

# Depression in end-stage renal disease patients on hemodialysis –a single center experience in Saudi Arabia

## Abstract

**Background:** It is known that hemodialysis patients suffer multiple comorbidities; prevalence of depression is higher than general population however it's underestimated. Addressing the problem of depression in those patients will help in management that will lead to improvement in their quality of life. Based on that we screened for depression in hemodialysis patients at King Faisal Specialist Hospital and Research center (KFSHRC).

**Design and setting:** A prospective cross-sectional study using validated Beck's Depression Inventory (BDI) to identify the prevalence of depression in hemodialysis patients, we looked for the effect of different variables gender, age, marital status, dialysis vintage and renal transplant fitness status.

**Methods:** 79 patients were screened, 67 patients met the inclusion, 32 were female. BDI scores were computed based on the patient responses to the questionnaire.

**Results:** 18 % of patients had a BDI score of >16 which is regarded as an indicator of moderate to severe depressive symptoms. BDI score of <16 among different categories assessed age, marital status, dialysis vintage, while patients who were deemed not transplantable, female patients had (BDI score of 18%).

**Conclusion:** Prevalence of moderate to severe depression is high among hemodialysis patients. There was no significant effect of different variables assessed age, marital status, dialysis vintage except in patients who were deemed not transplantable; where female patients predominated.

**Keywords:** end-stage renal disease, depression, hemodialysis, beck's depression inventory

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Hassan Hakami,<sup>1</sup> Mohamed Said Abdelsalam,<sup>1,2</sup> Mohamed Rashwan,<sup>1</sup> Mohammed Mahdi Althaf,<sup>1</sup> Nayyar Saleem,<sup>1</sup> Ihab A Ibrahim,<sup>3,4</sup> Osman Alfurayh<sup>1</sup>

<sup>1</sup>Department of Medicine, Section of Nephrology, King Faisal Specialist Hospital and Research Center, Saudi Arabia

<sup>2</sup>Nephrology unit, Internal Medicine Department, Alexandria University, Egypt

<sup>3</sup>Department of Kidney and pancreas transplantation, King Faisal Specialist Hospital and Research Center, Saudi Arabia

<sup>4</sup>Division of Nephrology, Department of Internal Medicine, Cairo University School of Medicine, Egypt

**Correspondence:** Mohamed Rashwan, Department of Medicine, Section of Nephrology, MBC #46, King Faisal Specialist Hospital and Research Center, PO Box 3354, Riyadh 11211, Saudi Arabia, Tel 966-1-4647272, Saudi Arabia, Email rashwan44@hotmail.com

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**Abbreviations:** KFSHRC, king faisal specialist hospital and research center; BDI, beck's depression inventory; WHO, world health organization; DALYs, disability-adjusted life-years

## Introduction

The World Health Organization (WHO) has underscored unipolar depressive disorders as one of the leading causes of total disability-adjusted life-years (DALYs) worldwide.<sup>1</sup> Depression in combination with a medical or psychiatric illness; also known as 'compound depression' is of higher intensity and more difficult to manage than unipolar depression.<sup>2-4</sup> In patients with end-stage renal disease ESRD on hemodialysis HD depression is considered the most common psychiatric illness. The incidence of major depression in ESRD patients on HD has been estimated to be between 6% and 18% however, this variance is probably due to the different populations studied and methods of screening employed in earlier studies.<sup>5-7</sup>

This is significantly greater than that of the general population, where the incidence of major depression is 2% to 4% in the community, 5% to 10% in primary care populations, and 10% to 14% in medical inpatients.<sup>8,9</sup> Recent studies have shown that depressive disorders are risk factors for morbidity and mortality in dialysis patients.<sup>10,11</sup> However, despite these statistics; depression is under recognized and underestimated in this sub-population.<sup>12</sup> Data reviewed from the Saudi Center for Organ Transplant revealed that around 13000

ESRD patients are currently on maintenance hemodialysis and 1200 on peritoneal dialysis across the Kingdom of Saudi Arabia. This study aims to identify the prevalence of depression in ESRD patients on our HD unit and look for the effect of the different variables on its prevalence that will help in better management.

## Materials and methods

A cross-sectional study to assess the prevalence of depression in established ESRD patients on maintenance HD in dialysis unit at King Faisal Specialist Hospital and Research Center in Riyadh, Kingdom of Saudi Arabia. The study was approved by our institutions 'Office of Research Affairs'. Patients were screened using a validated questionnaire called the Beck's Depression Inventory (BDI)<sup>13</sup> translated to the Arabic language. BDI is a validated measure of depression in ESRD patients.<sup>14</sup> BDI is comprised of a set of 21 items that the patient should respond to. It correlates with the diagnostic criteria for depression, quality of life, functional status and survival over time.<sup>3</sup>

The BDI test employs 0 to 3 Likert scales that yield total scores ranging from 0 to 63. Higher the score the greater the degree of depression. A BDI score >16 is highly suggestive of the presence of moderate to severe depressive symptoms. The study was conducted over a period of 3 weeks. The BDI questionnaire was distributed to all chronic dialysis patients defined as; being on HD for a minimum

period of 3 months or greater, aged 18 years or greater. For patients who were unable to read, a social worker was involved to verbally complete the questionnaire at the bedside.

**Statistical considerations**

Data was analyzed using SPSS statistical software version 19. Categorical data was reported as percentages. We divided the patients by gender looking for effect of Age, Marital Status, and Dialysis Vintage on prevalence of depression.

**Results**

A total of 79 patients were screened, 67 patients met the inclusion criteria, 32 were female. Mean age (47.5±20.7 years), mean dialysis vintage was 42.5±21.3 months. 17.9 % of patients had a BDI score of >16(moderate to severe depressive symptoms). When patients were

categorized by age groups, the prevalence of depression (patients had a BDI score of >16 was) 6% in the age group (18-24) years and age group (45-64) year, but did not differ on gender. For both age group (22-44 ) years and >65 years the prevalence was lower at 3% and again did not differ on gender. As regard marital status, those who are married had the highest prevalence at 9% compared to singles, divorced and widows and was similar regardless of gender. For dialysis vintage the prevalence of depression, was higher in relation to vintage of dialysis; 1.5%, 7.4% and 9% in the vintage of <1 year, 2-5 years and >5 years respectively. As regard transplant candidacy, those who are not candidate for renal transplantation had a higher prevalence of depression at 11.9% compared to 5.9% of those who are candidate for renal transplantation. Overall, female ESRD patients on HD who were not transplantable had the highest prevalence of depression at 18% (Table 1).

**Table 1** Characteristics of the study population

Characteristics	All Patients (n=67) (% BDI Score >16)	Male (n=34) (% BDI Score >16)	Female (n=33) (% BDI Score >16)
<b>Age</b>			
18-24 years	23.80%	23.50%	24.20%
	-6%	-5.80%	-6%
22-44 years	14.90%	17.60%	12.10%
	-3%	-3%	-3%
45-64 years	35.80%	38.20%	33.30%
	-6%	-5.80%	-6%
>65 years	23.80%	20.50%	25%
	-3%	-3%	-3%
<b>Marital Status</b>			
Single	29.80%	32.30%	27.20%
	-6%	-2.90%	-9%
Married	59.70%	55.80%	63.60%
	-9%	-8.80%	-9%
Divorced	2.90%	5.80%	0%
	-1.50%	-2.90%	0%
Widow/Widower	7.40%	5.80%	9%
	-1.50%	-2.90%	0%
<b>Dialysis Vintage</b>			
<1 year	10.40%	5.80%	15%
	-1.50%	0%	-3%
2-5 years	32.80%	35%	30%
	-7.40%	-8.80%	-6%
>5 years	56.70%	52.90%	60.60%
	-9%	-8.80%	-9%
<b>Transplant Status</b>			
Transplantable	41%-5.90%	52.90%-11.70%	27%0%
Not Transplantable	59%-11.90%	47%-5.80%	72%-18%

## Discussion

Dialysis patients suffer many social losses in addition to renal loss; these include loss of independence, loss of dominant/co-dominant family role, altered body image and decreased sexual function. These patients usually try hard to adapt to this lifestyle and demands of hemodialysis, however, each individual has their own ability to cope with circumstances and those fail to cope are at risk of depression.<sup>2,15</sup> Considering that depression is a risk factor for suicide, early screening and diagnosis of depression is crucial. Non-compliance and/or frequent shortening of dialysis treatment sessions, non-compliance to medications, non-adherence to dietary restrictions and disruption of vascular access are different mechanisms that depressed dialysis patients may employ in order to commit suicide.<sup>2,3,16,17</sup>

McDade-Montez EA et al.<sup>18</sup> showed an increase in the total BDI score was associated with a 5.2% increase in the risk for withdrawing from dialysis in a predominately white population. One challenge of diagnosing depression in dialysis patients is deciding on which screening tool to use. Several studies have been conducted to determine the validity and accuracy of screening tools to diagnose depression in the dialysis population but the ideal screening tool still remains a matter of debate.<sup>14,19,20</sup> The Beck's Depression Inventory (BDI) is a standard self-administered questionnaire,<sup>21</sup> and has been used to detect the presence and severity of depression in dialysis patients. Many studies have validated BDI for in this population,<sup>14,19,20</sup> its total score is interpreted as follows: <9 no depression; 10 to 15 mild depression, 16 to 23 moderate depression and >24 severe depression.<sup>3,14,21,22</sup>

Our data showed that prevalence of depression is correlated with dialysis vintage as the longer time on dialysis is associated with higher incidence of depression, this could be correlated to positive relationship between comorbidities and vintage of dialysis, that has been shown by carven et al.<sup>23</sup> in contrast Asuwaida A AL wahhaibi F showed that there is no association of dialysis vintage and prevalence of depression.<sup>24</sup> We have found positive correlation between prevalence of depression and being not candidate patient for renal transplantation compared to those who are candidate's especially female patients this could be correlated to more comorbidity in this group of patients.

Regarding marital status, depression was more prevalent in married patients; this could reflect the burden of the disease that hinders their family responsibilities mainly sexual dysfunction and infertility. Our data showed that there was no direct correlation between age and prevalence of depression in dialysis patients. Our study was limited by small number of patients and long list of queries to be answered which can be time consuming for both the patient and the physician; additionally assistance is required when a patient cannot read.

## Conclusion

Prevalence of moderate to severe depression is high among hemodialysis patients and higher than general population. There was no significant effect of different variables assessed age, marital status, dialysis vintage except in patients who were deemed not transplantable; where female patients predominated. Regular screening and management of depression should be a part of standard dialysis care.

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## Conflicts of interest

The author declares there is no conflict of interest.

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