ORIGINAL ARTICLE

Frequency of Anxiety and Depression in Patients undergoing Hemodialysis in Tertiary Care Hospitals of Rawalpindi

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ABSTRACT

Objectives: a. To determine the frequency of anxiety and depression among patients undergoing hemodialysis. b. To provide an association between anxiety and depression in dialysis patients and the socio-demographic factors.

Materials and Methods: A cross sectional study was conducted over a period of 6 months at tertiary care hospitals of Rawalpindi. Data was collected using purposive sampling technique from 358 patients on hemodialysis. The data collection tool, "Hospital Anxiety and Depression scale", comprised of 14 questions; seven each for assessing depression and anxiety. The collected data was analysed through SPSS version 26.0.

Results: Anxiety and depression was common in hemodialysis patients in proportion of 34.3% and 38.7% respectively. Significant association was found between anxiety and gender (p=0.038). Educational level was also significantly associated with both depression (p=0.016) and anxiety (p=0.018). No significant results was found with other sociodemographic factors, i.e age, marital status, type of family, occupation, and monthly income.

Conclusion: Anxiety and depression are prevalent in hemodialysis patients. These mental disorders need to be addressed by the physicians to promote treatment adherence, to improve quality of life of patients and disease prognosis.

Key words: Anxiety, Chronic kidney Disease, Depression, Renal Dialysis, Mental Health, Prevalence, Mental Disorders, Tertiary Healthcare.

INTRODUCTION

Hemodialysis serves as a vital lifeline for millions, with over two million patients worldwide relying on this life-sustaining treatment each year. In Pakistan, the situation is particularly critical, as the prevalence of Chronic Kidney Disease (CKD) is alarmingly high. Recent studies indicate that between 12.5% to 29.9% of the population is affected by CKD, while it reaches up to 43.6% among older adults.[1] This significant prevalence highlights the urgent need for hemodialysis, solidifying its status as an essential medical service in the country.

The hemodialysis process involves effectively rerouting blood through an external machine, where it is meticulously filtered before being returned to the body. This procedure typically lasts three to four hours and is generally required three times a week in developed nations, while in developing countries, it may be conducted twice a week.[2] While hemodialysis is crucial in maintaining and prolonging life, it undeniably impacts the quality of life for many patients.[3,4] Patients often confront repeated punctures and must adhere to strict fluid and dietary restrictions, all while managing potential complications arising from regular treatments.[5,6] This rigorous routine can take a toll on mental well-being, leading to increased feelings of anxiety and depression among those undergoing hemodialysis.[7,8]

Anxiety is marked by intense feelings of uncertainty, dread, and fear.[9] Research indicates

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that approximately 50% of individuals undergoing hemodialysis experience symptoms of both anxiety and depression.[10] Notably, the incidence of depression among these patients is about three times higher than that in the general population. This surge in anxiety and depression can significantly impact treatment outcomes, potentially resulting in poor adherence to dialysis protocols. This may manifest as missed hemodialysis appointments and shorter treatment durations, ultimately compromising patient health.[11]

The financial strain associated with weekly dialysis, ongoing medication, and necessary laboratory tests places considerable economic pressure on families. This situation may lead to feelings of guilt and intensify the psychological burdens faced by patients. Additionally, these mental health challenges are correlated with an increased incidence of social isolation, hospitalization, and mortality.[12,13]

In a country like Pakistan, the burden of patients grappling with neuropsychiatric symptoms is significant, yet these crucial aspects often go unaddressed by healthcare providers. This oversight can have a detrimental impact on both disease prognosis and treatment adherence.[14,15] To improve patient outcomes, it is essential to incorporate the assessment of anxiety and depression into routine care evaluations. By doing so, healthcare professionals can tailor the most effective treatment plans for each individual, ensuring a more holistic approach to their care.[16]

Even though several studies on anxiety anddepression have been undertaken, most have been conducted in Western countries. Findings on these issues in relation to haemodialysis populations in Pakistan are very scarce. Thus, the aims of the current study were to asses the frequency of these psychiatric disorders in patients undergoing hemodialysis and to determine their relationship with sociodemographic factors.

METHODOLOGY

The study utilized a cross-sectional analytical study design. The study population consisted of patients undergoing hemodialysis. Data collection took place in tertiary care hospitals in Rawalpindi over a period of six months. A sample size of 358 patients was determined for the study. The sampling strategy employed was non-probability purposive sampling.

To be eligible for participation in the study, participants were required to be undergoing maintenance hemodialysis for a minimum duration of three months, to provide informed consent, and to be at least 15 years of age. Patients were excluded if they had been diagnosed with pre-existing psychiatric disorders, had severe physical or cognitive limitations, or were critically ill.

Anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS) questionnaire. The questionnaire was translated into the local language for participants. The HADS questionnaire contained seven items for assessing depression and seven items for assessing anxiety. Out of the 14 questions, 8 were forward-scored and 6 were reverse-scored. The scoring system for HADS was as follows: a total score of 0 to 7 was considered normal, a score of 8 to 10 indicated borderline anxiety or depression, and a score of 11 to 21 indicated abnormal anxiety or depression (classified as a case). Each question had a maximum score of 3 and a minimum score of 0.

For statistical analysis, the collected data were entered into SPSS version 26.0. Both descriptive and inferential statistics were computed. Descriptive analysis included measuring mean and standard deviation for continuous variables, while frequency and percentage were reported for categorical variables. For inferential analysis, chi-square test was applied, with a p-value of ≤ 0.05 considered statistically significant. Ethical considerations for the research included obtaining voluntary informed consent, ensuring anonymity and receiving approval from Ethical Review Committee of Army Medical College, Rawalpindi.

RESULTS

A total of 358 patients undergoing hemodialysis participated in the study. The mean age was 47.67 years (± 15.23), with the largest age group being 46–60 years. The majority of participants were male (66.8%) and married (81.8%). Most patients belonged to joint families (53.6%) and had varying educational levels, with the highest proportion (27.1%) completed matriculation. In terms of monthly income, 43.0% were earning below 40,000 PKR. Occupations ranged from unskilled labor to professional roles, with clerical workers comprising the largest subgroup (23.5%). The proportions of depressive disorder was 39.7% (n=142), while anxiety disorder affected 34.3% (n=123) of the patients.

Analysis of associations between socio-demographic variables and psychological outcomes revealed that gender was significantly associated with anxiety, with females experiencing higher rates than males (p = 0.038). Although females also showed a higher ooccurrence of depression, this difference was not statistically significant (p = 0.151).

Educational level was significantly associated with both depression (p= 0.016) and anxiety (p = 0.018). Higher educational attainment was generally associated with lower levels of abnormal depression and anxiety scores. Other socio-demographic variables including age group, marital status, type of family, occupational level, and monthly income showed no statistically significant association with either depression or anxiety (all $p > 0.05$), as detailed in Tables I and II.

Table I: Association between Socio-demographic Variables and Depression

Socio-demographic variables	Category	Normal n (%)	Borderline n (%)	Abnormal n (%)	*p*-value
Age in years	15 - 30	16 (31.4%)	15 (29.4%)	20 (39.2%)	0.568
	31 - 45	25 (23.8%)	42 (40.0%)	38 (36.2%)	
	46 - 60	38 (29.0%)	40 (30.5%)	53 (40.5%)	
	61 - 75	20 (32.3%)	15 (24.2%)	27 (43.5%)	
	76+	1 (11.1%)	4 (44.4%)	4 (44.4%)	
Gender	Male	73 (30.5%)	79 (33.1%)	87 (36.4%)	0.151
	Female	27 (22.7%)	37 (31.1%)	55 (46.2%)	
Marital status	Married	81 (27.6%)	95 (32.4%)	117 (39.9%)	0.962
	Unmarried	19 (29.2%)	21 (32.3%)	25 (38.5%)	
Educational level	Illiterate	10 (16.7%)	16 (26.7%)	34 (56.7%)	**0.016***
	Primary	10 (15.9%)	22 (34.9%)	31 (49.2%)	
	Matric	28 (28.9%)	33 (34.0%)	36 (37.1%)	
	Intermediate	24 (36.9%)	21 (32.3%)	20 (30.8%)	
	Graduate	14 (34.1%)	14 (34.1%)	13 (31.7%)	
	Postgraduate	14 (43.8%)	10 (31.3%)	8 (25.0%)	
Type of family	Nuclear	45 (27.1%)	62 (37.3%)	59 (35.5%)	0.154
	Joint	55 (28.6%)	54 (28.1%)	83 (43.2%)	
Occupational level	Unskilled	17 (21.5%)	27 (34.2%)	35 (44.3%)	0.117
	Semi-skilled	21 (24.7%)	23 (27.1%)	41 (48.2%)	
	Clerical	27 (27.8%)	40 (41.2%)	30 (30.9%)	
	Semi-professional	17 (32.1%)	15 (28.3%)	21 (39.6%)	
	Professional	18 (40.9%)	11 (25.0%)	15 (34.1%)	
Monthly income in thousands (k)	Below 40k	40 (26.0%)	48 (31.2%)	66 (42.9%)	0.675
	40k-75k	30 (29.1%)	35 (34.0%)	38 (36.9%)	
	75k-150k	15 (23.1%)	23 (35.4%)	27 (41.5%)	
	150k-300k	10 (43.5%)	7 (30.4%)	6 (26.1%)	
	Above 300k	5 (38.5%)	3 (23.1%)	5 (38.5%)	

*Statistically significant ($p < 0.05$)

Table II : Association between Socio-demographic Variables and Anxiety

Socio-demographic variable	Category	Normal n (%)	Borderlinen (%)	Abnormal (case) n (%)	*p*-value
Age in years	15 - 30	21 (41.2%)	12 (23.5%)	18 (35.3%)	0.792
	31 - 45	37 (35.2%)	30 (28.6%)	38 (36.2%)	
	46 - 60	45 (34.4%)	47 (35.9%)	39 (29.8%)	
	61 - 75	20 (32.3%)	17 (27.4%)	25 (40.3%)	
	76+	3 (33.3%)	3 (33.3%)	3 (33.3%)	
Gender	Male	94 (39.3%)	72 (30.1%)	73 (30.5%)	**0.038***
	Female	32 (26.9%)	37 (31.1%)	50 (42.0%)	
Marital status	Married	105 (35.8%)	88 (30.0%)	100 (34.1%)	0.859
	Unmarried	21 (32.3%)	21 (32.3%)	23 (35.4%)	
Educational level	Illiterate	12 (20.0%)	22 (36.7%)	26 (43.3%)	**0.018***
	Primary	16 (25.4%)	24 (38.1%)	23 (36.5%)	
	Matric	40 (41.2%)	29 (29.9%)	28 (28.9%)	
	Intermediate	30 (46.2%)	10 (15.4%)	25 (38.5%)	
	Graduate	18 (43.9%)	14 (34.1%)	9 (22.0%)	
	Postgraduate	10 (31.3%)	10 (31.3%)	12 (37.5%)	
Type of family	Nuclear	61 (36.7%)	52 (31.3%)	53 (31.9%)	0.663
	Joint	65 (33.9%)	57 (29.7%)	70 (36.5%)	
Occupational level	Unskilled	18 (22.8%)	25 (31.6%)	36 (45.6%)	0.097
	Semi-skilled	33 (38.8%)	25 (29.4%)	27 (31.8%)	
	Clerical	35 (36.1%)	29 (29.9%)	33 (34.0%)	
	semi-professional	17 (32.1%)	19 (35.8%)	17 (32.1%)	
	professional	23 (52.3%)	11 (25.0%)	10 (22.7%)	
Monthly income in thousands (k)	Below 40k	55 (35.7%)	39 (25.3%)	60 (39.0%)	0.187
	40k-75k	37 (35.9%)	29 (28.2%)	37 (35.9%)	
	75k-150k	19 (29.2%)	29 (44.6%)	17 (26.2%)	
	150k-300k	11 (47.8%)	7 (30.4%)	5 (21.7%)	
	above-300k	4 (30.8%)	5 (38.5%)	4 (30.8%)	

*Statistically significant ($p < 0.05$)

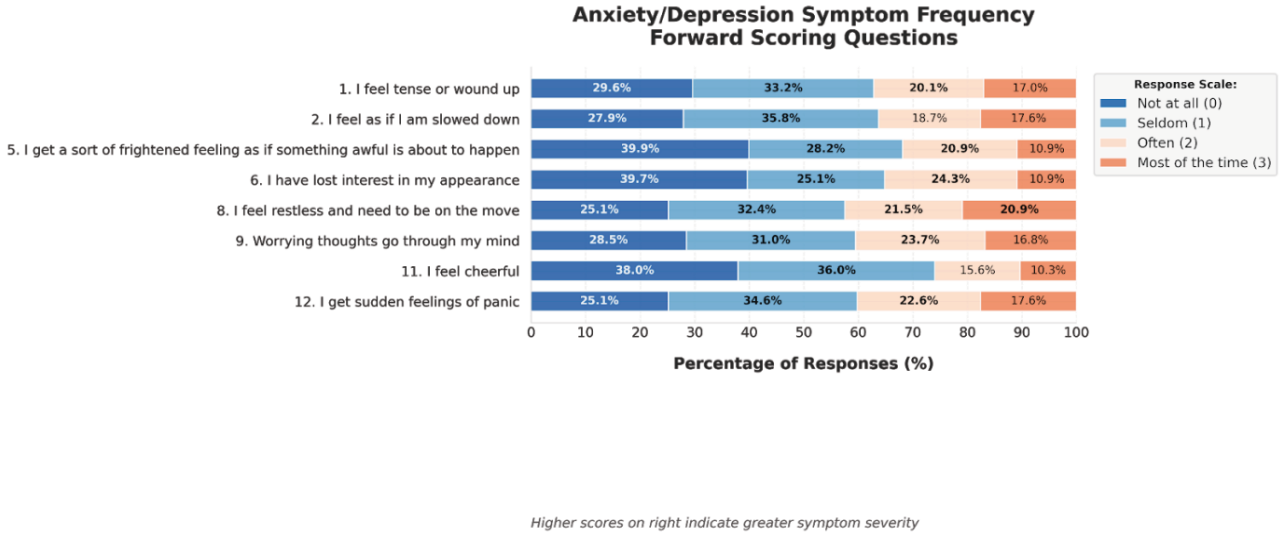

Figure 1: Frequency of Anxiety/Depression Symptoms - Forward Scoring Questions

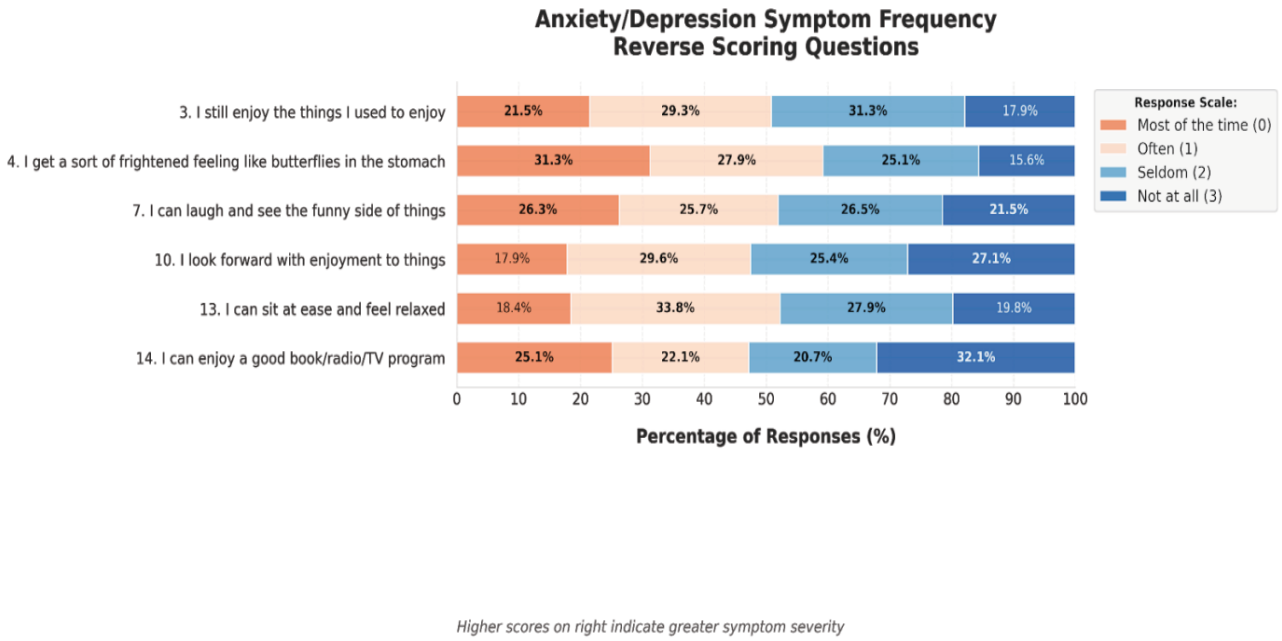

Figure 2: Frequency of Anxiety/Depression Symptoms - Reverse Scoring Questions

DISCUSSION

The findings reveal that the prevalence rates are 39.7% for depression and 34.3% for anxiety, figures that are comparable to a similar study conducted in China.[17] In contrast, research from Egypt reported significantly higher prevalence rates, with anxiety affecting 49.6% and depression affecting 55% of the participants. Both studies utilized the Hospital Anxiety and Depression Scale to evaluate symptoms of anxiety and depression. The discrepancies in prevalence rates may be attributable to geographic and socio-economic differences between the countries involved.[12]

Meng-Wei Ge et al. reported a prevalence of 24.4% and 23.7% for anxiety and depression respectively in cancer patients, which, although concerning, are lower than those found in dialysis patients.[18] A separate study examining the impact of the COVID-19 pandemic on the general population revealed a prevalence of 31.9% for anxiety and 33.7% for depression, emphasizing the significant challenges faced during this unprecedented time and the resilience required to navigate through adverse mental health symptoms. The results of the present study align closely with these statistics, illustrating the ongoing need for attention to mental health in these populations.[19]

In the present study, it was found that majority of the participants, specifically 39.7%, reported never experiencing a loss of interest in their personal appearance, as indicated by question 6 of the HADS questionnaire: "I have lost interest in my appearance." This positive response suggests that hemodialysis may not substantially impact an individual's physical appearance. In contrast, conditions like lupus nephritis and alopecia areata have been shown in various studies to significantly affect physical appearance, leading to higher levels of anxiety and depression among affected individuals. The presence of alopecia in these conditions can contribute to a negative self-perception, which is not as prevalent in those undergoing hemodialysis.[20,21]

Additionally, the study revealed another encouraging finding, that is 39.9% of respondents answered “not at all” to the question, “I get a sort of frightened feeling as if something awful is about to happen,” which is question 5 of the HADS. Furthermore, 34.6% of participants reported experiencing “sudden feelings of panic”

only “seldom”. These results indicate that the above stated aspects didnot significantly affect the majority of patients undergoing hemodialysis.

Our study found no appreciable association between age and levels of anxiety and depression. This contrasts with the findings of Nirmala Aryal's research conducted in Nepal, which reported that 50% of patients aged 65 and older experienced anxiety and 60% exhibited signs of depression.[22] The literature suggests that advancing age is a predictive factor for lower mental component scores and heightened levels of both anxiety and depression. Additionally, older adults often face a higher incidence of comorbidities and reduced social engagement, which can further compromise mental health. Our study primarily involved younger patients having a mean age of 47 years which may have lower incidence of other chronic diseases and shorter duration of hemodialysis sessions.

In our study, females reported significantly higher levels of anxiety than males. The prevalence rate was also high in females but not statistically significant. It was aligned with the study conducted in Egypt which reported higher rates of anxiety in females.[11] Gonadal hormones may be a major factor given that women are more likely to experiences mood disturbances during hormonal flux, in contrast to testosterone which has protective anxiolytic effects.[23] In a country like Pakistan, women have limited access to education, health facilities and equal job opportunities which can further exacerbate these mental disorders in them.

The current study found no association between marital status and family type with the levels of anxiety and depression, contrasting with the findings from a study conducted in Poland. Leszek Sulkowski indicated that social support from family and friends played a significant role in reducing mental disorders by enhancing patient satisfaction, encouraging treatment-seeking behavior, and adherence to dietary restrictions.[24] This perspective is further supported by an American study, which demonstrated that social support markedly improved the quality of life of the patients undergoing dialysis thereby reducing anxiety and depression in them.[25]

A lack of statistically significant association of monthly income and occupational level with anxiety and depression levels was reported in the present study. This can be attributed to the fact that the majority of the patients had health insurance that fully covered their treatment costs, alleviating their financial concerns.

Education provides patients with the necessary skills to comprehend complex health information related to dialysis procedures, which facilitates better adherence to treatment protocols and encourages proactive health management, ultimately alleviating symptoms of anxiety and depression. Patients with higher educational attainment tend to be more receptive to the advice of healthcare professionals, allowing them to make healthier lifestyle choices and engage more actively in psychosocial interventions, which have shown promising effects on reducing anxiety and depression. Conversely, those with limited educational backgrounds often experience increased vulnerability to poor health decisions. The current study has several limitations that should be considered before implication of findings. Firstly, its cross-sectional design restricts the ability to establish a cause-and-effect relationship between the variables, as it lacks a temporality. Additionally, the generalizability of the findings is limited due to the focus on a small geographical area. Furthermore, anxiety and depression were evaluated based on self-reported measures rather than established clinical diagnoses, which may affect the accuracy of the findings. Lastly, selection bias is also a concern, as the study excluded patients who opted not to participate, potentially including those who may have experienced anxiety or depression.

CONCLUSION

Anxiety and depression are prevalent in patients undergoing hemodialysis. Factors like gender and educational levels are associated with increased levels of anxiety and depression. Other sociodemographic factors such as age, marital

status, type of family, monthly income and occupation are not related to the levels of anxiety and depression.

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