"ASSESSMENT OF DEPRESSION AMONG HEMODIALYSIS PATIENTS AND OUTLIVING THE CONDITION THROUGH EFFECTIVE PATIENT COUNSELLING"

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ARTICLE INFO	ABSTRACT
Article history Received 14/02/2019 Available online 01/03/2019 **Keywords** Depression, Hemodialysis, Beck Depression Inventory, Patient Counseling, Quality of Life.	End Stage Renal Disease is a medical condition which occurs when a person's kidney stops functioning, where dialysis is done to remove wastes from the body. Depression is identified as the most common psychological problem among dialysis patients. Hence it is mandatory to evaluate depression and to reduce its psychological symptoms through patient counselling. The intention of this study is to assess the periodicity of depression among hemodialysis patients. The prospective observational questionnaire based study was conducted for a period of 6 months in the Nephrology department of a tertiary care teaching hospital, Davangere. A sample size of 50 patients was enrolled and randomized into case and control groups. The study used specific data collection form and depression was determined using Beck Depression Inventory (BDI) questionnaire. The questionnaire was applied before and after patient counseling for both groups. At the end of the study, a significant reduction ($p<0.05$) in the BDI score have been observed in the case group of study population, who received patient counseling and patient information leaflet. This study tried to entitle the name of pharmacist as a patient educator who gives proper guidance to the patient and also the family members about the disease, drug management, diet and life style modifications. We conclusively state that clinical pharmacist can play a key role in reducing the depression through psychosocial interventions, thereby enhancing the health related quality of life among dialysis patients.

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INTRODUCTION

Dialysis is a process that facilitates the removal of excess water and toxins from the body, both of which accumulate as a result of inadequate kidney function. It is initiated in patients when the GFR falls below 15ml/min. Hemodialysis (HD) is an extracorporeal (dialysis membrane is outside of the body) process, whereas PD uses the patients peritoneal membrane for the clearance of water and solutes. Most of the HD patient's receive dialysis twice or thrice a week. Without dialysis or transplantation, patients with ESRD will die due to the metabolic complications of renal failure. [1]

End Stage Renal Disease is a medical condition which occurs when a person's kidney stops functioning, over a period of months to years to the point where the kidneys can no longer remove wastes, concentrate urine, maintain acid-base homeostasis, and regulate fluid and electrolytes and other important body functions. [2] The number of patients with renal failure is increasing globally with poor Quality of Life (QoL) and high economic burden. Dialysis and transplantation are the two renal replacement therapies for the management of ESRD . [3] Around 2.6 million people worldwide received dialysis in 2010, and there will be a two-fold increase in dialysis patients by 2030 [4].

In 2007, the prevalence of ESRD in the United States was 1,665 per million populations. Of these, 341,364 patients were treated by hemodialysis (HD), 26,340 were on peritoneal dialysis (PD), and 158,739 received a kidney transplant. The shortage of donor kidneys and the existence of patients with ESRD who are unacceptable transplant recipients sustain the demand for dialysis. According to 2009 annual report, Diabetes and Hypertension continue to be leading causes of ESRD among 45-64 years of age group. [5]

DEPRESSION AMONG HEMODIALYSIS PATIENTS

Depression is a significant contributor to the global burden of disease. It comprises of depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. [6] Several studies have shown that patients with depression had lower QoL, more functional impairment, greater co morbidity, lower treatment adherence and an increased risk of both hospitalization and mortality. [7]

It is estimated that ESRD induced depression is the second most common condition encountered in general practice (World Health Organization), with the lifetime prevalence reported to be 16.2%. [4]

ESRD has a remarkable influence on the lives of sufferers. The patients experience multiple losses in their lives including kidney function, family role, work role, sexual function, time and mobility. Further, medication effects, dietary constraints, fear of death and dependency upon treatment, may affect quality of life (QoL). It has been declared that depression is one of the most common psychopathological condition among ESRD population. The evaluation of depression inpatients during early stages of CKD becomes important, since its influence on QoL and mortality rates is demonstrated by various literatures. It has been suggested that approximately 20-30% of ESRD population suffer from depression. [4]

The QoL is used to evaluate the general wellbeing of individuals and societies. It has been proven that the QoL is very poor among ESRD patients. The WHO has defined QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." Co morbidities such as anemia, diabetes mellitus (DM), hypertension (HTN), dyslipidemia and thyroid disorders impair the QoL of HD patients. [3]

CAUSES OF DEPRESSION

The prevalence of depression among the chronically ill reflects significant and prolonged changes to the social environment, psychological state, physical ability and pathology. Among hemodialysis patients, hopeless and distress are prominent features of depression. The sequence of dialysis treatment and varying levels of health may impact upon feelings of hopelessness, which may induce episodes of depression. The dependency upon treatment, accompanied by numerous losses, may lead to perceived feelings of lack of control. Alternative explanations view depression as the direct or indirect consequence of the renal failure. [4]

EFFECT OF PATIENT COUNSELLING ON DIALYSIS PATIENTS

Patient counselling is defined as the process through which detailed information on lifestyle, diet and medications given by health care professionals orally or in written form to the patient or his/her representative to increase the knowledge of health related issues. Strict dietary compliance was found to be a key factor in improving QoL of patients undergoing hemodialysis. Food and fluid restrictions are mandatory for the patients due to hyperkalemia, high blood pressure and fluid retention. Salt free diet, low potassium containing foods and limited fluid intake are possible interventions. ESRD patients have to consume high protein diet (ie, 1-1.2g/kg/day) so as to meet the extra needs for body repair functions and immunity. Counselling can make improvement regarding health related QoL through awareness and removing the misconceptions about the disease.[8]

Although many studies suggest that depression is independently associated with higher risk of mortality and hospitalization among hemodialysis patients, the link between depression and other components such as gender, extent of pain, and dialysis withdrawal are scarce. Therefore, we understood the necessity of conducting a study on the above mentioned characteristics.

MATERIALS AND METHODS
Materials used

Informed consent form, Study Information Handout, Patient case sheet ,Treatment chart, Data collection form, Self-reported questionnaires (Beck Depression Inventory, Visual Analogue Scale, Patient Information Leaflet (PIL) were used during the study period.

Study design
A Prospective observational questionnaire based study.

Ethical issues
The ethical clearance for the study was obtained from the institutional ethical committee of Bapuji Pharmacy College Davangere.

Methods
      A Prospective observational questionnaire based study was carried out between September 2017 – February 2018 at Nephrology department of SS Institute of Medical Sciences and Research centre Davangere, Karnataka with a sample size of 50 patients. Patients above 18 years of age, those experiencing End Stage Renal Disease, undergoing hemodialysis and various co morbid diseases like hypertension and diabetic mellitus were enrolled in the study. Patients who were not willing to participate in the study or not consented, voluntarily withdraw from hemodialysis. Patients with acute kidney disease and those with HIV were excluded from the study. The information was compiled from patient's data collection form and from the patient or the patient's representatives directly and also details from the self-reported questionnaire.
Patient demographics, medical, medication history and dialysis schedule dates was collected in a predesigned patient proforma. Information regarding mortality rates, gender based characterization, dialysis withdrawal was documented simultaneously. Effective patient counselling was provided at the designed follow up visits and all the conclusive data was finally merged and the therapeutic outcome established.

RESULTS
      After careful scrutiny, using the inclusion and exclusion criteria, 50 HD patients were enrolled into the study and were randomised into case and control groups. Out of them, 43 patients (21 from case and 22 from control group) completed all follow ups of the study. Among 50 patients 70% were males and 30% were females

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Table 1: Randomisation of study population based on gender.

Gender	Case Group (n = 25)	Control Group (n = 25)	Total (n = 50)
Male	16(64%)	19(76%)	35(70%)
Female	9(36%)	6(24%)	15(30%)

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      When categorizing age wise, 6 (12%) were in the age group 20-30, 8 (16%) patients were in the age group 30-40 and 40-50, 12patients (24%) were in the age group 50-60, 10 patients (20%) were in the age group 60-70, 6 patients (12%) were in the age group above 70.

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Table 2: Distribution of age group.

Age	Case Group (n=25)	Control Group (n=25)	Total (n=50)
20-30	4(16%)	2(8%)	6(12%)
30-40	6(24%)	2(8%)	8(16%)
40-50	3(12%)	5(20%)	8(16%)
50-60	8(32%)	4(16%)	12(24%)
60-70	3(12%)	7(28%)	10(20%)
> 70	1(4%)	5(20%)	6(12%)

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Among the 50 patients recruited, 40 patients (80%) were married and 10 patients (20%) were unmarried.

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Table 3: Distribution of marital status among study population.

Marital status	Case Group (n=25)	Control Group (n=25)	Total (n=50)
Married	19(76%)	21(84%)	40(80%)
Unmarried	6(24%)	4(16%)	10(20%)

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      4 patients (16%) in case group and 4 patients (16%) from control did not have any formal education, 10 patients (40%) in case and 6 (24%) in control completed primary school, 5 patients (20%) in case and 7 (28%) in control completed high school, 5 patients (20%) in case and 7 (28%) in control were graduates and 1 patient in case (4%) and 1 patient in control (4%) were post graduates.

Table 4: Propagation of education among study population.

Education	Case Group (n=25)	Control Group (n=25)	Total (n=50)
Illiterate	4(16%)	4(16%)	8(16%)
Primary	10(40%)	6(24%)	16(32%)
High School	5(20%)	7(28%)	12(24%)
Graduate	5(20%)	7(28%)	12(24%)
Post Graduate	1(4%)	1(4%)	2(4%)

Table 5 shows that out of 50 patients, majority of participants 14 (28%) were unemployed and were involved in other sectors, 3 (12%) in case and control were involved in agriculture, 2 (8%) from case and 5 (20%) from control were involved in business sector, 4 (16%) in case and 5 (20%) in control were employees.

Table 5: Dispersion of occupation among study population.

Occupation	Case Group (n=25)	Control Group (n= 25)	Total (n= 50)
Agriculture	3(12%)	3(12%)	6(12%)
Business	2(8%)	5(20%)	7(14%)
Employee	4(16%)	5(20%)	9(18%)
Unemployed	9(36%)	5(20%)	14(28%)
Others	7(28%)	7(28%)	14(28%)

Of the 50 participants in the study 42(84%) were non- smokers, 42(84%) were non- alcoholics and 33(66%) were vegetarians whereas the habit of smoking was observed in 8 patients (16%), alcoholism in 8 patients (16%) and 17(34%) followed a mixed diet.

Table 6: Social habits of study population.

Habits		Case Group (n=25)	Control Group (n=25)	Total (n=50)
Smoking	Yes	4(16%)	4(16%)	8(16%)
	No	21(84%)	21(84%)	42(84%)
Alcohol	Yes	3(12%)	5(20%)	8(16%)
	No	22(88%)	20(80%)	42(84%)
Diet	Veg	17(68%)	16(24%)	33(66%)
	Mixed	8(32%)	9(36%)	17(34%)

Concerning hemodialysis per week, out of 50 participants most of them were on twice a week 35(70%) followed by thrice a week 12(24%).

Table 7: Frequency of hemodialysis per week.

Frequency/ week	Case Group (n=25)	Control Group (n=25)	Total (n=50)
Once	3(12%)	0	3(6%)
Twice	19(76%)	16(64%)	35(70%)
Thrice	3(12%)	9(36%)	12(24%)

35(70%) patients enrolled into the study were undergoing HD for less than 3 years and 15(30 %) of patients were undergoing dialysis for more than 3 years.

Table 8: Period of illness (ESRD) in the study population.

Duration	Case Group (n=25)	Control Group (n=25)	Total (n=50)
< 3 years	20(80%)	15(60%)	35(70%)
> 3 years	5(20%)	10(40%)	15(30%)

In table 9 out of 50 patients, 22(44%) patients had HTN with ESRD, 28(56%) patients had HTN and DM with ESRD.

Table 9: Distribution of comorbidities among ESRD population.

Comorbidities	Case Group (n=25)	Control Group (n=25)	Total (n=50)
ESRD with HTN	13(53%)	9(36%)	22(44%)
ESRD with HTN and DM	12(48%)	16(64%)	28(56%)

Table 10 shows out of 50 participants, 5(10%) expired, 2 (4%) underwent kidney transplantation. The remaining 43 patients (21 from case and 22 from control) completed all the pre-designed follow ups.

Table 10: Dissemination of other variants among ESRD study population.

Variants	Case Group (n=25)	Control Group (n=25)	Total (n=50)
Alive	21(84%)	22(88%)	43(86%)
Death	3(12%)	2(8%)	5(10%)
Transplantation	1(4%)	0(0%)	1(2%)
Withdrawal	0(0%)	1(4%)	1(2%)

Among 50 HD patients involved in the study, majority had 15(30%) moderate and severe pain, 13 (26%) had mild pain, and 3(6%) had worst pain.

Table 11: Categorization of pain among hemodialysis study population.

Pain Score	Case Group (n=25)	Control Group (n=25)	Total (n=50)
No pain	1(4%)	3(12%)	4(8%)
Mild pain	3(12%)	10(40%)	13(26%)
Moderate pain	8(32%)	7(28%)	15(30%)
Severe pain	11(44%)	4(16%)	15(30%)
Worst pain	2(8%)	1(4%)	3(6%)

There is a gradual decrease in the overall depression scores in the case group whereas in control group, changes in the overall depression scores were non significant.

Table 12: Comparison of BDI scores between the groups

Comparison of BDI Scores	Case Group	Control Group	p value
Before patient counselling	25.76± 10.48	19.50 ± 8.44	0.037
After patient counselling	15.48 ± 6.67	21.95 ± 8.69	0.009
p value	0.000	0.069	

DISCUSSION

The management of CKD not only requires the prescription of appropriate nutritional and pharmacological regimen by the physician but also intensive education and counselling of the patient.

A total of 50 patients were enrolled into the study. Out of that 5(10%) expired , 1 (2%) underwent kidney transplantation and 1(2%) withdrawal. Remaining 43 (21 from case and 22 from control group) completed (86%) all the follow ups.

The demographic details of patients enrolled in present study showed that male (70%) patients with ESRD were higher than the female (30%) patients. These findings were similar to a study conducted by JavedhShareef et.al were the male (76.7%) patients was more in number than females (23.3%)[1].

In India, the average age of ESRD patients is between 32-42 years [8]. The present study reveals that the majority of ESRD population was found to be aged 50-59 (24%) year's old. This may be due to the contributing factors like diabetes mellitus and cardiovascular diseases. This findings are in contrast to the study conducted by Hala Mohammed et.al showed that 26.7% of patients belonged to age group of 30-39[9].

In the present study majority of patients (80%) are married. This was in correlation with the studies conducted by Savitha R Sanathan et.al, 89% of patients were married [10].These findings suggests that better psychological and social wellbeing can be associated with family conditions and living with a partner.

While observing the education among the study population, it was noted that majority of patients (32%) had primary school education only. This was similar to the study conducted by PriscilaSilvaira et.al, 65.7% of patients were not educated after primary level [11]. We observed a greater number of patients were unemployed (28%) which was similar to a study conducted by Yueh-chingLii et.al, where 52.1% of patients were unemployed [12].

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Our study revealed that majority of study population (66%) prefers veg diet, though the social habits like smoking (84%) and alcohol (84%) were found to be comparatively less. Similar findings were observed by Shareef et.al, were the majority are non-smokers and non-alcoholics [1].

In our study, it was found that most of the patients are undergoing HD twice a week (70%). Similar results were observed in the study conducted by Lok P et.al implies that two-third of the patients undergoing HD twice a week[13].

It was observed that 70% of patients enrolled into the study were diagnosed to have ESRD (undergoing HD) for < 3 years and 30% of patients were diagnosed to have ESRD for > 3 years. This findings are in contrast to the study conducted by Suja Abraham et.al showed that, 10.3% of patients were diagnosed to have ESRD for < 3 years.

In our study, majority of patients (56%) have two comorbidity (ESRD+HTN+DM) followed by patients (44%) having 1 comorbidity (ESRD+HTN) which was in contrast to the study performed by Suja et.al where 43.8% of patients had 1 comorbidity (ESRD+HTN)[3].

In HD patients, pain had been noted as a distressing matter for more than a quarter of a century, which is associated with increased depression and decreased health related QoL. Among 50 patients involved in the study majority of patients had severe and moderate pain (30%), which is similar to a study conducted by Tara J et.al where severe pain was experienced by 30.7% of patients during hemodialysis [14]. Uraemia, comorbid illnesses and factors related to the treatment procedure are found to be the causes of pain. Patient experienced pain when subjected to needle pricks on each dialysis section which was considered as the highest physical condition experienced by the study subjects. This condition was considered as a significant stressor related to QoL in HD patients.

BDI is the most frequently used validated screening system for evaluating depressive symptoms in HD patients [10]. It is a 21 self- report items that measures the intensity or depth of depression. Each question used a four- point Likert scale ranging from 0-3[12].

In our study, it is observed that there is a significant depletion in the BDI score among the case group of study population, who received patient counselling and PIL, whereas in the control group the scores remained more or less same. At baseline, the level of depression is 25.76 (SD=10.48) for the case group and 19.50 (SD=8.44) for the control group. This indicated that patients had moderately high levels of depression while receiving dialysis. Before patient counselling, there was no statistically significant difference between the groups (p = 0.037). The depression level gradually decreased for the case group after patient counselling. Conversely, for the control group, the depression level increased significantly overtime. The result of this study showed that the total scores of depression had significantly decreased (p=0.000) in patients who received patient counselling. Therefore, the effects of patient counselling reduced depression in HD patients. This results is similar to the results posted by Yueh-ChingLii et.al, where the scores of depression reduced from 15.90 (SD=9.89) to 12.85(SD=6.64) in the test group[12]. The results are also similar to studies conducted by Priscila et.al, Tsay et.al.[11, 15].

CONCLUSION

By conducting this study, we came to know the present scenario about the depression among ESRD patients in a tertiary care teaching hospital at Davangere which indicates the benefits of pharmacists provided counselling. Therefore there is a need for patient counselling to improve the QoL during hemodialysis. When compared with baseline, a significant decline in the BDI scores was observed in case group (p<0.05) who received patient counselling, whereas in control group no significant improvement was observed (p>0.05).

Role of a clinical pharmacist as a patient educator in chronic diseases is not well recognized in our society. Through this study we tried to entitle the name of pharmacist as a patient educator who gives proper guidance to the patient and also the family members about the disease, drug management, diet and life style modifications. We conclusively state that clinical pharmacist can play a key role in reducing the depression through psychosocial interventions, thereby improving medication adherence of patients and QoL among hemodialysis patients. Further research should be designed to evaluate the impact of depression among hemodialysis patients.

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CONFLICT OF INTEREST

There is no conflict of interest among the authors.

ABBREVATIONS

HD   - Hemodialysis
ESRD   - End Stage Renal Disease
QoL   - Quality of Life
CKD   - Chronic Kidney Disease
BDI   - Beck Depression Inventory
HTN   - Hypertension
DM   - Diabetes Mellitus

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