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Research Article

# PREVALENCE OF DEPRESSION AND ITS CORRELATION TOSOCIOECONOMIC FACTORS IN PATIENTS ON MAINTENANCE HAEMODIALYSIS

**Shabana Nazneen, Aluwala Padmavathi and Manjusha Yadla**

Department of Nephrology, Gandhi Medical College Secunderabad, Telangana

**A R T I C L E I N F O**

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CKD, BMI, BDI, ESRD

**A B S T R A C T**

**Background:** Depression is the commonest psychiatric disorder in chronic kidney disease and its prevalence increases in patients on maintenance haemodialysis. **Aim of the study:** Assessed prevalence of depression using becks depression inventory scale and its correlation to socioeconomic factors. **Material & Methods:** It was a hospital based cross-sectional study included 80 patients on maintenance haemodialysis more than 6 months, assessed depression using becks depression inventory scale, used modified Kuppuswamy scale for socioeconomic class classification. **Results:** Mean age was 44.01±13.46 years. Male were 56 (70%) female were 24(30%). 57 patients were on thrice weekly dialysis and 23 (28.8%) twice weekly dialysis, 78.8% were married, 7.5 %widowed,13.8% were unmarried .27(33.8%) patients were from lower socioeconomic class, 37(46.3%) were from upper lower, 13 (16.3%) were from lower middle, 3(3.8%) were from upper middle class. Depression seen in 50(62.5%) patients, with significant p in illiterate and unemployed patients. **Conclusion:** Prevalence of depression in our study was 62.5%, Factors associated with depression were low literacy rate, unemployment with statistically significant p value <0.05 and Severe depression predominant seen in lower socioeconomic class.



## INTRODUCTION

Depression is the one of the common psychiatric problem in patients with end stage renal disease (ESRD)(1-4). It leads toemotional imbalance between the patients and caretakers.

Depression in Patients on maintenance haemodialysis can be explained by the involvement of multiple factors like chronic stress due to disease burden, low quality of life, loss of importance and adjustment at workplace due to frequent visits at the dialysis clinic three times weekly for haemodialysis(2,3,5). Health issues like muscle cramps, headache, fatigue after haemodialysis can prevent them from performing routine tasks which in turn can lead to depression. Screening for depression in dialysis centres is important because of its high prevalence and association with increased morbidity and mortality (6). The complex interactions between depression and CKD are multifactorial. The shared risk factors for CKD and depression are Younger age, female gender, socioeconomic factors like lower education, lower family income, unemployment, and health behaviours such as smoking, poor diet and sedentary lifestyle, and co morbidities like Diabetes, Hypertension, CAD, Peripheral vascular disease (2,3,5,7-9). Loss of control over crucial aspects of life activities, dependency on medical staff, family, and mechanical devices are associated with depression(7-9).

**Corresponding author:* **Shabana Nazneen**
Department of Nephrology, Gandhi Medical College Secunderabad, Telangana

### AIM

1. To assess the prevalence of Depression in patients on Maintenance Haemodialysis.
2. To study the correlation of depression with socio economic factors.

### *Patients and Methods*

It was a Hospital based cross-sectional study conducted at our tertiary carereferral centre for a period of 2 years. We studied 80 Patients who were dialysed under cashless government scheme, and received thrice /twice weekly haemodialysis using polysulfone membrane with surface area 1.3 m². Total number of hours of haemodialysis per week was 8hrs to 12 hours per patient. Erythropoietin is given twice/thrice weekly depending on the requirement. All the patients had permanent vascular access.

### *Inclusion criteria*

1. Patients who gave consent.
2. Patients with age more than18years.
3. Patients with ESRD on dialysis for more than 6 months..

### *Exclusion criteria*

1. Patients refused to give consent.
2. Patients with age less than 18 years.

3. Patients with CKD 3,4,5ND
4. Patients with severe mental illness, past history of depression, cognitive dysfunction, acute infections, malignancies, patients on corticosteroids, immunosuppressive drugs, Antidepressants.
5. Patients on maintenance Haemodialysis less than 6 months.

Demographic and clinical variables were obtained from patient interview and review of medical records at the time of depression screening. Level of education, income details, marital status, employment status was obtained via patient questionnaire. Socioeconomical class is assessed using modified updated kuppuswamy scale which includes occupation, education and the monthly income of the family with scoring system.

**Table 1** Modified Kuppuswamy socioeconomic scoring scale 2018

| Serial No | Score | Socioeconomic class |
|---|---|---|
| 1 | 26-29 | Upper (I) |
| 2 | 16-25 | Upper Middle (II) |
| 3 | 11-15 | Lower Middle (III) |
| 4 | 5-10 | Upper Lower (IV) |
| 5 | <5 | Lower (V) |

Depression was assessed by self administered, clinical review screening tool using beck depression inventory scale(BDI).The 21 items are intended to be answered according to a 4-point Likert scale, in which 0 represents the absence of the problem and 3 represents an extreme problem, with a total score range of 0-63. Individual questions of the BDI assess mood, pessimism, sense of failure, self dissatisfaction, guilt, punishment, self dislike, self accusation, suicidal ideas, crying, irritability, social withdrawal, body image, work difficulties, insomnia, fatigue, weight loss, bodily preoccupation and loss of libido. Patients with BDI score >16were considered to have depressive symptoms in this present study, which is higher cut off compared with the general population so as to avoid over diagnosis of depression.

**Table 2** BDI Classification of severity of Depression

| Bdi score | Severity of Depression |
|---|---|
| 10-13 | Minimal depression |
| 14-19 | Mild depression |
| 20-28 | Moderate depression |
| 29-63 | Severe depression |

Patients who were illiterate BDI questionnaire was explained to them in their understandable language through medical assistants

***Stastical Analysis***

The data obtained was analyzed using SPSS version 20.0. Continuous variables were expressed as mean ± SD values. Statistical tests such as unpaired t test was used to find significance of mean difference between two groups, chi square test was used to assess the relation between independent categorical variables and ANOVA test was used to evaluate the mean difference in three or more groups.

Probability value (p value) was used to determine the level of significance, p value < 0.05 was considered as significant, p value < 0.01 was considered as highly significant.

# RESULTS

***Total 80 patients included and studied***

**Table 3** Showing Baseline demographic

| **Baseline Characteristics** | |
|---|---|
| Mean age | 44.01+_13.46(SD) |
| **Age:** | N(%) |
| Less than equal 40yrs | 31(38.8%) |
| 41 - 55yrs | 34(42.5%) |
| More than 55yrs | 15(18.7%) |
| **Gender:** | |
| Male | 56(70%) |
| Female | 24(30%) |
| **Habits:** | |
| Smoking | 3(3.8%) |
| Alcohol | 3(3.8%) |
| **Comorbidities:** | |
| DM | 17(21.3%) |
| HTN | 68(85%) |
| CAD | 11(13.8%) |
| CVA | 3(3.8) |
| **Etiology:** | |
| Presumed CIN | 49(61.2%) |
| Presumed CGN | 23(28.8%) |
| Diabetic kidney disease | 8(10%) |

**Table 4** Showing baseline Clinical and Laborotory Parameters

| | **Mean/no.** | **Std. Deviation/%** |
|---|---|---|
| Ht | 158.88 | 7.25 |
| Wt | 51.78 | 8.24 |
| BMI | 20.49 | 2.86 |
| MAP | 111.80 | 8.10 |
| Frequency of dialysis: Thrice weekly | 57 | 71.3% |
| Twice weekly | 23 | 28.8% |
| Access: | | |
| RC AVF | 35 | 43.8% |
| BC AVF | 45 | 56.3% |
| Hb | 9.23 | 1.48 |
| Leucocyte count | 6985.15 | 2080.18 |
| Platelet count | 215982.98 | 64894.62 |
| Creatinine | 8.66 | 1.91 |

**Table 5** Showing Socioeconomic Factors

| **Education:** | **N(%)** |
|---|---|
| Illiterate | 13(16.3) |
| Primary | 39(48.8) |
| Secondary | 23(28.8) |
| Graduate | 5(6.3) |
| **Marital status:** | 5(6.3) |
| Married | 63(78.8) |
| Widow | 6(7.5) |
| Divorcee | 0 |
| Unmarried | 11(13.8) |
| Socioeconomic class: | |
| Lower | 27(33.8) |
| Upper lower | 37(46.3) |
| Lower middle | 13(16.3) |
| Upper middle | 3(3.8) |

**Table 6** Gender Wise Demographic, Socioeconomic And Clinical Parameters Distribution .(Significant P*)

| | | **Male** | | **Female** | | **p value** |
|---|---|---|---|---|---|---|
| | | **No** | | **No** | | |
| **Age** | Mean age | 44.54,+/- 12.81yr | | 42.79,+/- 15. | | |
| Habits Co-morbidities | Smoking | 3 | 5.4 | 0 | 0 | 0.248 |
| | Alcohol | 2 | 3.6 | 1 | 4.2 | 0.898 |
| | DM | 12 | 21.4 | 5 | 20.8 | 0.952 |
| | HTN | 51 | 91.1 | 17 | 70.8 | 0.02* |
| | CAD | 9 | 16.1 | 2 | 8.3 | 0.357 |
| | CVA | 2 | 3.6 | 1 | 4.2 | 0.898 |
| Marital Status | Married | 49 | 87.5 | 20 | 83.3 | 0.62 |
| | Unmarried | 7 | 12.5 | 4 | 16.7 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Social | Above Poverty line | 11 | 19.6 | 5 | 20.8 | 0.903 |
| | Below Poverty line | 45 | 80.4 | 19 | 79.2 | |
| Education | Primary | 25 | 44.6 | 14 | 58.3 | 0.105 |
| | Secondary | 19 | 33.9 | 4 | 16.7 | |
| | Graduate | 5 | 8.9 | 0 | 0 | |
| | Illiterate | 7 | 12.5 | 6 | 25 | |
| Class | Lower | 16 | 28.6 | 11 | 45.8 | 0.252 |
| | Lower middle | 11 | 19.6 | 2 | 8.3 | |
| | Upper lower | 26 | 46.4 | 11 | 45.8 | |
| | Upper middle | 3 | 5.4 | 0 | 0 | |
| Etiology | CIN | 33 | 58.9 | 16 | 66.7 | 0.808 |
| | CGN | 17 | 30.4 | 6 | 25 | |
| | DKD | 6 | 10.7 | 2 | 8.3 | |
| Access | Ltbcavf | 26 | 46.6 | 8 | 33.3 | 0.754 |
| | Ltrcavf | 21 | 37.5 | 11 | 45.8 | |
| | Rtbcavf | 7 | 12.5 | 4 | 16.7 | |
| | Rtrcavf | 2 | 3.6 | 1 | 4.2 | |
| Frequency | Twice | 12 | 21.4 | 11 | 45.8 | 0.027* |
| | Thrice | 44 | 78.6 | 13 | 54.2 | |

**Table 7** Comparison of demographic, socioeconomic factors in depression.

| | | No depression (BDI<16) | | Depression (BDI>16) | | p value |
|---|---|---|---|---|---|---|
| | | No. | % | No. | % | |
| Age Group | ≤ 40 | 11 | 36.7 | 20 | 40 | 0.835 |
| | 41 – 55 | 14 | 46.7 | 20 | 40 | |
| | ≥ 56 | 5 | 16.7 | 10 | 20 | |
| SEX | Male | 23 | 77 | 33 | 66 | |
| | Female | 7 | 23 | 17 | 34 | 0.313 |
| | Smoking | 1 | 3.3 | 2 | 4 | 0.879 |
| | Alcohol | 2 | 6.7 | 1 | 2 | 0.287 |
| | DM | 8 | 26.7 | 9 | 18 | 0.359 |
| | HTN | 26 | 86.7 | 42 | 84 | 0.746 |
| | CAD | 6 | 20 | 5 | 10 | 0.209 |
| | CVA | 0 | 0 | 3 | 6 | 0.171 |
| Marital Status | Married | 23 | 76.7 | 40 | 80 | 0.286 |
| | Widowed | 1 | 3.3 | 5 | 10 | |
| | Unmarried | 6 | 20 | 5 | 10 | |
| Social | Above Poverty line | 4 | 13.3 | 12 | 24 | 0.248 |
| | Below Poverty line | 26 | 86.7 | 38 | 76 | |
| Education | Primary | 17 | 56.7 | 22 | 44 | 0.038* |
| | Secondary | 4 | 13.3 | 19 | 38 | |
| | Graduate | 4 | 13.3 | 1 | 2 | |
| | Illiterate | 5 | 16.7 | 8 | 16 | |
| Class | Lower | 10 | 33.3 | 17 | 34 | 0.317 |
| | Lower middle | 7 | 23.3 | 6 | 12 | |
| | Upper lower | 11 | 36.7 | 26 | 52 | |
| | Upper middle | 2 | 6.7 | 1 | 1 | |
| Etiology | CIN | 13 | 43.3 | 36 | 72 | 0.015* |
| | CGN | 11 | 36.7 | 12 | 24 | |
| | DKD | 6 | 20 | 2 | 4 | |
| Access | LTBCAVF | 15 | 50 | 19 | 38 | 0.22 |
| | LTRCAVF | 13 | 43.3 | 19 | 38 | |
| | RTBCAVF | 2 | 6.7 | 9 | 18 | |
| | RTRCAVF | 0 | 0 | 3 | 6 | |
| Frequency | Twice | 12 | 40 | 11 | 22 | 0.085* |
| | Thrice | 18 | 60 | 39 | 78 | |
| Occupation | Employed | 13 | 43.3 | 9 | | 0.027* |
| | Un-employed | 14 | 46.7 | 38 | 76 | |
| | Retired | 3 | 10 | 3 | 6 | |

**Table 8** Showing factors associated with severity of depression

| | | No Depression | | Mild depression | | Moderate depression | | Severe depression | | P Value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % | |
| SEX | Male | 23 | 76.7 | 6 | 75.0 | 15 | 55.6 | 12 | 80.0 | 0.668 |
| | Female | 7 | 23.3 | 2 | 25.0 | 12 | 44.4 | 3 | 20.0 | |
| Socioeconomic Class | lower | 10 | 33.3 | 3 | 37.5 | 8 | 29.6 | 6 | 40.0 | 0.02* |
| | upper lower | 11 | 36.7 | 5 | 62.5 | 15 | 55.6 | 6 | 40.0 | |
| | lower middle | 7 | 23.3 | 0 | 0.0 | 4 | 14.8 | 2 | 13.3 | |
| | upper middle | 2 | 6.7 | 0 | 0.0 | 0 | 0.0 | 1 | 6.7 | |
| weekly | twice | 12 | 40.0 | 2 | 25.0 | 7 | 25.9 | 2 | 13.3 | 0.289 |
| | thrice | 18 | 60.0 | 6 | 75.0 | 20 | 74.1 | 13 | 86.7 | |

**Table 9** Showing present study Comparison with other studies

| | Present study | Taraz *et al.* | Rai *et al.* | Aggarwal *et al.* | Ambar khaira *et al* |
|---|---|---|---|---|---|
| No.of patients | 80 | 83 | 69 | 200 | 49 |
| Mean age | 44 | 57 | 53.8+/-8.6yr | 50.11+/-13.9yr | - |
| Males | 66% | 56.8% | 68.1% | 64% | 32 |
| Depression prevalence | 62.5% | 61.4% | 47.8% | 69% | 57.1% |
| Mean BMI | 20.27 | 23.8 | - | | |
| Married | 0.28 p value | 0.57 Not significant p | - | 94.5% | <0.01 |
| Education | 0.03 p value | 0.02 p value | 0.83 | | |
| Primary | 22 | 36 | 7 | 58 | |
| Secondary | 19 | 13 | 10 | 34.5 | P not significant |
| Graduate | 1 | 2 | 16 | 7.5 | |
| Illiterate | 8 | | | | |
| Vintage of HD | 27+-3 | 71.1+_53 months | - | - | - |
| Mean Hb | 9.2 | 10.9 | - | >9 | - |
| BDI | >16 | >16 | 15 | - | 15 |
| Un-employed | 0.027 p value | | 0.03 | <0.001 | P not significant |

## DISCUSSION

Our study included 80 patients who were on maintenance haemodialysis. we observed mean age of study population was 44±13.46 years, males were 56(70%) and 24 (30%)were females.

We observed 33.8% lower socioeconomic class,46.3% upper lower,16.3% lower middle,3.8% from upper middle socioeconomic class.16.3% illiterate,48.8% completed primary education,28.8% studied till secondary education level, and 6.3%were graduate.78.8% married, 7.5 % widowed, 13.8% unmarried. Hypertension in 68 (85%) patients, Diabetes in 17(21.3%),Coronary artery disease(CAD) in11 (13.8%), CVA in 3(3.8%) .

In this study depression was assessed using BDI- II, which is a validated self screening depression questionnaire. A BDI score of 16 had sensitivity of 91% and specificity of 86%(35). BDI score more than 16 was taken as cut off for depression similar to Taraz *et al*.(10).

We observed that Comorbidities like hypertension ,Diabetes mellitus was not significantly associated with depression.( P >0.05).There was no statistically significant association observed in BMI, mean blood pressure levels haemoglobin (Hb) levels, in patients with depression when compared with non depression group (p >0.05). In the present study it was observed that mean age, gender, marital status, social class were not statistically significant in patients with depression when compared to non-depression (p >0.05). whereas significant marital status association observed in Ambar *et al*.(11). We observed educational status illiteracy, unemployment were statistically significant in patients with depression when compared with those of non-depression (P value <0.05).This observation was similar to Taraz *et al*, Rai *et al*.(10,12). All these studies used BDI as tool to screen the depression except Aggarwal *et al*. (13).

## CONCLUSION

1. Prevalence of depression in our study was 62.5%.
2. Factors associated with depression are low literacy rate, un-employment(p<0.05)
3. Severe depression was statistically significantly associated with lower socioeconomic class.

**Limitations:** Smaller study.

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