



# Prevalence of Depression in Jordanian Hemodialysis Patients

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## Abstract

**Background:** Although depression is recognized as the most common psychiatric disorder in hemodialysis patients with a significant negative impact on management and prognosis, we didn't find any previous data regarding its prevalence in Jordanian patients.

**Objectives:** We conducted this study to determine the prevalence of depression in Jordanian hemodialysis patients, the factors that may influence it, and to boost the awareness of its detrimental consequences.

**Methods:** In a descriptive cross-sectional study, patients on hemodialysis at the University of Jordan hospital in July 2015 participated in this survey utilizing a validated Arabic translation of the patient health questionnaire 9 (PHQ-9). The patients answered the questionnaire on the same day of dialysis, specifically, a few hours post dialysis when the effects of indistinguishable uremic symptoms are minimal.

**Results:** From the 49 patients that completed the survey, we found 29% to have depression, though significantly higher than the general population, however, considerably lower than similar studies. This finding may be due to the critical timing of questionnaire answering that had been ignored in other studies and led to an overestimation of the diagnosis of depression in hemodialysis patients. Interestingly, most patients were unaware of the diagnosis and refused therapeutic intervention. Although the adequacy of hemodialysis correlated with depression, it didn't reach statistical significance. Also, several relevant factors didn't correlate with depression, which may imply an independent endogenous origin of the disorder in hemodialysis patients.

**Conclusions:** Depression is highly prevalent and under diagnosed among hemodialysis patients in Jordan, which is ironic with patient's negative attitude towards the diagnosis and its treatment. Hence, we recommend a policy of routine assessment of depression accompanied by an educational program to emphasize the importance of treatment in improving the quality of life and the overall outcome of hemodialysis therapy.

**Keywords:** Depression, Hemodialysis, Jordan, Prevalence, Quality of Life, Questionnaire

## 1. Background

Depression is a common treatable mental illness that affects 5%-15% of the adult population (1). It adversely influences the quality of life (QOL) and might exhaust and disable its victims. However, depression is more prevalent in patients suffering from chronic diseases such as cancer, diabetes mellitus, and obesity, thus, imposing a significant deleterious effect on the disease outcome (2), as it is more severe and difficult to treat (3). Likewise, Chronic kidney disease (CKD) patients, particularly end-stage renal disease (ESRD), who are receiving hemodialysis (HD) therapy, are more susceptible to develop major depression with an estimated prevalence of 20% - 30% (4, 5); hence clinicians acknowledge depression as the most common psychiatric illness among these patients (6). Consequently, depression

has a severe adverse effect on HD patients' QOL, noncompliance with treatment, frequent hospitalizations, and increase in overall mortality rate with a parallel increase in the cost of management and poor outcome (7, 8). In contrast to other commonly encountered and readily diagnosed chronic derangements in ESRD (such as anemia and electrolyte abnormalities), we lack straightforward tools to diagnose and follow depression regularly, which result in delayed or missed diagnosis in the majority of ESRD patients. For the purpose of this study, we utilized the patient health questionnaire 9 (PHQ-9) form for the diagnosis of depression and its severity. The PHQ-9 is a reliable, well validated in many previous studies, and easily administered short questionnaire that proved to be a valuable clinical tool for the diagnosis and follow-up of depression and its

severity (9). This study is the first we know to assess depression in hemodialysis patients in Jordan.

## 2. Objectives

The aim of this study is to establish the prevalence of depression in Jordanian hemodialysis patients, the factors that may affect it, and to enhance the awareness of its negative impact on the outcome of hemodialysis patients.

## 3. Materials and Methods

In a descriptive cross-sectional study, we enrolled appropriate candidates who are on the maintenance HD program in the month of July 2015, at the University of Jordan hospital. The participants represent a convenient single center sample, which may be underpowered and small in size. The inclusion criteria incorporated all adult end-stage renal disease (ESRD) patients above the age of 18 receiving maintenance HD therapy who accepted to participate in the study. On the other hand, we excluded patients with dementia, cancer, and acute or debilitating conditions. No patients were formerly diagnosed as or treated for depression. We adopted the previously validated Arabic translation of the patient health questionnaire 9 (PHQ-9) (10, 11) because it is comprehensive and covers the 9 criteria, from the diagnostic and statistical manual of mental disorders, 4th edition (DSM-IV) for diagnosis of major depressive disorders (12). In addition, it was validated previously for dialysis patients (13). A qualified and trained nephrology doctor encountered the patients to explain and answer their questions and to obtain a signed informed consent from all participants. Considering the similarity of many depression symptoms such as lack of interest, poor appetite, insomnia, and weakness with symptoms of uremia, we instructed the patients to complete the PHQ-9 form the same day few hours' post-HD sessions, when uremic symptoms are the least. This critical precaution was overlooked in similar studies conducted formerly in the Middle and the Far East, that resulted in a considerable overestimation of the rate of depression in such patients (14, 15). We categorized the patients, according to the results of the PHQ-9 scores, considering a score of 10 or more as an indicator of significant clinical depression that required intervention, on the other hand, scores more than 20 suggested severe depression that required psychiatric consultation or referral. The researchers entered all the collected data into the SPSS statistical analysis package (MS Windows version 20)

for description and analysis. We used the Chi-Square and the t-Test for P value estimation, and considered a value < 0.05 as statistically significant. The institutional review board (IRB) at the University of Jordan hospital approved the study protocol.

## 4. Results

A total of 49 adult ESRD patients on maintenance HD therapy participated in this study. Mean age was 51.6 years, 57% were men, 61% were receiving 10-hour weekly dialysis program divided into 2 sessions, and 39% were receiving 12-hour weekly dialysis program divided into 3 sessions. Table 1 summarizes the demographic and epidemiological data from all participants.

Using the PHQ-9 questionnaire, 14 (29%) of the patients scored 10 or more, of whom, 7 (14%) scored above 15, and 2 (4%) scored above 20. Depression affected equal numbers of men and women, (7 males and 7 females), however, male patients tend to be more severely depressed than female ones (2 vs. 0 scored above 20). Likewise, we found that depression was more severe in elderly patients in comparison with younger patients (11 out of 33 (33%) above, while 3 out of 16 (19%) below the age of 40). On the other hand, patients who received 2 sessions per week scored an average of 6.9, while patients who received 3 sessions per week had the lowest average score of 6.2. Nevertheless, this finding was statistically insignificant (P value 0.68). In comparing the mean score of patients receiving 2 sessions per week whose Kt/V (an indicator of urea clearance and adequacy of HD) value was above the average of 1.9 (#20), to those under 1.9 (#9), it was 5.6 vs. 10.4; again, this was statistically insignificant (P 0.10). Similarly, the average score of patients receiving 3 sessions per week whose Kt/V was above the mean value of 1.4 (#11) to patients with Kt/V below 1.4 (#6), was 5.2 vs. 8, this was not statistically significant (P 0.44). Also, the researchers didn't find a significant correlation between depression and marital status (P = 0.31), the job of the patients (P = 0.9), smoking (P = 0.06), educational level (P = 0.85), number of family members living in the same house (P = 0.35), income (P = 0.69), HD access (P = 0.6), history of previous kidney transplantation (P = 0.43), family history of renal disease (P = 0.35), nor with the number of medications used (P = 0.64).

## 5. Discussion

The results of this survey show a high prevalence of depression among HD patients (29%), more than double the

**Table 1.** Jordanian Hemodialysis Patients' Epidemiological Characteristics

<b>Variables</b>		
<b>Age (Male/Female), y</b>	54/48	Mean 51.6
<b>Sex</b>		
Male	28 (57.1%)	
Female	21 (42.9%)	
<b>Marital status</b>		
Married	28 (57.1%)	
Single	17 (34.7%)	
Widow	4 (8.2%)	
<b>Education</b>		
PhD	2 (4.1%)	
University graduated	11 (22.4%)	
High school	26 (53.1%)	
Illiterate	8 (16.3%)	
Other	2 (4.1%)	
<b>Job</b>		
Unemployed	35 (71%)	
Retired	5 (10%)	
Employed	9 (18%)	
<b>Family Income</b>		
< 500 JD	83.7%	
501 - 1000 JD	12.2%	
> 1000 JD	4.1%	
<b>Residence</b>		
< 5 family members	65%	
> 6 family members	35%	
<b>Smoking</b>		
Smokers	7 (14.3%)	
Non-smokers	37 (75.5%)	
Ex-smokers	5 (10.2%)	
<b>Alcohol</b>		
	None	
<b>Sessions/week</b>	30 (61.2%) 2 sessions per week	19 (38.8%) 3 sessions per week
<b>Weight</b>	Range 35 to 117	Mean 62.6 kg
<b>Intradialytic weight gain (IDWG)</b>	Range 0.5 to 6 kg	Mean 3.3 kg
<b>Previous transplantation</b>	5 (10.2%)	
<b>Dialysis access</b>	AV fistula or graft in 25 patients (51%)	Catheter 24 (49%)
<b>Number of medications</b>	39 (80%) > 5 drugs	10 (20%) < 5 drugs

prevalence in the general population (1). Nonetheless, the treating physicians missed the diagnosis and didn't offer any medical treatment for this serious disease. Furthermore, when offered antidepressant treatment or referral

to a psychiatry clinic, most patients were reluctant to start treatment or to visit a psychiatrist, as most of them believe the diagnosis and treatment of a psychiatric disorder to be a social stigma. Accordingly, only 2 patients agreed to

start antidepressant medications, however, none accepted to consult a psychiatrist. Interestingly, Pena-Polanco J E et al., reported similar findings recently (16). As several depression symptoms are similar and overlap with uremic symptoms, as expected, we discovered a negative correlation with the adequacy of dialysis (Kt/V), the duration or frequency of dialysis sessions per week, however, did not reach statistical significance. Similarly, as HD through an arterio-venous (AV) fistula or a graft is more convenient for patients, have a better clearance, and fewer complications than HD through catheters, even though, as expected showed a negative correlation with depression yet again did not reach a significant difference in the 2 groups. Also, we did not find significantly different results with multiple other relevant variables such as marital status and income. These findings may be due to the small size of the sample, however, more likely specify depression as a primary endogenous disorder that is rather independent of other social or environmental factors. As depression is a devastating disease with an adverse impact on the results of successful treatment, QOL, morbidity, and mortality of HD patients, we recommend to routinely evaluate patients at least twice a year using the PHQ-9 or a similar tool for the assessment, diagnosis, and follow-up of depression. Likewise, we should implement a parallel educational program to raise the patients' awareness of the disorder, its complications, and the benefits of treatment on the overall success of the HD therapy. The primary limitations of our study are its cross-sectional design, which prevents detection of temporal mood changes over time as well as the small number of participants from a single HD center. Although establishing the diagnosis of depression by a psychiatrist is more reliable than questionnaire assessment, our patients favored the survey approach. One obvious strength of the study protocol was to minimize the effects of overlapping symptoms of uremia as much as possible and to correlate the adequacy of HD with depression; both were overlooked in several previous studies that resulted in an overestimation of the prevalence of depression in dialysis patients (14, 15). We are planning a new survey that involves more patients from several dialysis centers with evaluation of pre and post-HD PHQ-9 scores to clarify the role of uremic symptoms on the diagnosis of depression, with longer follow-up. However, the current study clearly indicates a high percentage of depression prevalence in Jordanian HD patients, which is obviously under diagnosed and treated, along with patient's negative attitude toward the acceptance of the diagnosis and its man-

agement.

### 5.1. Conclusion

In summary, despite the limitations of this study, the researchers found a high prevalence of depression among hemodialysis patients in Jordan, which is basically under diagnosed and treated. Consequently, a prompt action to adopt a policy of routine screening of all HD patients for depression, accompanied by a parallel educational program to improve their acceptance of the diagnosis and its treatment is mandatory. We hope this will result in enhanced QOL and outcome of HD patients.

### Footnotes

**Authors' Contribution:** Izzat Ahmad Al Awwa and Shatha Ghalib Jallad shared the study concept and design, did the literature search and review, performed the analysis and interpretation of data, critical revision of the manuscript for important intellectual content, and drafting of the manuscript. Izzat Ahmad Al Awwa supervised the study, completed the statistical analysis, as well as the administrative, technical, and material support. Shatha Ghalib Jallad achieved the acquisition of data. Both authors read and approved the final manuscript.

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