Prevalence and Risk Factors for Anxiety and Depression in Chronic Kidney Disease Patients Undergoing Hemodialysis

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Abstract: *Chronic kidney disease (CKD) is determined by the presence of kidney injury and by the level of renal function, assessed according to the glomerular filtration rate. Depression and anxiety are more frequent in patients on maintenance haemodialysis than the general population, and are associated with reduced quality of life and increased mortality risk. Patients on haemodialysis are thought to be highly susceptible to emotional problems because of the chronic stress-related to disease burden, dietary restrictions, functional limitations, associated chronic illness, adverse effects of medications, changes in self-perception and fear of death.* <u>*Objective:*</u> *To evaluate the prevalence of depression among CKD Patients undergoing haemodialysis.* <u>*Materials & Methods:*</u> *A Total of 82 subjects of age 25 years or above are included in this study. HADS questionnaire is used to assess the level of depression. After obtaining informed consent, the patients were subjected to detailed history including personal and demographic characteristics, disease related information and various lab investigations.* <u>*Results:*</u> *The present study shows that there were significant association of depression in haemodialysis patients. Depression among this study population showed a moderate positive correlation which was found to be statistically significant. Occupation was the only factor observed as significantly associated with depression levels.* <u>*Conclusion:*</u> *Depression is the most prevalent entities among the haemodialysis population. They are more prevalent in female, uneducated married patients belonging to lower socioeconomic class.*

Keywords: chronic kidney disease (CKD), haemodialysis(HD), Depression

1. Introduction

Chronic kidney disease (CKD) is a complex condition in which the kidneys are unable to function properly as a result of structural or functional damage that leads to excessive fluid and waste accumulation in the blood. CKD represents a major economic burden on healthcare systems worldwide. Nowadays, the prevalence of CKD is rising significantly. The estimated number of affected people ranges from 11% to 13% globally [1,15,16].

Chronic kidney disease (CKD) is determined by the presence of kidney injury and by the level of renal function, assessed according to the glomerular filtration rate.Following the criteria proposed by the National Kidney Foundation, 2002, the CKD is divided into five stages, classified according to the degree of the patient's renal function. Until the fourth stage ofthe disease, the so-called "conservative treatment" is recommended. In more advanced stages, called end-stage renal disease (ESRD), i.e., when the kidneys can no longer maintain homeostasis of the body, the patient will depend on one of the modalities of renal replacement therapy (RRT): dialysis or kidney transplant [2].

Hemodialysis (HD) is a life sustaining treatment for patients with ESRD. It has revolutionized the treatment of end-stage renal disease (ESRD) and allowed patients with this disease throughout the world to survive longer. There has been a progressive increase in both the incidence and prevalence of patients with ESRD throughout the world. Patients on HD are thought to be highly susceptible to emotional problems because of the chronic Stress-related to disease burden, dietary restrictions, functional limitations, associated chronic illnesses, adverse effects of medications, changes in self-perception and fear of death [3].

Significance of the Study
Chronic kidney disease (CKD) is a global health problem with a high economic burden on the health-care system. Considering the chronic nature of disease, patients undergoing haemodialysis are at risk of developing psychiatric disorders [4].

2. Materials and Methods

The present study is a cross sectional study to assess the prevalence and risk factors of depression in CKD patients undergoing haemodialysis. This study was conducted at Department of Nephrology, Little Flower Institute of Medical Science and Research, Angamaly.82 subjects were already diagnosed with chronic kidney disease. The subjects were selected according to inclusion & exclusion criteria.

For attaining the objective of this studydepression related data were collected by using HADS questionnaire, a standardized tool to self-score the depression level. A total of 6-month duration is taken to attain the goals of this study. The ethical approval of this study was got from the ethical committee of Little Flower Institute of Medical Science & Research centre (LIMSAR). The permission for data collection from the dialysis department was taken from the

department in charge and consent for data collection is also taken from each patient.

Assessment of depression level
HADS questionnaire is a self-assessment questionnaire that has been found to be a reliable instrument for detecting state of depression. The HADS questionnaire has seven items for depression subscale. Scoring for each item ranges from zero to three, with three denoting highest depression level. A total subscale score of >8 points out of a possible 21 denotes considerable symptoms of anxiety or depression [5].

Statistical Analysis
Descriptive statistics were used to present all outcomes. Quantitative data presented by mean and standard deviation and binary or categorical variables was presented using counts and percentages. Fishers exact test &Karl Pearson or Spearman Rank correlation were used for the assessment of correlation. A p value <0.05 shows statistical significance. Data were entered by using SPSS version 28.00.

3. Results

**Table 1:** Distribution of age among the study population

Age	Frequency	Percentage
Range, Mean ±SD	28-80, 58.21±12.71	
28-40	10	12.2%
41-53	17	20.7%
54-67	34	41.5%
68-80	21	25.6%
Total	82	100.0%
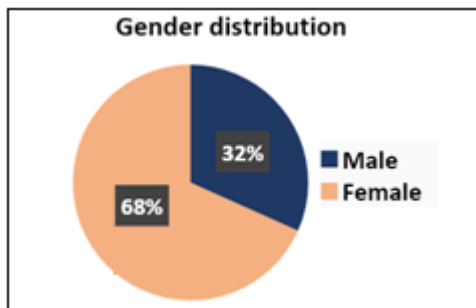
Graph 1: Gender distribution of the study population

Table 2: Assessment of education status of the study population

Education status	Frequency	Percentage
Post-Graduation	2	2.4%
Graduate	8	9.8%
Intermediate or diploma	7	8.5%
High school	36	43.9%
Middle school	29	35.4%
Total	82	100%
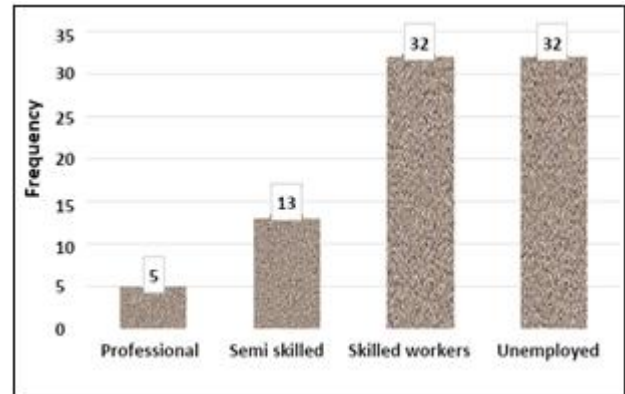
Graph 2: Occupation status of the study population

Table 3: Assessment of depression using HADS score among the study population

Depression	Frequency	Percentage
Range, Mean ±SD	6-19, 11.61±2.814	
Abnormal	49	59.8%
Borderline abnormal	29	35.4%
Normal	4	4.9%
Total	82	100%

Table 4: Association of depression levels with demographic profile of the study population

Variables		Depression			Chi Square Value	p value
		Normal	Borderline abnormal	Abnormal		
Age	28-40	1(10%)	2(20%)	7(70%)	8.96	0.118
	41-53	2(11.8%)	9(52.9%)	6(35.3%)		
	54-67	0	12(35.3%)	22(64.7%)		
	68-80	1(4.8%)	6(28.6%)	14(66.7%)		
Gender	Male	0	7(26.9%)	19(73.1%)	3.208	0.210
	Female	4(7.1%)	22(39.3%)	30(53.6%)		
Education	Post-Graduation	0	2(100%)	0	11.036	0.143
	Graduate	1(12.5%)	4(50%)	3(37.5%)		
	Intermediate or diploma	0	4(57.1%)	3(42.9%)		
	Middle school	1(3.4%)	6(20.7%)	22(75.9%)		
	High school	2(5.6%)	13(36.1%)	21(58.3%)		
Occupation	Professional	1(20%)	2(40%)	2(40%)	12.427	0.026*
	Semi-skilled	0	7(53.8%)	6(46.2%)		
	Skilled workers	1(3.1%)	15(46.9%)	16(50%)		

	Unemployed	2(6.3%)	5(15.6%)	25(78.1%)		
Marital status	Yes	3(3.9%)	28(36.8%)	28(36.8%)	2.781	0.239
	No	1(16.7%)	1(16.7%)	4(66.7%)		

4. Discussion

CKD is considered as one of the most disabling diseases in the world, with a global prevalence rate of 8-16% in 2013 and 11-13% in 2016. Psychiatric disorders usually co-exist with most chronic illnesses and especially with CKD[17]. In this study, we found that there was significant association of depression in haemodialysis patients. 60% of the study participants reported their depression status as abnormal, 35% were on borderline abnormal and only 5 were found to be normal (Table 3).

Occupation was the only factor we observed as significantly associated with depression levels. In this study we have observed that those samples who are unemployed, vast majority had rated the depression level as abnormal and in all other categories majority of the participants were either borderline abnormal or abnormal (Table 4).

Depression is an emotional state characterized by somatic and cognitive symptoms including feelings of sadness, worthlessness, sleeplessness, loss of appetite and sexual desires, and interest in usual activities[18]. A clinical diagnosis of depression, most often major depressive disorder, is performed when symptoms of depression become persistent, often for more than 2 weeks. The assessment of depression is rather challenging in the CKD population, partly because of overlapping physical symptoms of uremia and depression, such as fatigue, loss of appetite, sleep disruption, and so on [6].

A recent, longitudinal study by Ng et.al followed up with 159 patients undergoing dialysis over a period of 12 months. According to their results, 63 patients (39.6%) presented with persistent symptoms of depression[7].

A study byMapes et.al demonstrated that among patients on HD, depression was independently associated with increased mortality and hospitalization.Several other original studies and systematic reviews haveconfirmed the prognostic association of depression with overall mortality[8].

Yet, a cross-sectional study conducted in Saudi Arabia in 2017 showed that 70% of patients with kidney failure had depression at varying levels. That study found that 28% had mild depression, 26% had moderate depression, 8% had severe depression, and 7% had very severe depression. Among the demographic profile of the patients, socioeconomic status and marital status were found to be associated with depression among renal failure patients (P <0.05) [9].

According to many studies, depression seen in CKD patients can be attributed to several factors that include the reaction to the diagnosis and the nature of the treatment that the patient will undergo for a lifetime and the effect of these long-term treatments such as compromised quality of life, job loss, and financial burden to the patient and the family [10-13].These reactions are compounded by the impact of depression, which is recognized to be an incapacitating disorder. The person suffering from depression further manifest their inability to perform their daily activities, such as the way they think, eat, sleep, and work. Symptoms can range from fatigue, feelings of hopelessness, restless, headaches, and suicide attempts among others. The symptoms of depression among these patients complicate their illness, affect their compliance to treatment, and their ability to cope [14].

5. Conclusion

Depression is the most prevalent entities among the haemodialysis population. They are more prevalent in female, uneducated married patients belonging to lower socioeconomic class. It is important that all the patients ending up on lifelong maintenance haemodialysis should be routinely screened for signs of psychiatric illnesses like depression.

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