Depressive disorder among the end-stage renal disease patients undergoing maintenance hemodialysis at Chitwan medical college

Sabina Dahal[1], C. P. Sedhai[2]

1.Lecturer, Department of Psychiatry, Kathmandu Medical College, Kathmandu

2.Professor, Department of Psychiatry, Chitwan Medical College, Bharatpur

Abstract

Background:

Patients with End stage renal disease (ESRD) suffer from a variety of losses, including renal function, family role, work role, sexual function, as well as time and mobility, all of which have a substantial influence on their lives.[1,2] Physical manifestation of the End-Stage Renal Disease patients receiving dialysis treatment may be obvious but studies have found that they are also at increased risk of clinical and subclinical Depressive Disorder for a variety of reasons; which might be overlooked in our routine clinical assessment. Depressive Disorder has been associated with impaired recovery and increased mortality in many diseases including End-Stage Renal Disease patients [3,4]

Objectives:

To assess the magnitude of depressive disorder among the patients undergoing hemodialysis of duration >3 months at Chitwan Medical College Teaching Hospital (CMCTH) and to determine the association between explanatory variables with depressive disorder.

Methods:

Patients undergoing maintenance hemodialysis at CMCTH after meeting inclusion criteria were enrolled by consecutive sampling technique. Diagnoses were assessed on the basis of the ICD-10 Classification of Mental and Behavioral Disorders- Diagnostic Criteria for Research (ICD-10 DCR). To stratify the severity of the Depression into mild, moderate and severe categories, we used Hamilton Depressive Disorder rating scale. Seventy-four (74) patients undergoing maintenance hemodialysis were assessed. Interviews with patients and informants were taken and filled in a self-designed demographic datasheet. Obtained data were analyzed by using descriptive and inferential statistics.

Results:

The prevalence of the depressive disorder among patients undergoing maintenance hemodialysis was 75.70%. Positive correlations were found between depressive disorder and gender, age group and occupation ($p<0.05$)

Conclusion:

The present study showed that the prevalence of depressive disorder was higher in ESRD patients compared to study done in Nepal where prevalence of depressive disorder in ESRD patients was 51.8%.[10]

***Corresponding Author**

Dr. Sabina Dahal

Lecturer, Department of Psychiatry Kathmandu Medical College, Kathmandu, Nepal

email: sabina257dahl@gmail.com

INTRODUCTION

Chronic Kidney Disease (CKD) is a global health issue with prevalence rising exponentially including in Nepal. Approximately 10% of the world's population is affected by chronic kidney disease (CKD) and millions of people die each year due to a lack of access to affordable treatment.[3] Chronic medical morbidities including CKD leads to significant psychiatric morbidity and is strongly associated with an increase in disability, healthcare costs, and mortality risks. [5]

As Nepal is a developing country going through many socio-economic difficulties and changes, psychological problems are in increasing trend even in the general population. Additionally, chronic medical morbidities including End-Stage Renal Disease (ESRD) can lead to significant psychological problems like depressive illness, anxiety disorders, which were found on the previous studies.[6]

While our Government of Nepal provides hemodialysis free of cost, ESRD patients receiving dialysis treatment may be at increased risk of clinical and subclinical Depressive Disorder for a variety of reasons due to regular, frequent, and tiresome hospital visits, the lifelong burden of medications, increase in frequency and severity of illness due to immunocompromised state, and progressive nature of the

disease. [7] Depressive Disorder, anxiety, dementias, alcohol and drug-related disorders, and schizophrenia disorders are among the psychiatric ailments seen in the ESRD population.[8] Existing research on ESRD patients' psychological discomfort focuses mostly on the features and prevalence of Depressive Disorder among them.[9] The objective of this study was to assess the magnitude of depressive disorder among the patients undergoing hemodialysis of duration >3 months at CMCTH and to measure the association between depressive disorder and explanatory variables. There are very limited studies looking into the Mental health conditions including Depressive Disorder in the ESRD population in our country.[10] One of the first and most well-known studies, conducted in Nepal, found that the prevalence of depressive disorder in ESRD patients was 51.8% and there were no significant differences in BDI score and Depressive Disorder rates between genders, housing status, education level, alcohol consumption, co morbidity.[10] As ESRD is an increasing trend in our country and many studies have shown a high prevalence of psychiatric co-morbidities among them, our study will help in comprehensive management of ESRD and its precipitating depressive disorder which leads to increased patient compliance, decrease mortality of chronic kidney disease patients.[10]

MATERIAL AND METHODS

The study design was cross sectional descriptive study. We used consecutive sampling technique in our study. Study period was of 6 months starting from February of 2020 to July of 2020. All the patients suffering from ESRD undergoing maintenance hemodialysis of duration >3 months in CMC teaching hospital were taken as total sample and was determined by complete enumeration method for the study. Patient < 18 years (as ESRD is less common in people <18 years), who did not give consent and the those who were unable to comprehend and express were excluded from our study.

Semi-structured pro-forma was used to assess socio-demographic variables. ICD-10 DCR was used to make a diagnosis of depression. Hamilton depression rating scale was used to rate the severity of depressive disorder as mild, moderate and severe. Data was analyzed using SPSS version 20 for windows.

Prior to commencement of the study, ethical clearance was obtained from CMC IRC. Written consents was taken from each patient who is selected.

RESULTS

A total of 74 samples were taken up for study. Equal numbers of male and female patients of age group 30-45 years are undergoing maintenance hemodialysis in CMC. In the age group 46-60 years, males are more in compare to females undergoing maintenance hemodialysis. Whereas, above 60 years of age females > males undergoing maintenance hemodialysis.

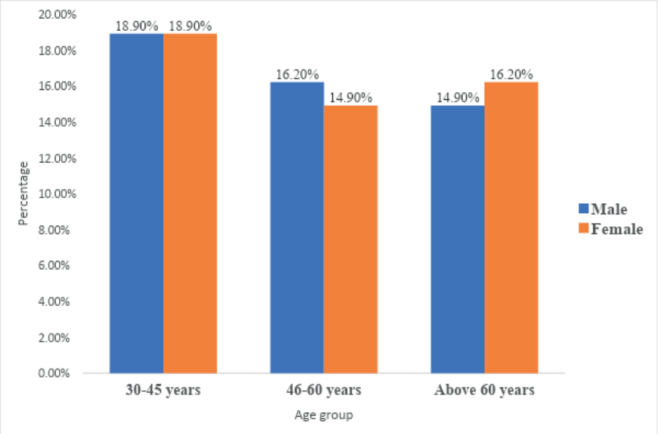

Fig no. 1 Age – sex distribution of patients undergoing maintenance hemodialysis attending Chitwan medical college teaching hospital (n=74).

Table:1

Sociodemographic characteristics among patients undergoing maintenance hemodialysis attending Chitwan medical college teaching hospital (n=74).

Variables	Frequency (%)
Age group	
30-45	28(37.8%)
46-60	23(31.1%)
Above 60	23(31.1%)
Median (IQR) = 53.5(24),	
Sex	
Male	37(50%)
Female	37(50%)
Ethnicity	
Brahmin/Chhetri	31(41.8%
Janajati	40(54.1%)
Others	3(4.1%)
Religion	
Hindu	61(82.4%)
Non-Hindu	13(17.6%)
Marital status	
Married	59(79.7%)
Others**	15(20.3%)
Occupation	
Agriculture/housewife	46(62.1%)
Business	6(8.1%)
Unemployment	9(12.1%)
Others	13(17.5%)

Median age of patients undergoing maintenance hemodialysis is 53.5(24). Maximum patients were of Hindu religion n=61 (82.4%) belonged to Janjati group n=40 (54.1%) 79.7%

were married (n=59) whereas 20.3% belonged to others category (unmarried, separated, widowed)
Most patients undergoing maintenance hemodialysis were housewife/farmer n=46 (62.1%).30 patients (i.e.40.5%).

Table 2
Participant health related characteristics(n=74)

Variables	Frequency (%)
Past history of mental illness	
Yes	1(1.4%)
No	73(98.6%)
Family history of mental illness	
Yes	2(2.7%)
No	72(97.3%)
Substance use	
Yes	12(16.2%)
No	62(83.8%)
Medical comorbidities	
Hypertension (HTN)	54(72.9%)
Diabetes Mellitus (DM	4(5.4%)
Both	16(21.6%)

Only one patient had past history of mental illness (1.4%) and 2 patients had family history of mental illness (2.7%). 12 patients (16.2%) had past history of substance use disorder (alcohol, nicotine). 54 patients (72.9%) had history of HTN whereas 4 patients (5.4%) had history of DM

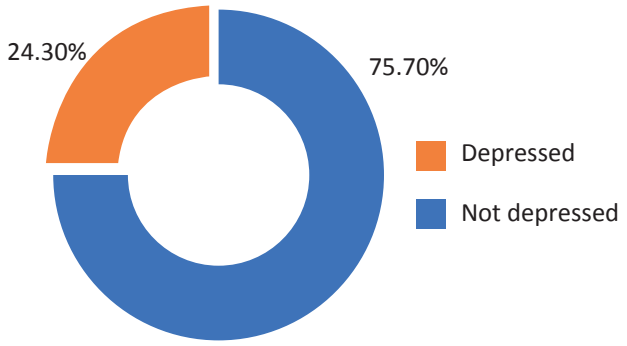

Fig no. 2 Prevalence of Depressive Disorder among end stage renal disease (esrd) patients undergoing maintenance hemodialysis attending CMCTH (n=74)

Out of 74 patients undergoing maintenance hemodialysis 56 patients (75.70%) were depressed and 18 patients (24.30%) were not depressed.

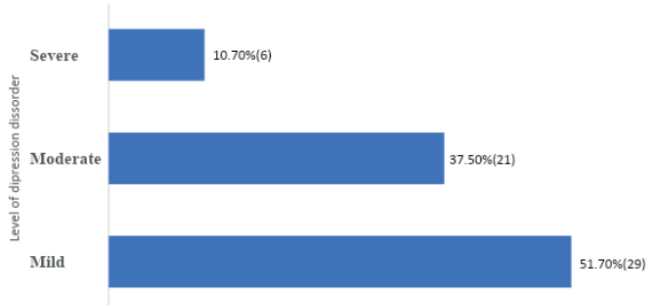

Fig no. 3 Severity of Depressive Disorder disorder among end stage renal disease (esrd) patients undergoing maintenance hemodialysis attending CMCTH (n=56)

According to severity 51.70% (n=29) had mild depressive episode with HADS score of 7-17, 37.50% (n=21) had moderate depressive episode with HADS score of 18-24 and 10.70% (n=6) had severe depressive episode with HADS score of >25.

Table 3
Association between Depressive disorder with independent variables among CKD patients attending CMCTH (n=74)

Variables	Depressive disorder		P-value
	Yes (%)	No (%)	
Sex			
Male	23(62.2%)	14(37.8%)	0.007**
Female	33(89.2%)	4(10.8%)	
Age group			
30-45	17(60.7%)	11(39.3%)	
46-60	18(78.3%)	5(21.7%)	0.038**
Above 60	21(91.3%)	2(8.7%)	
Religion			
Hindu	47(77%)	14(23%)	0.722¥
Non-Hindu	9(69.2%)	4(30.8%)	
Ethnicity			
Brahmin/Chhetri	25(80.6%)	6(19.4%)	
Non-Brahmin//Chhetri	31(72.1%)	12(27.9%)	0.398
Marital status			
Married	43(72.9%)	16(27.1%)	0.33¥
Other than married	13(86.7%)	2(13.3%)	
Occupation			
Agriculture/housewife	40(87%)	6(13%)	0.004**
Others	16(57.1%)	12(42.2%	
Substance use			
Yes	10 (83.3%)	2 (16.7%)	
No	46(74.2%)	16(25.8%)	0.718¥
Medical comorbidities			
Only HTN	39(72.2%)	15(27.8%)	0.364¥
Others	17(85%)	3(15%)	
Family history of mental illness			
Yes	2(100%)	Nil	----------
No	54(75%)	18(25%)	

*** denotes significant association at 5% level of significance (applying chi-square test)*
¥ denotes Fisher exact p value

Out of 37 male patients, 23 male patients had depressive disorder whereas out of 37 female patients 33 patients had

depressive disorder. P value 0.05 which is statistically significant. Most common age group with depressive disorder were above 60 years (i.e. 91.3%) statistically significant (p value 0.038).

Maximum patients were of Hindu religion (n = 47, 77%) and belonged to non-Brahmin category (n =31, 72.1%). Development of Depressive Disorder in CKD patients under dialysis was not associated with religion and caste (p –value: 0.39)

Out of 59 married patients 43 had Depressive Disorder (72.9%) while out of 15 other (not currently married) 13 patients were depressed (86.7%). Marital status of the patient did not show significant difference for developing Depressive Disorder in patients (p –value: 0.33)

Most patients who developed Depressive Disorder were housewife/farmer (n = 40, 87%) (p value=0.004 which is statistically significant).

10 patients(83.3%) had a past history of substance abuse and 2 patients (100%)had a family history of mental illness who developed depressive disorder which was statistically insignificant (p value: 0.718).

72.2% of patients who developed Depressive Disorder had hypertension which was statistically not significant (p value=0.364)

DISCUSSION

Patients with CKD suffer a variety of losses, including renal function, family role, work role, sexual function, as well as time and mobility, all of which have a substantial influence on their lives.[1] Furthermore, drug side effects, food restrictions, dread of death, and treatment dependency may all have an impact on quality of life and heighten feelings of powerlessness.[11]

The primary aim of this study was to assess the presence of depressive disorder in patient with ESRD, to find out the level of depressive disorder among patients and to measure the association between depressive disorder with explanatory variables.

Out of 74 patients undergoing maintenance hemodialysis, (N=56)75.4% were depressed and 18 patients were not depressed. It was similar to the study conducted by Khan et al 2019,220 patients were selected from the dialysis center and HADS questionnaire was used.157 patients i.e. 71.3% had depressive disorder in 1st visit.[7] Also it was similar to the study conducted by Al-jabi S.W. et al 2021,where 73.1% had depressive disorder.[12]

According to severity 51.70% (n=29) had mild depressive episode, 37.50% (n=21) had moderate depressive episode and 10.70% (n=6) had severe depressive episode. In contrast to the study conducted by Hawamdeh S et al at 2017, 28 percent had mild Depressive Disorder, 26 percent had moderate Depressive Disorder, 8 percent had severe Depressive Disorder[19]. It could be due to different sample size and different geographic region.

In our study (n =23,62.2%) male had depressive disorder and (n = 33,89.2%) female had depressive disorder. There was significant association between depressive disorder and female sex.

It was similar to the study conducted by Ping-Hsun Wu et al 2019, 56414 patients were selected for study. Diagnosis was made according to ICD-9. Depressive disorder were present among 36.4%, (n=901) males and 63.6% (n=1547) females.[14] This could be due to difference in genetics, hormones, stress tolerance and biological susceptibility.

Maximum patients were of Hindu religion 77%, (n=47) and belonged to other (non-Brahmin, Chettri) category 72.1%, (n=31). On the basis of occupation, the highest number of patients were housewife/farmer 87%(40 patients).

In contrast, a study conducted by Marthoenis 26.9%, 51 were housewives.[15] The difference could be due to different sample size.

Majority patients with depressive disorder 72.9 %, (n=43) were married. In this study there was no difference in marital status between two groups.

It was similar to the study conducted by Hamody et al where 72%(n=54) were married.[16] In contrast to the study conducted by Theofilou P. et al, married patients had better mental health and divorced/widowed patients had depressive disorder.[18] This could be due to sample characteristics and the method used.

72.2%, (n=39) of patients who developed depressive disorder had hypertension.

It was similar to the study conducted by Victoria where 74.7%, (n=62) patients who developed depressive disorder had hypertension.[17]

In this study, 83.3% (10 out of 12) of patients who had past history of substance abuse developed depressive disorder but was not statistically significant.

LIMITATION

This study, however, has some limitations. This study with conducted with a limited time frame. A small sample size was taken which may not have represented the whole population. A larger sample size could have shown a clear statistical difference. This study was limited to one hospital so the findings couldn't be generalized to other setting

CONCLUSIONS

In the current study, our findings showed that there were higher proportions of Depressive Disorder in ESRD patients undergoing maintenance hemodialysis. Among the patients undergoing maintenance hemodialysis significant association was present between patients having ESRD diagnosis and older age group. As depressive disorders were highly prevalent among End Stage Renal Disease patients, screening and early management can reduce the disease burden and improve quality of life. Depressive disorder has been associated with impaired recovery and increased mortality in ESRD, increasing awareness regarding mental health could benefit for patient treatment.

References

1. Perico N, Remuzzi G. Chronic kidney disease: a research and public health priority. Nephrol Dial Transplant Internet . 2012 Oct 1;27(suppl_3):iii19–26.
2. 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.
3. Levin A, Stevens PE. Summary of KDIGO 2012 CKD Guideline: behind the scenes, need for guidance, and a framework for moving forward. Kidney Int. 2014 Jan;85(1):49–61.
4. Pompili M, Venturini P, Montebovi F, Forte A, Palermo M, Lamis DA, et al. Suicide risk in dialysis: review of current literature. Int J Psychiatry Med. 2013;46(1):85–108.
5. Furlanetto LM, da Silva R V, Bueno JR. The impact of psychiatric comorbidity on length of stay of medical inpatients. Gen Hosp Psychiatry. 2003;25(1):14–9.
6. Kimmel PL. Psychosocial factors in dialysis patients. Kidney Int. 2001 Apr;59(4):1599–613.
7. Khan A, Khan AH, Adnan AS, Sulaiman SAS, Mushtaq S. Prevalence and predictors of Depressive Disorder among hemodialysis patients: a prospective follow-up study. BMC Public Health. 2019 May;19(1):531.
8. Kimmel PL, Fwu C-W, Abbott KC, Moxey-Mims MM, Mendley S, Norton JM, et al. Psychiatric Illness and Mortality in Hospitalized ESKD Dialysis Patients. Clin J Am Soc Nephrol. 2019 Sep;14(9):1363–71
9. Abbasi MA, Chertow GM, Hall YN. End-stage renal disease. BMJ Clin Evid. 2010 Jul;2010.
10. Manandhar NR, Shakya R, Pandey B, Wagley P. Depressive Disorder among patients undergoing maintenance hemodialysis at a tertiary care center in Kathmandu, Nepal. In 2018.
11. Goyal E, Chaudhury S, Saldanha D. Psychiatric comorbidity in patients undergoing hemodialysis. Ind Psychiatry J. 2018;27(2):206–12.
12. Al-Jabi SW, Sous A, Jorf F, Taqatqa M, Allan M, Sawalha L, et al. Depressive Disorder among end-stage renal disease patients undergoing hemodialysis: a cross-sectional study from Palestine. Ren Replace Ther Internet . 2021;7(1):12.
13. Elkheir HK, Wagaella AS, Badi S, Khalil A, Elzubair TH, Khalil A, et al. Prevalence and risk factors of depressive symptoms among dialysis patients with end-stage renal disease (ESRD) in Khartoum, Sudan: A cross-sectional study. J Fam Med Prim care. 2020 Jul;9(7):3639–43.
14. Wu P-H, Lin M-Y, Huang T-H, Lin Y-T, Hung C-C, Yeh Y-C, et al. Depressive Disorder amongst patients commencing maintenance dialysis is associated with increased risk of death and severe infections: A nationwide cohort study. PLoS One. 2019;14(6):e0218335.
15. Marthoenis M, Syukri M, Abdullah A, Tandi TMR, Putra N, Laura H, et al. Quality of life, Depressive Disorder, and anxiety of patients undergoing hemodialysis: Significant role of acceptance of the illness. Int J Psychiatry Med. 2021 Jan;56(1):40–50.
16. Hamody ART, Kareem AK, Al-Yasri ARS, Sh Ali AA-H. Depressive Disorder in Iraqi hemodialysis patients. Arab J Nephrol Transplant. 2013 Sep;6(3):169–72.
17. Semaan V, Noureddine S, Farhood L. Prevalence of Depressive Disorder and anxiety in end-stage renal disease: A survey of patients undergoing hemodialysis. Appl Nurs Res. 2018 Oct;43:80–5.
18. Theofilou P. Depressive Disorder and Anxiety in Patients with Chronic Renal Failure: The Effect of Sociodemographic Characteristics. Taskapan H, editor. Int J Nephrol Internet . 2011;2011:514070.
19. Hawamdeh S, Almari AM, Almutairi AS, Dator WLT. Determinants and prevalence of Depressive Disorder in patients with chronic renal disease, and their caregivers. Int J Nephrol Renovasc Dis. 2017;10:183–9.