ORIGINAL ARTICLE

PREVALENCE OF DEPRESSION, ANXIETY AND STRESS AMONG CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS

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ABSTRACT

Introduction: Patients with chronic kidney disease (CKD) undergoing hemodialysis often experience significant psychological distress, which can adversely affect treatment adherence and quality of life. However, limited studies in Nepal have explored the mental health status of this population. This study aimed to assess the prevalence of depression, anxiety, and stress among CKD patients undergoing hemodialysis and to examine their association with selected socio-demographic and clinical factors.

Method: A cross-sectional study was conducted among 143 patients undergoing hemodialysis at Manmohan Memorial Teaching Hospital, Kathmandu. Data were collected using a socio-demographic questionnaire and the Nepali version of the Depression, Anxiety and Stress Scale (DASS-21). Descriptive statistics, correlation, and chi-square tests were used for data analysis.

Result: A considerable proportion of participants reported moderate levels of depression, anxiety, and stress. Education level showed a significant negative correlation with all three psychological outcomes, indicating that patients with lower education experienced higher emotional distress. Gender, duration of dialysis, and comorbid diabetes were not significantly associated with mental health outcomes, although female patients reported slightly higher depressive symptoms.

Conclusion: The study reveals a high prevalence of depression, anxiety, and stress among CKD patients on hemodialysis, highlighting the need for regular mental health screening and psychosocial support in dialysis care.

Key words: **Hemodialysis; Chronic Kidney Disease; Depression; Anxiety; Stress**

INTRODUCTION

Carpal Chronic kidney disease (CKD) is a progressive condition characterized by a gradual loss of kidney function, often leading to end-stage renal disease requiring hemodialysis. Globally, CKD affects millions and is associated with substantial physical, social, and psychological burden[1]. In Nepal, the prevalence of CKD has been rising, and hemodialysis remains the primary treatment for advanced stages[2]. Although physical complications of CKD are well-documented, psychological challenges such as depression, anxiety, and stress are often overlooked[3].

Patients undergoing long-term dialysis experience major lifestyle disruptions, financial strain, and uncertainty about prognosis, which contribute to emotional distress[4]. International studies consistently report high rates of depression and anxiety among CKD patients, yet limited research has been conducted in the Nepalese habitat and socioeconomic context[5]. Understanding the psychological burden among this population is essential for improving their overall quality of life and treatment adherence. Several studies have investigated the significant prevalence of depression, anxiety, and stress among CKD patients undergoing hemodialysis with unemployment[6]. Lack of medical insurance as a major predectors of depression. Depression and anxiety among such patients are strongly associated with eGFR[7]. In the Nepalese context, a hospital-based study conducted at Kathmandu Medical College and Teaching Hospital, Nepal found that 77.1% of CKD patients experienced depression and 68.8% experienced anxiety, highlighting the high psychological burden in this population[8]. Globally, research indicates that depression affects approximately 21.4% of pre-dialysis CKD patients and 22.8% of those undergoing dialysis, suggesting that mental health issues are a widespread concern across different populations[9]. Another study reported that among patients with end-stage renal disease, depression and anxiety prevalence ranged from 22.8% to 53.4%, emphasizing the need for routine psychological assessment and interventions in hemodialysis settings[10].

These studies collectively underscore that CKD patients undergoing hemodialysis are at significant risk for psychological distress, which may negatively impact treatment adherence, quality of life, and overall health outcomes. Therefore, this study aimed to assess the prevalence of depression, anxiety, and stress among CKD patients undergoing hemodialysis at Manmohan Memorial Teaching Hospital, Kathmandu, and to examine their association with socio-demographic and clinical factors.

METHODS

This study employed a quantitative cross-sectional research design to investigate the prevalence of depression, anxiety, and stress among patients undergoing hemodialysis at Manmohan Memorial Medical College and Teaching Hospital (MMTH), Swoyambhu, Kathmandu. A total of 143 patients receiving hemodialysis through the hospital's referral system for free dialysis treatment were included in the study. The cross-sectional design allowed the researchers to assess the psychological status of the participants at a single point in time, providing a snapshot of the prevalence of mental health issues within this patient population. Data were collected using standardized instruments and structured questionnaires, ensuring consistency and reliability in measuring depression, anxiety, and stress. This design also enabled the examination of associations between psychological outcomes and selected socio-demographic and clinical factors, offering insights into potential risk factors that may contribute to mental health challenges among patients with chronic kidney disease undergoing

hemodialysis. By focusing on a well-defined sample within a tertiary care hospital, the study aimed to generate findings that are both relevant and applicable for improving the holistic care of CKD patients in Nepal. The study was initiated after obtaining ethical approval form the Institutional Review Committee of NECHO-IRC (Reference number: (081/104).

RESULTS

Among 143 dialysis patients, 37.8% had moderate depression, followed by 30.8% fall in the normal range. For anxiety levels, 31.5% were in normal, 16.1% had mild anxiety, 20.3% experienced moderate anxiety, 14.0% were severely anxious, and 18.2% had extremely severe anxiety. The majority of the respondents (55.2%) were classified as normal, 9.8% experienced mild stress, 13.3% had moderate stress, 14.0% were severely stressed, and 7.7% showed extremely severe stress (Table 1).

Among male respondents, the majority of the respondents, 68.2% were classified as normal, whereas 51.9% had moderate depression, and 50.0% showed extremely severe depression. Most of the female respondents, i.e., i.e.73.3% were severely depressed, and 50.0% showed extremely severe depression. Most of the respondents among males, i.e., 58.6% were experiencing moderate anxiety, whereas among female respondents, 70.0% were severely anxious. Among males, 63.2% experienced moderate stress, whereas among females, 72.7% with extremely severe stress (Table 2).

Among 143 CKD patients, 75 were male and 68 were female. Most males had normal (30) or moderate (28) depression, while most females had moderate (26) or mild (15) depression. Severe and extremely severe depression were more common in females (11 and 2) than males (4 and 2). Overall, moderate depression (54) was the most prevalent across both genders (Table 3).

Relationship of Education Level with Depression, Anxiety, and Stress

Education level showed a negative correlation with depression ($r = -0.36$, $p < 0.001$), anxiety ($r = -0.22$, $p = 0.008$), and stress ($r = -0.38$, $p < 0.001$), indicating that higher education is linked to lower levels of these psychological conditions. A strong positive correlation was found between depression and anxiety ($r = 0.64$, $p < 0.001$), between depression and stress ($r = 0.61$, $p < 0.001$), and between anxiety and stress ($r = 0.69$, $p < 0.001$). These results indicate that higher levels of depression, anxiety, and stress tend to occur together (Table 4).

Rho Correlation Analysis of Dialysis Adequacy with Depression, Anxiety and Stress

The Rho correlation between depression and the adequacy of dialysis was weak and not statistically significant ($r = 0.101$, $p = 0.232$) whereas Anxiety showed a statistically insignificant correlation with dialysis adequacy ($r = 0.029$, $p = 0.731$) and stress had a minimal and non-significant correlation with dialysis adequacy ($r = 0.025$, $p = 0.766$) (Table 6).

Association Between Sex and Levels of Anxiety and Stress Among CKD Patients

A chi-square test of independence was conducted to examine the relationship between anxiety levels and sex among 143 participants. The test showed no significant association, $\chi^2_4 = 5.21$, $p = .266$. The likelihood ratio test was also non-significant, $\chi^2_4 = 5.30$, $p = .258$. The linear-by-linear association was $\chi^2_1 = 1.67$, $p = .196$. Since all p-values were greater than .05, the null hypothesis was retained, indicating that anxiety levels did not differ significantly by sex (Table 7). The Chi-square analysis revealed a statistically significant association between gender and stress levels among CKD patients. The Likelihood Ratio was significant, $\chi^2_4 = 9.70$, $p = .046$, and the Linear-by-Linear Association was also significant, $\chi^2_1 = 5.30$, $p = .021$, indicating a trend in which stress levels vary by gender. These results suggest that female patients are more likely to report higher stress levels than male patients. The Pearson Chi-square test was marginally non-significant $\chi^2_4 = 9.45$, $p = 0.051$), but the overall pattern supports a weak but meaningful association between gender and stress. (Table 8)

Table 1: Level of Depression, Anxiety, and Stress Scores

Level	Depression (%)	Anxiety (%)	Stress (%)
Normal	44(30.8)	45(31.5)	79(55.2)
Mild	26(18.2)	23(16.1)	14(9.8)
Moderate	54(37.8)	29(20.3)	19(13.3)
Severe	15(10.5)	20(14.0)	20(14.)
Extremely Severe	4(2.8)	26(18.2)	11(7.7)
Total	**143(100.0)**	**143(100.0)**	**143**

Table 2: Level of Depression, Anxiety, and Stress score by Sex

Variables	Level	Male (%)	Female (%)
Depression	Normal	68.20	31.80
	Mild	42.30	57.70
	Moderate	51.90	48.10
	Severe	26.70	73.30
	Extremely severe	50.00	50.00
Anxiety	Normal	57.80	42.20
	Mild	56.50	43.50
	Moderate	58.60	41.40
	Severe	30.00	70.00
	Extremely severe	50.00	50.00
Stress	Normal	59.50	40.50
	Mild	28.60	71.40
	Moderate	63.20	36.80
	Severe	45.00	55.00
	Extremely severe	27.30	72.70
Total		52.40	47.60

Table 3: Level of Depression by Sex

Level	Male (%)	Female (%)	Total(%)
Normal	30 (20.98)	14 (9.79)	44 (30.77)
Mild	11 (7.69)	15 (10.49)	26 (18.18)
Moderate	28 (19.58)	26 (18.18)	54 (37.76)
Severe	4 (2.80)	11(7.69)	15 (10.49)
Extremely severe	2 (1.40)	2 (1.40)	4 (2.80)

Table 4: Rho-Correlation between the Education level of respondents on Depression, Anxiety, and Stress

Variables	1	2	3	4
1. Education Level	—			
2. Depression	-.36**	—		
3. Anxiety	-.22**	.65**	—	
4. Stress	-.39**	.62**	.69**	—

Note. r = Pearson correlation coefficient. p < .01 (2-tailed).

Table 5: Correlation of duration of dialysis on Depression, Anxiety, and Stress

Variables	1	2	3	4
1. Duration of hemodialysis	—			
2. Depression	0.049	—		
3. Anxiety	0.032	0.645**	—	
4. Stress	0.087	0.622**	0.690**	—

Table 6: Spearman's Rho Correlation between Adequacy of Dialysis, Depression, Anxiety, and Stress (n = 143)

Variables	1	2	3	4
1. Adequacy of Dialysis	—			
2. Depression	0.09	—		
3. Anxiety	0.00	0.65**	—	
4. Stress	0.01	0.62**	0.69**	—

Note. ρ = Spearman's correlation coefficient. p < .01 (2-tailed)

Table 7: Chi-Square Test Results Showing the Association between Gender and Stress Levels Among CKD Patients (N = 143)

Particulars	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.45	4	0.051
Likelihood Ratio	9.70	4	0.046*
Linear-by-Linear Association	5.30	1	0.021*

Note. df = degrees of freedom. p < 0.05 is considered statistically significant. * indicates significant result.

Table 8: Significant Chi-Square Test Results for the Association Between Gender and Stress Levels (n = 143)

Particulars	Value	Df	Asymp. Sig. (2-sided)
Likelihood Ratio	9.70	4	.046*
Linear-by-Linear Association	5.30	1	.021*

Note. df = degrees of freedom. p < .05 indicates statistical significance

DISCUSSION

This study examined the prevalence of depression, anxiety, and stress among patients with chronic kidney disease (CKD) undergoing hemodialysis at Manmohan Memorial Teaching Hospital, Kathmandu. The findings revealed that a substantial proportion of patients experienced moderate levels of depression, anxiety, and stress, which is consistent with international literature indicating that CKD is frequently associated with psychological distress[11]. The high emotional burden may be attributed to the chronic nature of the disease, financial strain, lifestyle restrictions, and uncertainty about prognosis, all of which are known to affect mental well-being.[12]

The study also revealed a high prevalence of depression, anxiety, and stress among patients with chronic kidney disease undergoing hemodialysis. The findings highlight that lower educational attainment was significantly associated with higher levels of psychological distress, suggesting that limited health literacy and coping resources may increase vulnerability to mental health problems. Although gender, duration of dialysis, and comorbid diabetes were not significantly related to psychological outcomes, female participants showed slightly higher depressive symptoms, which is consistent with previous findings.

A notable finding of this study was the significant negative correlation between education level and symptoms of depression, anxiety, and stress. This aligns with previous studies showing that higher educational attainment enhances coping skills and health literacy, enabling patients to manage treatment-related stressors more effectively.[13] Patients with lower education may have a limited understanding of their illness, which could contribute to heightened fear, perceived helplessness, and emotional distress. This suggests that health education and counseling interventions tailored to patients' literacy levels could play an important role in improving mental health outcomes.

Although gender did not show a strong association with psychoogical distress, female patients displayed slightly higher levels of depression, which mirrors findings from regional and international studies.[14] Cultural expectations and caregiving responsibilities might contribute to this vulnerability among women. Interestingly, no significant associations were found between the duration of dialysis or the presence of diabetes and mental health outcomes, which contradicts some earlier findings. This discrepancy may be related to sample size, cultural factors, or resilience developed over time by long-term dialysis patients.

Overall, these findings highlight the urgent need to integrate routine psychosocial assessment and mental health support into CKD management in Nepal. Regular mental health screening using validated tools such as the DASS-21, along with counseling and peer support interventions, could help address the psychological burden faced by this vulnerable population. Future studies with larger samples, longitudinal designs, and multi-center settings are recommended to validate these findings and explore additional psychosocial factors influencing the quality of life among CKD patients in Nepal.

CONCLUSION

The study reveals a high prevalence of depression, anxiety, and stress among CKD patients on hemodialysis, highlighting the need for regular mental health screening and psychosocial support in dialysis care.

Strong correlation of education level suggests that health education tailored to patients' literacy levels, regular psychological assessments, counseling, and peer support groups could help reduce emotional distress and improve overall well-being.

LIMITATIONS

The research has some limitations. This study was conducted on hospital patients, therefore, it may not be representative of the entire nation or generalizable to the general community.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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