

Prevalence of Depressive Symptoms among Hemodialysis and Peritoneal Dialysis Patients

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Abstract

Introduction: *End stage renal disease* (ESRD) affects patient's physical and psychological health. Depression is the most common psychiatric illness among patients with ESRD. This study aimed to identify the prevalence of depressive symptoms among patients undergoing peritoneal (PD) and hemodialysis (HD), also to correlate these symptoms with the demographic data.

Methods: this is a cross-sectional study that includes 133 PD patients and 133 HD patients attending the King Fahad Dialysis Center at King Saud Medical Complex (KSMC), Riyadh, Saudi Arabia. Socio-demographic data were documented. Depression was evaluated by using the zung self- rating depression scale (Zung SDS).

Results: using the Zung SDS; the prevalence of depression was significantly higher among PD patients (98.5%) in compare with HD patients (83.5%).

Conclusion: the study reveals that there is a high prevalence of depressive symptoms among PD and HD patients. This will lead us to think of adding a system for screening, diagnosis and treatment of depression for all dialysis patients to improve their life.

Keywords: depression, Zung SDS, peritoneal dialysis, Hemodialysis.

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Introduction

End stage renal disease (ESRD) is a chronic disease in which the kidneys cannot regulate electrolytes, acid-base balance, and fail to excrete waste products. ESRD can be treated by hemodialysis, peritoneal dialysis, or kidney transplantation.⁽²⁶⁾

In Saudi Arabia, by the end of 2013, there were 13160 patients on hemodialysis (HD) and 1402 on peritoneal dialysis (PD).⁽¹⁾ There are many causes of psychological illness in ESRD patients, including the multiple medications, the stresses associated with the disease and the frequency of hospitalization.^(2, 3)

Depression is the most common psychological condition among patients with ESRD.⁽⁴⁻⁷⁾ Also depression affects the self-care of these patients which lead to poor adherence to dialysis.⁽⁸⁾ One study showed that ESRD patients have a *risk* of depression that is *4 times higher* than the general population.⁽⁹⁾

Depressed dialysis patients are more likely to face complications; some studies have demonstrated a relationship between depression and mortality in hemodialysis patients.^(3, 9-13)

In addition; depressed patients on HD are twice as likely to die or require hospitalization within a year compared with those without depression.⁽⁹⁾ Further study showed that the depression among peritoneal dialysis patients has been associated with higher incidence of peritonitis.⁽¹⁴⁾

Depression is a common under recognized and undertreated problem among ESRD patients.^(15, 16)

An extensive electronic search revealed few of studies done among dialysis patients in Saudi Arabia, also because the complications of depression on those patients make the disease more worse. This study aimed to determine the prevalence of depressive symptoms in hemodialysis patients and peritoneal dialysis patients and to explore the factors that may be related to depressive symptoms among these patients.

Material & Methods

This was a cross-sectional study of patients with ESRD attending the King Fahad Dialysis Center at King Saud Medical Complex, Riyadh, Saudi Arabia.

The study was conducted from mid of October 2013 to end of December 2013. All cases attending the study center throughout the period of the study were included until we reach the required sample size. A total of 266 patients, 133 HD patients and 133 PD patients who at age 18 years or older. Exclusive criteria include illiterate patients; patient who had mental illness would impair their understanding of the questionnaire and patients with a history of depression or on anti-depressives. The study protocol was approved by ethics committee of KSMC and written informed consent was obtained from participants included in the study.

The questionnaire consisted of two parts, first part contained socio-demographic data that included gender, age, marital status, educational level, working status, monthly income and duration of dialysis. The second part was for evaluation of the depression by using the Zung Self-rating Depression Scale (Zung SDS) which is a widely used and validated. It consists of 20 items that evaluate depressive symptoms, with each question being scored from 1 to 4.

Patient were categorized as normal (SDS index, <50), having mild (SDS index, 50-59), moderate (SDS, 60-69), and severe depression (SDS, 70 and above). We use a validated Arabic version of the Zung depression Scale.⁽¹⁷⁾

Statistical Analysis

The results are reported as percentages for categorical variables and as means \pm standard deviation (SD) for continuous variables. The independent t-test was used for statistical analysis of continuous variables. The chi-square test or Fisher's exact test were used for the comparison of categorical variables. All analyses were performed using the Statistical Package for Social Sciences, windows version 20. A *p* value < 0.05 was considered statistically significant.

Ethical Consideration:

The patients were asked to participate anonymously. Participation in this study is completely voluntary. They were able to withdraw at any time while completing the questionnaire. Informed consent was provided with the questionnaire, and return of the survey was voluntary. No incentives or rewards were given to participants. The survey was approved by

institutional review board at King Saud Medical Complex.

Results:

The socio-demographic characteristics of PD and HD patients are shown in **Table (1)**. The mean age of PD patients were 45.83 ± 15.54 and 46.55 ± 12.09 years respectively. Among the PD patients; 53.4% of them were female and 46.6% male, whereas 50.4% of HD patients were female and 49.6% male. 42.9% of PD patients were married, also 57.9% of HD patients were married. 44.4% of PD and 33% HD patients had attained

secondary school education and above. 45.1% of PD patients were not working in compare with HD patients (52.6%). Most of HD patients had monthly income < 7500 Saudi Riyals in compare with PD patients (58.6%). The mean \pm SD of the duration of dialysis was 4.11 ± 2.88 years for PD patients and 4.44 ± 3.88 years for HD patients.

Association of depression with socio-demographic characteristics of PD and HD patients are shown in **Tables (2, 3 and 4)**. Also **Table (5)** shows level of depression according to dialysis type.

Table 1. Socio-demographic characteristics among participants of study according to dialysis type

Socio-demographic	Peritoneal dialysis (n=133)		Hemodialysis (n=133)		P-value
	No	%	No	%	
Age					
Mean \pm SD		45.83 ± 15.54		46.55 ± 12.09	0.676*
Gender					
Female	71	53.4	67	50.4	0.624
Male	62	46.6	66	49.6	
Marital Status					
Single	23	17.3	25	18.8	0.031
Married	57	42.9	77	57.9	
Divorced	30	22.6	18	13.5	
Widow	23	17.3	13	9.8	
Education level					
Non-formal education	25	18.8	27	20.3	0.195
Primary	28	21.1	33	24.8	
Intermediate	21	15.8	29	21.8	
Secondary	38	28.6	22	16.5	
University	21	15.8	22	16.5	
Working status					
Employed	40	30.1	39	29.3	0.261
Business/Private	14	10.5	6	4.5	
Not working	60	45.1	70	52.6	
Retired	19	14.3	18	13.5	

Monthly income in Saudi Riyal

<7500	78	58.6	96	72.2	0.036
7500-15000	43	32.3	25	18.8	
>15000	12	9.0	12	9.0	

Duration of dialysis in years

Mean±SD	4.11±2.88	4.44±3.80	0.426**
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*=independent t-test (t-test =0.418)

**=independent t-test (t-test =0.798)

Table 2. Socio-demographic according to the type of dialysis vs Depression

Characteristics	Dialysis type	No	Depression				Chi Square	P-value*
			Non depressed		Depressed			
			No	%	No	%		
Gender								
Female	P	71	2	2.8	69	97.2	8.615	0.004
	H	67	12	17.9	55	82.1		
Male	P	62	0	0.0	62	100.0	10.190	0.001
	H	66	10	15.2	56	84.8		
Marital status								
Single	P	23	2	8.7	21	91.3	-	1.000
	H	25	3	12.0	22	88.0		
Married	P	57	0	0.0	57	100.0	13.450	0.000
	H	77	16	20.8	61	79.2		
Divorced	P	30	0	0.0	30	100.0	3.478	0.136
	H	18	2	11.1	16	88.9		
Widow	P	23	0	0.0	23	100.0	1.820	0.361
	H	13	1	7.7	12	92.3		
Education								
Non-formal education	P	25	0	0.0	25	100.0	2.948	0.236
	H	27	3	11.1	24	88.9		
Primary	P	28	1	3.6	27	96.4	0.753	0.618
	H	33	3	9.1	30	90.9		
Intermediate	P	21	0	0.0	21	100.0	4.937	0.033
	H	29	6	20.7	23	79.3		
Secondary	P	38	1	2.6	37	97.4	4.411	0.056
	H	22	4	18.2	18	81.8		
University	P	21	0	0.0	21	100.0	6.656	0.021

Working Status	H	22	6	27.3	16	72.7		
Employed	P	40	1	2.5	39	97.5	6.347	0.014
	H	39	8	20.5	31	79.5		
Business / Private	P	14	0	0.0	14	100.0	2.456	0.300
	H	6	1	16.7	5	83.3		
Not working	P	60	1	1.7	59	98.3	5.698	0.020
	H	70	9	12.9	61	87.1		
Retired	P	19	0	0.0	19	100.0	4.734	0.046
	H	18	4	22.2	14	77.8		
Monthly income (Saudi Riyal)								
<7500	P	78	2	2.6	76	97.4	5.742	0.023
	H	96	12	12.5	84	87.5		
7500-15000	P	43	0	0.0	43	100.0	13.422	0.000
	H	25	7	28.0	18	72.0		
>15000	P	12	0	0.0	12	100.0	3.429	0.217
	H	12	3	25.0	9	75.0		

*= Fisher exact test

Table 3. Means of the age & the duration of dialysis according to depression among PD patients

Characteristics	Depression in Peritoneal		T-test	P-value
	Depressed (n=131)	Not depressed (n=2)		
Age	46.15±15.45	25.50±3.54	1.882	0.062
Duration of dialysis	4.13±2.90	2.50±0.71	0.793	0.429

Table 4. Means of the age & the duration of analysis according to depression among HD Patients

Characteristics	Depression in Hemodialysis		T-test	P-value
	Depressed (n=111)	Not depressed (n=22)		
Age	46.55±12.21	46.55±11.72	0.001	0.999
Duration of dialysis	4.41±3.84	4.59±3.67	0.201	0.841

Table 5. Level of depression according to dialysis type

Depression	Peritoneal dialysis (n=133)		Hemodialysis (n=133)		Total (n=266)	
	No	%	No	%	No	%
	Level					
Normal	2	1.5	22	16.5	24	9.0
Mild	52	39.1	34	25.6	86	32.3
Moderate	72	54.1	61	45.9	133	50.0
Severe	7	5.3	16	12.0	23	8.6

Discussion

The finding of this study showed that the prevalence of depression in PD patients was higher than HD patients (PD 98.5%, HD 83.5%) and there was a significant difference between the two groups in this regard. Further analysis showed that 1.5% of PD patients had no depression, 39.1% had mild depression, 54.1% had moderate depression and 5.3% had severe depression, whereas 16.5% of HD patients had no depression, 25.6% had mild, 45.9% had moderate and 12% had severe depression. ($p=0.000$).

This high prevalence of depression in this study may be due to the fact that most of the study population had multiple risk factors of depression; 65.4% of participant patients had low monthly income, also 61.3% of them had low education and 48.9% of them were not working.

In study by ZebSaeed, et al. conducted in Pakistan, it showed that 92.2% of HD patients had depression. ⁽¹⁸⁾ In addition, an Iranian study conducted by *Maryam Eghbali et al.* stated that 66.7% of PD patients and 75% of HD patients

had depression. ⁽¹⁹⁾ Too, KultiginTurkmen, et al using the Beck Depression Inventory (BDI) reported that 65.5% of PD patients were depressed whereas 23.3% of HD patients were in depression. ⁽²⁰⁾

In a study conducted in India done by Pramiladevi, et al. on HD patients using BDI found that the prevalence of depression on HD patients was 72.7%, ⁽²¹⁾ DraganKlaric and Vera Klaric by using Hamilton depression rating scale discovered that moreover half of the examined HD patients had marked depression symptoms meeting the criteria for major depression. ⁽²²⁾

This study revealed that the mean of the duration of dialysis for the depressed PD patients was 4.13±2.90 years while for the HD patients were 4.41±3.84 years. Also according to the findings 97.2% of females of PD patients were depressed, while 82.1% of females of HD patients were depressed; A chi-squared test showed significance difference between them ($p=.004$).

In addition, the finding of this study showed that in both PD and HD patients; most of depressed patients were low educated, and this

is similar to findings from several previous studies, where the depression was higher among low educated patients. ^(23, 24)

According to the result of the present study, the depression was higher among married PD patients versus married HD patients ($p=0.000$). In addition, in both groups; the most of the depressed patients were married. In agreement with the results of ZebSaeed, et al. study that show the depression was higher among married hemodialysis patients. ⁽¹⁸⁾

Also from this study 58% of depressed PD patients had monthly income <7500 Saudi Riyals, while 75.7% of depressed HD patients had monthly income <7500 Saudi Riyals SR (also from this study observed that a higher percentage of depressed patients among those with low monthly income); this result similar to the study done by Pramiladevi R. et al. on HD patients and another study done by C.P Andrade, et al. showed that the depression was higher among HD patients who had lower economic status. ^(21, 25)

Conclusion

The result of this study showed that most of patients undergoing PD and HD are depressed, which alert us to the importance of the screening and diagnosis of depression to improve psychological and quality of life for those patients.

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