

Correlates of Cognitive Function with Anxiety and Depression in Patients on Chronic Haemodialysis

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ABSTRACT

Background: Incidence of patients suffering from End-stage renal disease (ESRD) are increasing worldwide. Increase in life expectancy and increase in prevalence of life style diseases such as diabetes and hypertension have led to increase in the incidence of ESRD. ESRD is the most advanced stage of kidney failure in which kidney function is irreversibly lost. Renal transplant which is the most ideal therapy for this disorder has limited availability requiring the patients to go for Hemodialysis therapy. Hemodialysis (HD) has become the most accessible treatment for ESRD. Hemodialysis procedure for ESRD is done on regular basis and it requires modifications related to diet, fluid control, and medication intake and tremendous life style modification which leads to physical impairments, cognitive impairment, depression and anxiety in this patient group. Dialysis is one of the important factor which leads to depression and anxiety in this patient group. As known in geriatric population, deteriorating cognitive function predisposes to depression and anxiety. The relationship between cognitive function with depression and anxiety has not been explored in detail in patients on hemodialysis in past. Early recognition of risk factors associated with psychiatric symptoms will improve the prognosis in this population group. This study will focus on relationship between cognitive function with depression and anxiety in patients of ESRD on maintenance HD. **Objectives:** 1.To assess prevalence of depression and anxiety in ESRD patients on chronic hemodialysis. 2. To assess relationship between cognitive function, depression and anxiety in ESRD patients on chronic hemodialysis. **Methods:** A cross sectional, observational study was conducted at B.V.D.U.M.C. & H. Sangli. Patients Of chronic renal failure who were on maintenance dialysis for more than 6 months were assessed for depression and anxiety using Beck's Depression Inventory, Beck's Anxiety Inventory; cognitive function was assessed using MMSE test. Statistical test were applied to assess the data. **Results:** As the duration of dialysis increased severity of depression increased but severity of anxiety decreased. We could not find relationship between cognitive function and prevalence of depression and anxiety in patients on hemodialysis. **Conclusion:** Patients on maintenance hemodialysis should be screened for presence of depression, anxiety and cognitive impairment than should be treated appropriately.

Keywords: Anxiety, Cognitive Function, Haemodialysis.

INTRODUCTION

Depression and anxiety are common psychiatric illness in end stage renal disease patients (ESRD) receiving maintenance hemodialysis (HD). Different studies have given rates of depression between 20 – 70 % and rates of anxiety between 30 - 60 % in patients on maintenance hemodialysis.^[1-3] A range between 5 – 24 % for depression in HD patients is given by Chilcot et al. 2008.^[4] A study by Cukor et al. 2007 indicated persisting clinical anxiety at around 15%.^[5] These data suggest that prevalence of depression and anxiety are higher in end stage renal disease patients than in general population.

Hemodialysis patients are known to face numerous physical stressors and life style modifications. These include physical symptoms of pain and lethargy, specific dietary regimens, time constraints due to regular hemodialysis and change in their body image due to fluid retention. Therefore depression and

anxiety are more common in such population.^[6]

According to studies conducted by Arema A.Pereira et. al.^[18] cognitive impairment can affect such patients in multiple ways thereby decreasing an individual's quality of life.

Very little information is available about cognitive function affecting symptoms of depression and anxiety in this population group. Presence of depression and anxiety can lead to poor adherence to treatment, increased morbidity and mortality.^[7] Impaired cognitive function can also lead to poor adherence to treatment, increased morbidity and mortality. In many cases Cognitive decline, depression and anxiety are present simultaneously in this subpopulation. It is important to find out relationship between cognitive function with depression and anxiety in this subpopulation.

The present study is aimed at evaluating the prevalence of depression and anxiety and relationship between cognitive score with prevalence of depression and anxiety.

MATERIALS AND METHODS

This cross section observational study was conducted at Bharati Vidyapeeth Deemed University,

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bharati hospital, sangli, Maharashtra (a), between January and February 2017.

Patients with end stage renal disease who were more than 21 years old and receiving maintenance hemodialysis at bharati hospital were preliminarily screened.

Exclusion criteria includes patients who were unable to give informed consent, unable to understand spoken Marathi, English, or Hindi, past history of functional psychosis, substance dependence, major sensory, motor impairment that may prohibit assessments, patients who are on HD for less than 6 months.

The study was approved by ethics committee and written informed consent was obtained from all patients before enrolment in study.

The following demographic, clinical and laboratory data were recorded for each patient at the moment of the inclusion in the study.

We applied becks depression scale, becks anxiety scale, MMSE scale in all the patients.

We enrolled 100 patients on maintenance hemodialysis, all patients were receiving hemodialysis 3 times per week.

Becks depression inventory has 21 items that evaluate a broad spectrum of symptoms (8). Of these items 15 refer to psychological cognitive symptoms, while remaining 6 items address vegetative somatic symptoms. Thus the instrument gives more emphasis to cognitive component of depression. The score range is from 0 – 63 points. Score in the range of 17-20 was considered as mild depression, score between 21-30 points as moderate depression, score between 31-40 points as severe depression and score above 40 as extreme depression.

Becks anxiety inventory (9) was used to assess anxiety symptoms, it comprises of 21 items. Score range from 0-36 points, where score of 0-21 was considered as low anxiety, score between 22-35 points was considered moderate anxiety and any score above 35 was considered as severe anxiety.

MMSE: The maximum MMSE score is 30 points. A score of more than 24 suggest no cognitive impairment. A score of 20 to 24 suggests mild cognitive impairment, 13 to 20 suggests moderate cognitive impairment, and less than 12 indicates severe cognitive impairment.

Discrete data was assessed using Chi-square test. Continuous was assessed using ANNOVA or Student's T-test.

Statistical analysis was done using SPSS 22.0 software. A p value less than 0.05 was considered significant.

RESULTS

The study interviewed 110 patients on maintenance hemodialysis. 10 patients were excluded due to delirium (4), aphasia (2), and history of alcohol dependence (4).

100 patients were included in the study.

Table 1: Demographic and social characteristics of patients included in the study

Age(years)	45.09 +_ 13.54
Female	26(26%)
Male	74(74%)
Illiterate	7(7%)
Literate	93(93%)
Employed	36(36%)
Unemployed	64(64%)
Married	82(82%)
Single	18(18%)

		No depression	Mild depression	Moderate depression	Severe depression	Extreme depression	P value
N		60	15	14	7	4	
Duration of illness	Mean	12.82	27.53	33.21	62.00	43.25	<0.001

		Low anxiety	Moderate anxiety	Severe anxiety	P value
N		82	16	2	
Duration of dialysis	Mean	25.24	10.38	9.00	0.014
	S.D.	21.15	4.19	4.24	

The mean age was 45.09 +_ 13.54 years.

We had 26 female patients and 74 male patients.

The average time on dialysis was 22.5 ± 20.06 months.

- Prevalence of depression was 40% and prevalence of anxiety was 18% in our study sample
- As duration of dialysis increased there was increase in BDI (p value-0.001)and decrease in BAI score (p value-0.014) which is statistically significant.
- Depression was found in 40 (40%) cases. The intensity of depression was classified as mild in 15 (15%), moderate in 14 (14%), severe in 7(7%) and extreme in 4(4%) cases.
- We found that 82 (82%) patients had low anxiety, 16 (16%) patients had moderate anxiety and 2 (2%) patients had severe anxiety.

MMSE	N	Mean	Std. Deviation
no depression	60	25.85	3.483
mild depression	15	26.53	2.774
moderate depression	14	26.43	2.102
severe depression	7	26.29	4.499
extreme depression	4	25.75	4.349
Total	100	26.06	3.284

P value was 0.941

MMSE	N	Mean	Std. Deviation
no anxiety	82	26.06	3.260
mild anxiety	16	26.44	3.444
moderate anxiety	2	23.00	2.828
Total	100	26.06	3.284

P value 0.381

DISCUSSION

According to a study by Ginieri-Coccosis M et al. depression is most common psychiatric illness in patients with ESRD.^[4] Sleep disturbance, malaise, anorexia which are common in patients of HD can be mistaken for depressive symptoms.^[10] In their meta-analysis Palmer et al reported a wide range in the prevalence of depressive symptoms (1.4-94%), among studies that involved dialysis patients.^[11] In study by Koo JR et al. 56.6% had BDI score >21.^[12] In a study by Chilcot et al. (2011) depressive symptoms were present in 25% (BDI > 16) of patients.^[13] In the present study depression was found in 40% of patients which is comparable to previous studies. We found out that as the duration of dialysis increases severity of depression increases. Patients who were on dialysis for years had more symptoms of depression, this is an important finding which suggest need for longitudinal study.

In a recent review the prevalence of anxiety has been reported to be around 38%,^[14] rates of clinical anxiety ranging between 0% and 45%,^[15] these rates are higher as compared to our rates. We found out that as the duration of dialysis increases severity of anxiety decreases. This could be because of the problem with adjustment will HD at initial stages. There is lack of consensus on best assessment method and variable measures and criteria used to assess/ diagnose depression or anxiety which may account for some of the variation in the observed rates.^[16]

According to study by Brian T et Al,^[17] there is a direct correlation between cognitive impairment and depressive symptoms in patients on hemodialysis, their results show that hemodialysis patients with a greater burden of depressive symptoms perform worse on tests of cognition test.

According to San Jung et al Cognitive impairment was closely correlated with the presence of depressive symptoms and can affect the quality of life of maintenance dialysis patients without sufficient evidence of dementia which makes it is important to detect cognitive impairment and depression in dialysis patients in an early state of ESRD.^[19]

According to Condé SA et al,^[31] There was no statistical difference when cognitive impairment was assessed by the Mini-mental test. But using Digit Span test and Clock test were significantly worse in the hemodialysis patients. There was no difference between groups in the level of depression on the basis of duration of dialysis.

We assessed the cognitive function using mmse scale.

We did not find significant relationship between level of depression or anxiety with cognitive impairment. Though the previous studies and our study state presence of depression and cognitive impairment simultaneously in patients of

hemodialysis, we can't say that cognitive impairment predisposes to depression or anxiety or vice versa.

Our study has certain limitations: We used BAI for assessing anxiety. There is no minimum cut off score in BAI for anxiety. We used only mmse score to study cognitive impairment, while other studies have used other more specific tests to determine cognitive impairment. Our sample size was small: we had limited number of patients in our hospital that prevented us from taking large sample size. Selection bias: as the patients with significant disability were not included, this may influence the result.

CONCLUSION

In summary patients on maintenance hemodialysis should be screened for presence of depression, anxiety and cognitive impairment than should be treated appropriately.

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