y, Yang F, Du Y. Factors associated with depression and anxiety in patients with end-stage renal disease receiving maintenance hemodialysis. 2014 Aug; 46(8):1645-9

16. Sidy Mohamed Seck, Dominique Doupa, Lamine Gueye and Charles Abdou Dia. Prevalence of Chronic Kidney Disease and Associated Factors in Senegalese Populations: A Community-Based Study in Saint-Louis. 2014 September; 6(5): e19085

17. Sqalli-Houssaini T, Ramouz I, Fahi Z, Tahiri A, Sekkat FZ, Ouzeddoun N, Ezzaitouni F, Benamar L, Rhou H, Ktiouet JE, Balafrej L.Effects of anxiety and depression on haemodialysis adequacy. 2005 Mar; 1(1): 31-7

18. Virendra C Patil, Chinmay Kulkarni, Amardip Rajput, Harsha V Patil and Vaibhav Agarwal. Incidence, Etiology and Clinical Profile of Newly Detected Chronic Kidney Disease (CKD) at Teaching Hospital. March–April 2015 RJPBCS 6(2)

19. Espinosa, M. F. M., Erazo E. W. V., Villada N. Z., Sánchez D. A. G., García, J. S. R., Peña, C. A. E., Mejía A. O., Rey J. V., & Pertuz J. G. V. Treatment of Ventral Hernia Laparoscopic or Open Approach? Journal of Medical Research and Health Sciences. 2022; 5(4): 1876–1880.