

## ORIGINAL ARTICLE

## Prevalence of depressive symptoms among haemodialysis patients: A cross sectional survey

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## ABSTRACT

**Background:** High prevalence of depression has been reported among patients undergoing maintenance haemodialysis. Very few studies have been undertaken in India to assess prevalence of depressive symptoms in this population. The objective of this descriptive cross sectional study was to assess prevalence of depressive symptoms among patients undergoing haemodialysis in tertiary care hospital at Bangalore, Karnataka.

**Methods:** A cross sectional survey design was used to assess prevalence of depressive symptoms among 145 (104 male and 41 female) patients undergoing maintenance haemodialysis. Beck Depression Inventory –II (BDI-II) was used to assess depressive symptoms.

**Results:** Depressive symptoms were found among 77.2% (112) subjects. Depressive symptoms were found to be mild in 24% (35), moderate in 27% (39) and severe in 26% (38) subjects. : Statistically significant negative correlation was found between depressive symptoms and education (P=0.01), annual income (P=0.05). No significant associations were found between depressive symptoms and gender, marital status, religion employment, presence of other disease, and availability of medical insurance.

**Conclusion:** There is a high prevalence of depressive symptoms in ESRD patients receiving haemodialysis, particularly among those with low socioeconomic status and lower education.

**Keywords:** Haemodialysis, prevalence of depressive symptoms, End stage renal disease.

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## Introduction:

Depression has been identified as the most common psychiatric illness in patients with end-stage renal disease (ESRD), but its prevalence has varied widely in different studies, in different populations, using different assessment tools.(Kimmel, 2001; Kimmel, Weihs, & Peterson, 1993; Smith, Hong, & Robson, 1985). Depression in patients with another medical or psychiatric illness, or “compound depression,” is typically of greater intensity and more difficult to treat than depression occurring in patients without other underlying disorders. (Kimmel, 2001; Kimmel et al., 1993; Keitner, Ryan, Miller, Kohn, & Epstein, 1991; Franco-Bronson, 1996; Iosifescu et al., 2003).

Depression has several effects on the clinical outcomes of patients undergoing haemodialysis treatment. Depression among this population has been shown to have significant relationship with non-compliance, shortening of dialysis treatments, and withdrawal from haemodialysis. (DiMatteo, Lepper, & Croghan, 2000; Kutner, Zhang, McClellan, & Cole, 2002; McDade-Montez, Christensen, Cvengros, & Lawton, 2006). Decreased quality of life is reported in haemodialysis patients (Kimmel et al., 1995; Watnick S, 2007). Higher morbidity and mortality rates have also been reported in literature (Lopes et al., 2002; Boulware et al., 2006; Watnick S, 2007). It is essential to screen patients on haemodialysis for symptoms of depression so that early interventions could be initiated. There is significant overlap between somatic symptoms of depression and uraemia among ESRD patients (Anees M, 2008). Hence use of appropriate tools to screen for depression is essential. Very few studies have been conducted in India to assess depression among haemodialysis patients. The objective of this descriptive cross sectional study was to assess prevalence of depressive symptoms among patients undergoing haemodialysis in tertiary care hospital at Bangalore, Karnataka.

## Methods

This was a cross-sectional survey of patients with End Stage Renal Disease (ESRD) undergoing maintenance haemodialysis treatment on outpatient basis at M.S. Ramaiah Memorial hospital Bangalore, Karnataka. Ethical approval for the study was obtained from institutional ethics committee. ESRD patients aged above 18 years of age who agreed to participate in the study were recruited by convenient sampling technique. Subjects were provided with explanation about the purpose of the study, and an

informed written consent was obtained from them. Patients undergoing haemodialysis who are diagnosed to have psychiatric illness and those on medical treatment for depression were excluded from the study. Demographic and clinical data were documented. Subjects were requested to complete Beck Depression Inventory-II (BDI-II), a self-report questionnaire to assess depression. Beck's Depression Inventory (BDI-II) is one of the most commonly used tools to assess depression. The BDI-II is a 21-item questionnaire that uses cut off scores to determine the levels of depression. A score of 0 to 13 indicates minimal depression, 14 to 19 mild form of depression, 20 to 28 moderate depression and 29 to 63 indicates severe depression. BDI-II is found to be a reliable and well-validated measure of depressive symptoms both in clinical and in non-clinical samples (Chilcot, Wellsted, Da Silva-Gane, & Farrington, 2008; Finkelstein & Finkelstein, 2000; Anees M, 2008; Cukor et al., 2007; Diefenthaler, Wagner, Poli-de-Figueiredo, Zimmermann, & Saitovitch, 2008).

BDI-II was translated in local language (Kannada) and reliability for Kannada version of tool was established (Cronbach's  $\alpha = 0.9$ ). A total of 145 patients completed the BDI-II from August to October 2014. Subjects who participated in the study completed the questionnaire during their haemodialysis treatment or while waiting for it. **Results:** Data was verified and analysed using Statistical Package for Social Sciences (SPSS) for windows version 20.0. Results were valuated using percentage value, mean and standard deviation. Comparisons between categorical variables were done using the chi square test. Comparisons between continuous variables were made using correlation. A p value < 0.05 was considered statistically significant.

**Socio-demographic data:** The mean age of study subjects was  $45.26 \pm 12.19$  years, with age ranging between 18-71 years. Patients were undergoing dialysis for a mean duration of  $3.89 \pm 2.49$  years. Out of 145 subjects who completed the BDI-II questionnaire 71.7 % (104) were male and 28.3% (41) were females. Majority of the subjects 73.8% (107) were married. With regards to employment 32.4% (47) were self-employed and 17.2% (25) had stopped working due to their illness. Medical insurance facility was not available to 54.5% (79) subjects. With regards to presence of other diseases 33% (48) had hypertension, 28% (40) had diabetes mellitus and hypertension, and 11% (16) had diabetes mellitus. It is interesting to note that 21% (30) subjects did not have presence of any other medical disease.

Table 1: Socio-Demographic data

n = 145

Socio-demographic Data	Mean	S.D
Age	45.26	12.19
Income (annual)	145347.59	119394.47
Education in years	10.28	4.64
Socio-demographic Data	f	%
<b>Gender</b>		
a) Male	104	71.7
b) Female	41	28.3
<b>Religion</b>		
a) Hindu	123	84.8
b) Muslim	10	6.9
c) Christian	11	7.6
d) Others	01	0.7
<b>Marital Status</b>		
a) Single	26	17.9
b) Married	107	73.8
c) Divorced	12	08.3
<b>Occupational Status</b>		
a) Working for daily wages	23	15.9
b) Self Employed	47	32.4
c) Unemployed	10	6.9
d) Farmer	8	5.5
e) Homemaker	19	13.1
f) Retired	13	9
g) Stopped working due to present illness	25	17.2
<b>Availability of Medical Insurance</b>		
a) No	79	54.5
b) Yes	66	45.5
<b>Presence of any other diseases</b>		
a) Cardiac problem	1	1
b) DM, HTN & Cardiac Problem	3	2
c) DM	16	11
d) DM and Cardiac problem	1	1
e) DM and HTN	40	28
f) HTN	48	33
g) HTN and Cardiac problem	2	1
h) None	30	21
i) Others	3	2
j) Tuberculosis	1	1

**Prevalence of depressive symptoms:** Depressive symptoms were found among 77.2% (112) subjects. Depressive symptoms were found to be mild in 24% (35), moderate in 27% (39) and severe in 26% (38) subjects.

Table 2: Prevalence of depressive symptoms

n = 145

Level of Depression	Frequency	%
Minimal	33	23
Mild	35	24
Moderate	39	27
Severe	38	26

Correlations/Association of demographic variables with depressive symptoms: Statistically significant negative correlation was found between depressive symptoms and education (P=0.01), annual income (P=0.05). No significant associations were found between depressive symptoms and gender, marital status, religion employment, presence of other disease, and availability of medical insurance

Table 3: Association of demographic variables with depressive symptoms

n = 145

Socio demographic variable	Level Depression				Chi Square	p value
	Minimal	Mild	Moderate	Severe		
<b>Gender</b>						
Male	28	26	28	22	6 df=3	0.090 NS
Female	5	9	11	16		
<b>Marital status</b>						
Single	5	7	4	10	7.519 df=6	0.301 NS
Married	26	25	29	27		
Divorced	2	3	6	1		
<b>Religion</b>						
Hindu	32	25	32	34	13.268 df=9	0.151 NS
Christian	1	5	3	1		
Muslim	0	5	3	3		
Others	0	0	1	0		
<b>Employment</b>						
Working for daily wages	9	2	9	3	24.16 df=18	0.150 NS
Self Employed	9	14	11	13		
Unemployed	0	3	1	6		
Farmer	2	3	2	1		
Homemaker	3	5	6	5		
Retired	5	2	5	1		
Stopped working due to present illness	5	6	5	9		
<b>Presence of any other diseases</b>						
Cardiac problem	0	0	0	1	30.786 df=27	0.280 NS
DM, HTN and Cardiac Problem	1	1	1	0		
DM	2	3	8	3		
DM and Cardiac problem	0	0	0	1		
DM and HTN	13	6	10	11		
HTN	13	16	12	7		
HTN and Cardiac problem	0	0	1	1		
None	4	7	7	12		
Others	0	2	0	1		
Tuberculosis	0	0	0	1		
<b>Availability of Medical Insurance</b>						
No	16	21	17	25	4.733 df=3	0.192 NS
Yes	17	14	22	13		

Table 4: Correlation of depressive symptoms with selected demographic variables

n = 145

Variables	Age	Education	Income	Duration Of illness	Depression
Age	-				
Education	-0.126	-			
Income	-0.001	.238**	-		
Duration of illness	0.163	-0.097	0.044	-	
Depression	-0.084	-.231**	-.176*	-0.12	-

\*\* Correlation is significant at 0.01 level (2-tailed) \* Correlation is significant at 0.05 level (2-tailed)

## Discussion

Prevalence of depression is very high among haemodialysis patients as compared to general population (Reya Thomas, Sourya Acharya, & Samarth Shukla, 2014). Our study confirms the high prevalence of depressive symptoms among haemodialysis patients. Our study reveals that depressive symptoms were present in 77% (112) subjects. Depressive symptoms were found to be mild in 24% (35), moderate in 27% (39) and severe in 26% (38) subjects. Prevalence of depression in haemodialysis patients ranges between 40%-97% in various parts of India. (reference?) Wide variation in prevalence of depression reported in literature can be attributed to variation in tools used to assess depression and varied sample sizes used. Beck Depression Inventory (BDI) is the commonest tool used to assess depression (Khaira et al., 2012). Other tools used include Centre for epidemiological studies-depression scale (CES-D), Hospital anxiety and depression scale (HADS) and Zung depression questionnaire (Reya Thomas et al., 2014; ML Patel, 2012). Most studies that assessed depression in this population used small sizes (n=50 ±20). The only study from Lucknow, Uttar Pradesh that used a sample size of 150 HD patients reported prevalence of depressive symptoms as 46.66% with 33.3% patients having major depressive symptoms. HADS was used to assess depression in this study (ML Patel, 2012). Findings related to severe depressive symptoms of this study (33.3%) are very close to that of ours (26%). Our findings of overall prevalence of depressive symptoms (77%) are close to findings reported by (Vishal V Timaniya & Mittal V Dalal, 2013) who assessed depression in 60 HD patients at Vapi Gujarat. CES-D was used in this study to assess depressive symptoms.

Older age, male gender, lower education, presence of hypertension as comorbidity, being a member of nuclear family, being on dialysis for longer duration, low socioeconomic status, unemployment and low BMI are reported to be positively correlated with more depressive symptoms in Indian patients (Vishal V Timaniya & Mittal V Dalal, 2013; Khaira et al., 2012; Rai, Rustagi, Rustagi, & Kohli, 2011; ML Patel, 2012). In our study patients with lower education (P=0.01), and those with lower annual income (P=0.05) were found to have more depressive symptoms. Gender, marital status, religion, employment, presence of comorbidities, and availability of medical insurance had no significant associations with depressive symptoms.

Sample size of our study was larger than existing Indian studies; hence more confidence can be put in findings of our study. The study also used BDI-II which is the most widely used tool (owing to its high reliability and validity) to assess depressive symptom in scientific studies.

## Conclusion:

From the present study, it can be concluded that there is a high prevalence of depressive symptoms in ESRD patients receiving hemodialysis, particularly among those with low socioeconomic status and lower education. Expectedly, the prevalence of depression was higher in low socioeconomic group as the cost of dialysis treatment is very high for these patients in absence of social security in India. Most patients quit dialysis treatment due to inability to meet the treatment expenses (Jha, 2013).

It is necessary that more studies with larger sample sizes should be considered to develop further understanding about prevalence of depression and related factors among this population. This study also strongly recommends for routine screening of dialysis patients for depressive symptoms so that early treatment of depression can be initiated. Studies evaluating effectiveness of psycho-educational programs on depression would also be of great value.

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