

THE PREVALENCE & TREATMENT OF DEPRESSION IN PATIENTS UNDERGOING HAEMODIALYSIS IN A TERTIARY CARE CENTRE

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ABSTRACT

BACKGROUND

Psychiatric illness like depression is common in chronic kidney disease patients. With this rising incidence of chronic kidney disease in Kerala, we need to determine the extent of problem and find appropriate strategy to manage these cases. The purpose of this study was to find out the prevalence of depression in chronic kidney disease patients undergoing haemodialysis, the proportion of patients getting treatment for depression, various factors influencing the prevalence of depression in the dialysis group and also to find out a bedside tool for assessing the prevalence of depression which can be used by the treating physician as well.

METHODS

This is a cross-sectional observational prospective study conducted among 50 patients aged above 18 years undergoing haemodialysis. All underwent screening using Beck's Depression Inventory Scale II and were simultaneously assessed for depression and confirmed by using diagnostic and statistical manual for mental disorders IV criteria, with the help of a psychiatrist.

STATISTICS ANALYSIS

Chi square test was applied to know the association between two categorical variables. Statistical significance was set at $P < 0.05$.

RESULTS

Out of 50 patients, 23 were found to have depression using Beck's Depression inventory scale II as well as diagnostic and statistical manual for mental disorders IV criteria. Out of the 23 patients diagnosed to have depression with Beck's Depression inventory scale II, only 3 patients (13%) were getting treatments for depression. Also depression was associated with hypoalbuminaemia, anaemia, hyponatraemia and hypocalcaemia.

CONCLUSION

Beck's Depression Inventory scale was showing good correlation with diagnostic and statistical manual for mental disorders IV criteria diagnosis of depression and hence, it may also be used for screening depression, by the treating physician.

KEYWORDS

Chronic Kidney Disease, Haemodialysis, Depression, Beck's Depression Inventory II, Diagnostic and Statistical Manual for Mental Disorders IV.

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INTRODUCTION: Chronic kidney disease (CKD) is characterised by abnormal kidney function, a progressive decline in glomerular filtration rate (GFR) ultimately causing accumulation of abnormal levels of fluids & electrolytes in the advanced stage called end-stage renal disease (ESRD). Psychiatric illness is common among patients with CKD, especially in ESRD. The following mental disorders were frequently observed.¹

- 1) Depression and other affective disorders.
- 2) Organic brain diseases (e.g., dementia and delirium).
- 3) Alcoholism and other drug related disorders.
- 4) Schizophrenia and other psychoses.
- 5) Personality disorders.

These disorders account for a 1.5 to 3.0 times higher rate of hospitalisation among dialysis patients resulting in significant morbidity. Depression ranks the first among those requiring hospitalisation in dialysis patient population, but this can be successfully treated with medications, with or without counselling.²

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The exact prevalence of depression in dialysis patients is unclear, reportedly ranging from 10 to 66 percent.^{3,4} In ESRD, there is considerable overlap of depressive and uraemia symptoms.^{5,6}

Psychomotor agitation or retardation, decreased appetite or weight change, sleep disturbance, and aches and pains are often difficult to distinguish from the uraemic symptoms of encephalopathy, anorexia, sleep apnoea, and neuropathy, respectively.

Screening the HD population may be a practical method of assessment compared to professional psychiatric evaluation which is costly and ineffective when applied to the whole clinical population. Beck's Depression Inventory (BDI) remains one of the effective screening tools for depression. The BDI-created by Dr. Aaron T. Beck- is a 21-question multiple-choice self-report inventory, one of the most widely used instruments for measuring the severity of depression. The BDI-II was a 1996 revision of the BDI containing 21 questions, each answer being scored on a scale value of 0 to 3.⁷ The cut-offs used differ from the original, higher values are taken in view of the symptom overlap with uraemia. The accuracy of the BDI was also obtained by confirming depression by DSM IV criteria for depression.

Depression affects medical outcomes in patients with ESRD through multiple mechanisms, making the assessment and treatment of depression a must. 3 important mechanisms are:

- 1) Modification of immunologic and stress response.
- 2) Impact on nutritional status.
- 3) Reduction of compliance with, or access to, prescribed dialysis and medical regimens.

So treating depression can also have a favourable effect on other important complications of ESRD like nutritional status, thereby affecting survival.^{8,9} In a study by Koo et al,¹⁰ the effect of paroxetine compared with placebo on the nutritional status of 62 patients on haemodialysis those who were treated with antidepressants had significant increases in key nutritional parameters, including the serum albumin concentration, predialysis blood urea nitrogen levels, and higher protein catabolic rates.

MATERIAL & METHODS

Study Population: The study was conducted among patients under followup either in the Department Of General Medicine or Nephrology, Government Medical College Chest Hospital, Thrissur, Kerala, India after getting consent from the ethical committee. Patients aged above 18 years undergoing haemodialysis during June 2010 to November 2010 were taken after getting written informed consent. The following exclusion criteria was kept:

1. Age <18 yrs.
2. Past history of depression or depression preceding start of haemodialysis.
3. Family history of depression in first degree relative.

4. Any primary psychiatric illness which can present with secondary depression, e.g. schizophrenia.
5. History of current medical illness that may alter CNS structure or function, e.g. neuroinfection.
6. Life time history of significant head injury associated with any of the following:
 - a) Loss of consciousness lasting for more than 10 min.
 - b) Seizures.
 - c) Neurodeficit.
 - d) Depressed skull fracture.
 - e) Surgical intervention of brain.
7. Abnormal TSH value.

Design & Procedure: 77 patients were approached out of which 50 patients who satisfied the inclusion criteria were included in the study. Personal details and demographic profile were noted. Detailed history was taken from all patients. Complete physical examination was done. All relevant investigations were obtained and recorded.

All ESRD patients meeting the inclusion criteria underwent screening using BDI II. In a recent study of HD patients, the BDI was validated against a structured clinical interview for depression (SCID) suggesting a BDI score of ≥ 16 as an optimal cut-off for significant depression symptoms, revealing 91% sensitivity and 86% specificity.¹¹ So higher cut-offs were taken as <16 - No depression, 16-28 -mild-moderate, 29-63 -severe depression. All of them were simultaneously assessed for depression using DSM IV criteria and were confirmed with the help of a psychiatrist.

Analysis: Data analysis was carried out in Epi Info. The means & proportion were computed for background variables. Chi square test applied to find the association between two attributes.

RESULTS: Out of the 50 patients studied, mean age of the patients was 43.52 years with a standard deviation of 14.23. Median age was 44 years with range 20 -76. Maximum patients were in the age group 19-44. Out of fifty patients, 36 (72%) of them were males & 14 (28%) were females. Of the 50 patients, 62% were below poverty line and 38% were above poverty line. Considering the educational status, 32% patients were educated above 10th standard while 68% patients were educated below 10th standard. About marital status, 76% of the patients were married and 24% were not. A small subset of patients in the study group gave history of substance abuse (14%). Considering the comorbid illnesses, 19 (38%) in the study group were suffering from Type 2 Diabetes Mellitus, 23 (46%) patients were having hypoalbuminaemia (<3.5 g/dL), 41 (82%) patients were suffering from anaemia (<11 g/dL). For control of hypertension, 23 (46%) patients were using clonidine. But the duration since initiation of clonidine therapy was uncertain in most cases. Erythropoietin was used by 64%.

Variable		Depression No	Depression Yes	P value
Age (years)	19-44	17	9	0.1861
	45-64	9	11	
	65 or more	1	3	
Sex	Male	19	17	0.9697
	Female	8	6	
Educational status	Up to 10 th std.	17	17	0.6008
	10 th Std. & above	10	6	
Socioeconomic status	APL	11	8	0.8884
	BPL	16	15	
Marital status	Yes	20	18	0.4966
	No	7	5	
Substance abuse	No	24	19	0.4070
	Yes	3	4	
Date of initiation of dialysis	2 W-6 M	17	13	0.5562
	6 M-12 M	4	2	
	>12 M	6	8	
Diabetes	Yes	8	11	0.1518
	No	19	12	
Haemoglobin (g/dL)	<11	25	16	0.0399
	11 or more	2	7	
Albumin (g/dL)	< 3.5	7	16	0.0051
	3.5 or more	20	7	
Sodium (mEq/L)	<135	12	19	0.0059
	135 or more	15	4	
Potassium (mEq/L)	<3.5	2	3	0.4221
	3.5 or more	25	20	
Erythropoietin (>2 months)	Yes	14	18	0.0491
	No	13	5	
Calcium	<9	26	16	0.0186
	9-11	7	1	

Table 1: Predictors of Depression

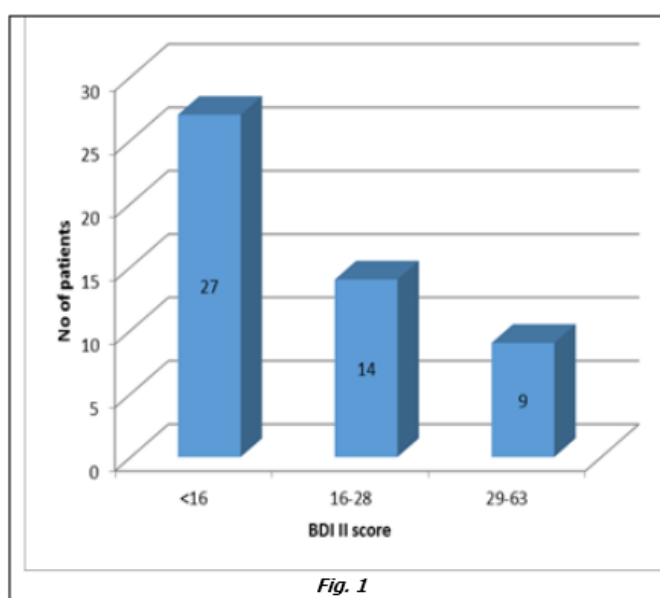


Fig. 1

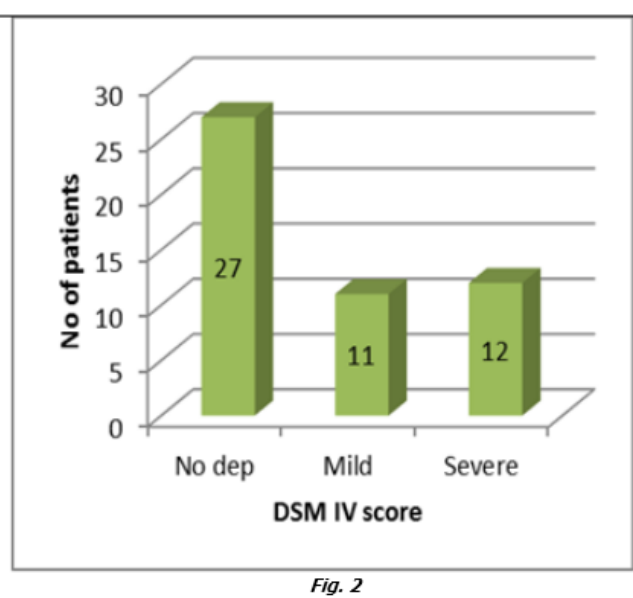


Fig. 2

Figure 1 & 2: BDI (Beck's Depression Inventory) DSM IV (Diagnostic and Statistical Manual for Mental Disorders IV)

Out of 50 patients, 31 (62%) of the study population were suffering from hyponatraemia, only 5 (10%) were suffering from hypokalaemia and 42 (84%) patients were having significant hypocalcaemia (<9 mg/dL).

In the study group, 23 patients (46%) were suffering from depression according to BDI as shown by a score of 16 or more.¹¹ Some of them were having severe depression (18%) as judged by a BDI score of 29 or more. Similar number of patients in the study group were suffering from depression according to DSM IV; 12 were having severe depression according to DSM IV.

DISCUSSION: Out of 50, maximum patients were in the age group 19-44 (52%). There was no significant statistical correlation between age group & depression. In a study by Kurtner et al, there was increased prevalence of depression with elderly.¹² There was no significant association between gender and depression. But in a study by Steven D Weisbord et al, there was a trend toward greater overall symptom burden in women.¹³

In the present study group, 46% were suffering from depression according to Beck's Depression Inventory (BDI score 16 or more) and 18% were having severe depression as judged by a BDI score of 29 or more. According to DSM IV, 46% of the study group were suffering from depression and 24% were having a diagnosis of severe depression. Beck's Depression Inventory scale (BDI) was correlating with DSM IV diagnosis of depression with high statistical significance (P value 0.0001).

In a recent study of HD patients by Watnick et al the BDI was validated against a structured clinical interview for depression (SCID) suggesting a BDI score of ≥ 16 as an optimal cut-off for significant depression symptoms, revealing 91% sensitivity and 86% specificity.

Socioeconomic status, educational status, marital status & substance abuse didn't show any significant statistical correlation with depression as shown from the table. In a study by Hedayati et al unemployment, comorbid psychiatric illness, and staying alone were significantly associated with a major depressive episode.¹⁴

In our study 38% in the study group was suffering from Type 2 Diabetes Mellitus. There was no significant statistical correlation between diabetes and depression (P value 0.1518) A similar study conducted by Steven D Weisbord et al no differences were observed in the overall burden or overall severity of symptoms between patients with and without diabetes.¹³

There was statistically significant correlation between the presence of anaemia and the diagnosis of depression. In a study by Umagaki H et al comparing hemoglobin and depression those with a higher depressive score had significantly lower hemoglobin levels than those with a lower score.¹⁵

Out of the 50 patients 23 (46%) were having hypoalbuminaemia. There was statistically significant correlation of hypoalbuminaemia as a predictor of depression (P=0.0051). In a study by Michelle C Odden et al compared to normal people those with CKD was associated with significant hypoalbuminaemia.¹⁶

In the present study, 62% had hyponatraemia, 31(62%) of the study population were suffering from hyponatraemia. There was statistically significant correlation between hyponatraemia & presence of depression.

Out of 50 patients, 42 (84%) were having significant hypocalcaemia and the study found out a statistically significant correlation (P value 0.0186) between the prevalence of depression by BDI & low calcium (<9 mg/dL). Hypocalcaemia is described as a major cause of depression in various books & literature.

Out of the 23 patients diagnosed to have depression, only three were getting treatment (13%) which was very less compared to western studies. Wuerth et al in peritoneal dialysis patients found that depressive symptoms were markedly ameliorated in patients who completed a 12-week course of treatment with sertraline, bupropion or nefazodone, despite low rates of compliance overall.^{17,18} In another study, Korean group of researchers found that HAM-D scores are significantly reduced in patients with ESRD treated with fluoxetine.¹⁰

CONCLUSION: Beck's Depression Inventory scale (BDI) was correlating with DSM IV diagnosis of depression with high statistical significance (P value 0.0001) suggesting it is a viable bedside screening tool for the physicians in screening patients with CKD on haemodialysis. BDI II needs further validating studies on a larger population for confirmation of the same. Hypoalbuminaemia, anaemia, hypocalcaemia and hyponatraemia showed significant correlation with depression showing the need for addressing these comorbidities.

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