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Prevalence and risk factors associated with the severity of depression in patients with end-stage renal disease undergoing haemodialysis in southern Algeria.

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Summary

Introduction: The management of patients suffering from end-stage chronic renal failure on haemodialysis is a major public health issue. Haemodialysis patients face a number of challenges: social, relational, family, financial, and psychological distress, of which depression is the main psychiatric condition described in this population.

High prevalence of depression in haemodialysis patients, which is underestimated, unrecognised and undiagnosed, represents a risk removed by non-compliance with treatment, indirectly responsible for an increase in morbidity and mortality in these patients.the severe nature of depression leads the patient to commit suicide, increases the potential for mortality and reduces quality of life.It is an additional burden for haemodialysis patients. Diagnosis and early detection of depression and its management is considered an indicator of quality of life .In Algeria, there is little data on depression in chronic haemodialysis patients, although it is the main psychiatric manifestation described in this population.We conducted this study in order to help improve the management of haemodialysis patients and improve their quality of life.. The aim of our study was: to assess the prevalence of depression and the clinical and epidemiological characteristics of this depression in haemodialysis patients in the EPHs of Laghouat, and to assess its severity using a Hamilton psychometric scale. And to look for factors associated with the severity of depression in patients with chronic renal failure undergoing haemodialysis.

Patients and Methods: This is a prospective cross-sectional descriptive study of patients with end-stage chronic kidney disease undergoing haemodialysis. From 13 July 2021 to 14 July 2022, a period of 12 months with a diagnosis of EDC, based on the DSM-5 diagnostic criteria. Results and Discussion: A total of 379 patients were treated in the four haemodialysis centres in the wilaya of Laghouat during the study period. Of these, 289 met the inclusion criteria; 57.1% were men and 42.9% women, corresponding to a sex ratio of 1.33 with an average age of 52.38± 17.13 years, ranging from 18 to 91 years; the average duration of haemodialysis was 8 years and 2 months and 4 days; 56% had an average standard of living, 58.1% had completed their primary education, 56.1% were married, however kidney disease limited their activities, most of the patients (90%) had no activities, most of them (74.7% had undergone haemodialysis treatment for more than 5 years, the majority (69.6%) were less than 50 km from the haemodialysis centre to their home, almost all (90%) had received social support and 58.1% lived in an urban environment, 46% had comorbidities such as diabetes and hypertension, evenly distributed. In addition, the majority (58%) had a fistula as their vascular approach, 92% had regular sessions 3 times a week and 56.7% had frequent dialysis incidents. The prevalence

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of EDC was 76.5% in the population of haemodialysis patients in the wilaya of Laghouat, of whom 48.8% had mild depression, 27.7% had mild to moderate depression and 23.5% had moderate to severe depression. Five factors were found to be strongly correlated with the severity of depression, which was confirmed in multivariate analysis by ordinal logistic regression with: profession, average socioeconomic level, distance of haemodialysis centre from home, frequent dialysis incidents and accidents, duration of haemodialysis treatment. The risk of having severe depressive symptoms was 50.15 times for patients who had dialysis incidents during haemodialysis sessions,
25.99 times for non-active patients, 9.45 times for patients who had been on haemodialysis for between 1 and 2 years, 4.78 times for patients whose distance from home centre was greater than 100km, 3.75 times for patients whose socio-economic status was average.
Conclusion: This study shows that depression is common in chronic haemodialysis patients and is often unrecognised and underestimated. Early diagnosis and management of the haemodialysis patient must be multidisciplinary. Collaboration between psychiatrists and nephrologists must begin as early as possible in order to inform the patient of the difficulties that are likely to arise during the course of treatment. The aim is to reduce the severity of depression and improve quality of life by keeping patients active and improving their socio-economic conditions, by creating new centres close to haemodialysis patients' homes and by preventing frequent dialysis incidents and accidents.

Key words: Depression,haemodialysis,risk factors,prevalence,Hamilton scale,CKD

Introduction

Chronic kidney disease is a common condition in Algeria. The number of Algerians at risk of kidney damage is estimated at 6 million, of whom around 1.5 million suffer from chronic renal failure. The majority of patients with chronic end-stage renal failure (91.8%) are treated by haemodialysis in 337 centres.
In Algeria, chronic end-stage renal failure is considered to be a real public health problem, with a very heavy economic burden, consuming 2% of the health budget. In 2017, 243 patients (99.9%) were treated by haemodialysis, giving a prevalence rate of 381 (pmh) in the wilaya of Laghouat. In 2018, there were approximately 25,000 patients with chronic end-stage renal disease. [1 ,2].
Haemodialysis therapy is necessary for people whose glomerular filtration rate falls below 15 ml/min. Haemodialysis patients find themselves in an uncomfortable situation because their survival depends on haemodialysis treatment throughout their lives. The progressive and irreversible evolution of the risk has psychological consequences for patients, who experience the announcement of the diagnosis of haemodialysis as a shock, a transition to another life, that of survival, and without haemodialysis they cannot live, it's haemodialysis or death. Patients suffering from chronic end-stage renal failure are obliged to connect to a kidney machine every two or three days for a period of three to five hours. As a palliative treatment, haemodialysis is seen as a vital necessity and constitutes a major constraint. Although advances in diagnostic and therapeutic techniques have improved the prognosis of many chronic patients, renal failure is a particular problem in that it is still awaiting a kidney transplant, with haemodialysis only ensuring its survival. [3,4,5,6].

Patients with end-stage renal disease undergoing haemodialysis suffer devastating and disruptive physical consequences as well as severe psychological distress, the latter may be due to fear of death, disability, changes in social

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relationships and self-image, financial problems, disruption of activities, dependence on machines and uncertainty about the future. All these challenges lead to various psychiatric problems, of which depression is the most common, an additional burden to end-stage chronic kidney disease, considered the most important problem among these consequences is the reduced quality of life and the potential for increased mortality due to the global prevalence of depression in haemodialysis patients in different studies which vary from 14%-83% with a wide spectrum from mild to severe [7,8,9].

Depression is the most common complication which has a serious impact on the quality of life of haemodialysis patients and on their clinical and psychological social well-being. More severe depression can lead individuals to commit suicide, there is a relationship between depression and high mortality, studies have shown that haemodialysis patients have a 4 times higher risk of depression than the general population and depression is one of the causes of mortality. [10,11].

It is very difficult to identify the associated depressive symptoms, and it has been shown that a high risk of mortality has been associated with it. For this reason, early diagnosis and management of depression is considered to be an indicator of quality of life for these patients (Center for Medicare and Medicaid).

Although the prevalence of depression in haemodialysis patients is quite high, the diagnosis is often overlooked, with existing health services focusing solely on the physical aspects of the illness, and they must therefore also focus on the psychological aspects including depression due to chronic medical illnesses linked to suicidal tendencies and affecting survival rates The lives of haemodialysis patients who are dependent on a machine, and who are in a state of uncertainty, can be a powerful stress factor for psychological problems, such as symptoms of depression,[12,13] as a result. We found that in our country there is a lack of real data in this area, and that despite the considerable impact of depression in patients with end-stage renal disease undergoing haemodialysis, little is known about the mental health of our patients with end-stage renal disease, which justifies the need to carry out this study, as it would make it possible to assess depressive states and improve care in haemodialysis units and nephrology departments it would also provide baseline data for future research in our country. Through a study carried out in the wilaya of Laghouat at four haemodialysis centres, this research work therefore proposes to highlight the value of screening for depressive states in patients with end-stage chronic renal failure undergoing haemodialysis, and to assess its severity, with the aim of improving care. The aim of the study was therefore to assess the prevalence of depression in patients with end-stage renal disease on haemodialysis and to determine the risk factors that may be associated with depressive symptoms.

Methods

A descriptive, cross-sectional, multicenter study was conducted over a one-year period from July 2021 to July 2022, involving 289 hemodialysis patients across four centers in the Wilaya of Laghouat, Algeria (Laghouat, Aflou, Gueltet Sidi Saad, Ksar El Hiran). The inclusion criteria required patients to be at least 18 years old, with no cognitive or sensory impairments that could interfere with questionnaire responses. Only individuals meeting the diagnostic criteria for a depressive episode as defined by the **Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)** were retained. Those with prior psychiatric conditions, apart from a history of depression, were excluded. The study protocol received approval from the designated expert committee.

At the time of data collection, 293 patients were undergoing hemodialysis in the

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selected centers. Among them, 289 consented to participate, while three declined. Information was gathered through structured individual interviews using a standardized form covering sociodemographic characteristics such as age, sex, marital status, education level, place of residence, employment status, and socioeconomic level. Clinical variables included psychiatric history, duration of hemodialysis, weekly session frequency, and presence of somatic comorbidities. Depressive symptoms were assessed using the **Hamilton Depression Rating Scale (HDRS)**, a widely employed tool for evaluating depression in chronic disease populations, including those undergoing long-term hemodialysis.

The HDRS was used in its 17-item version, which has been validated in this specific population. It was chosen to minimize the confounding effects of somatic symptoms that overlap with uremic syndrome. Each item was rated according to its severity, with nine items scored from 0 to 4 and the remaining eight from 0 to 2. The total score allowed classification into different categories: absence of depression (0–9), mild depression (10–13), mild to moderate depression (14–17), and moderate to severe depression for scores above 18.

Data were recorded using **Epi-Info 6 (French version)** and analyzed with **SPSS Statistics version 20**, while ordinal logistic regression was performed using **Stata/SE version 12.0**. Quantitative variables were expressed as means with standard deviations, minimum, and maximum values, whereas categorical variables were presented as percentages. Comparative analyses were conducted using the **Chi-square test** for proportions and **Student's t-test** for means, with statistical significance set at $\mathbf{p < 0.05}$.

To explore factors associated with depression, severity was classified into three levels: mild, moderate, and severe. The analysis followed a two-step approach. First, a univariate analysis was performed, assessing associations between each explanatory variable and the severity of depression using Pearson's Chi-square test. Crude odds ratios (ORs) were calculated, with a threshold of $\mathbf{p < 0.25}$ for inclusion in the subsequent multivariate analysis. In the second stage, the selected variables were integrated into a multivariate ordinal logistic regression model to determine adjusted ORs, with statistical significance defined at $\mathbf{p < 0.05}$.

Results

Our population consisted of 289 patients, mainly men (57.1%), with an average age of 52.38 ±17.131 years, ranging from 18 to 91 years. The majority of patients were married (56.1%); 58.1% had completed their primary education and 56% had an average standard of living. 74% of patients had no activity.

The average duration of dialysis was 8 years, 2 months and 4 days. Most of them, i.e. 74.7%, had undergone haemodialysis treatment for more than 5 years,69.6% had a distance of less than 50 km from the haemodialysis centre to their home,90%, almost all, had benefited from social support and had retained their autonomy,58.1% lived in urban areas,46% had a morbidity rate equal to that of diabetes and hypertension, the majority (58%) had a fistula as their vascular approach, and 64.7% had had an AVF placed once,92% had regular haemodialysis sessions,75.4% had a haemodialysis dose of 3 times a week, 41.2% had their haemodialysis session during the 2nd quarter, 56.7% reported frequent dialysis incidents, 46% had physical mutilation related to haemodialysis.

The prevalence of depression among haemodialysis patients is 76.25%.

Among the 289 patients who were included in the study and who suffered from EDC, 48.8% had mild depression, 27.7% had mild to moderate depression and 23.5% had moderate to severe depression.table:2

In the univariate study, a significant correlation with the severity of depression

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was found for all variables, at the 25% significance level, with the exception of the following variables: Living environment, AVF repair, Marital status, Age class.

The results of the final multivariate ordinal logistic regression model confirmed the association between the severity of depression and showed that occupation, duration of haemodialysis, socio-economic level, frequent dialysis incidents and distance from the haemodialysis centre were risk factors associated with the severity of depression in haemodialysis patients in our study population at the 5% significance level.table:5

Table 1: Clinical characteristics of patients with chronic kidney disease on haemodialysis.who present with EDC

Features/categories	Effectif (%)% of total
Sex	
The men	165(57.1)
The women	124(42.9)
Age (years)	
18-30	33(11.4)
31-44	70(24.2)
45-60	48(29.1)
61-91	102(35.3)
Marital status	
single	105(36.3)
married	162(56.1)
divorced	17(5.9)
Widow(er)	5(1.7)
Level of education	
medium	26(9)
primary	168(58.1)
Place of residence	
urban	168(58.1)
rural	121(41.9)
profession	
Assets	75(26)
Not active	214(74)
Socio-economic level	
bottom	49(17)
medium	162(56.1)
high	78(27.0)

Table 2: Distribution of EDC patients according to depression score

Range of scores	N	%
No depression	0	0
Mild depression	143	48.8
Depression Moderate	80	27.7
Severe depression	68	23.5

data are expressed in n (%).

Table3: Distribution of EDC patients according to depressive symptoms (Hamilton scale) in haemodialysis patients

Symptom	Workforce	%
1. Depressive mood	289	100
2. Genital symptoms	267	92,38
3. Insomnia at the start of the night	267	92,38
4. Weight loss	208	71,97
5. General somatic symptoms	198	68,51
6. Slowing down	185	64,01
7. Somatic anxiety	178	61,59
8. Psychic anxiety	163	56,40
9. Insomnia in the middle of the night	152	52,59
10. Somatic gastrointestinal symptoms	148	51,21
11. Morning insomnia	122	42,21
12. Hypochondria	110	38,06
13. work and activity	86	29,75
14. Feelings of guilt	38	13,14
15. Awareness	18	6,22
16. agitation	4	1,38
17. Suicide	2	0,69

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Table 4: Univariate analysis using ordinal logistic regression.

Variable α≤25%	Gross gold	95% CI; P-value
Sex		
The men	1	
The women	1.40	(0.90, 2.18) ; 0.12
Age (years) [n=289]		
18-30	1	
31-44	0.9	(0.82, 1.93) ; 0.79
45-60	0.71	(0.33, 1.51) ; 0.38
61-91	1.25	(0.60, 2.5) ; 0.54
Marital status [n=289]		
single	1	
married	1.56	(0.60, 4.03) ; 0.35
divorced	1.25	(0.78, 1.98) ; 0.33
Widow(er)	0.58	(0.10, 3.22) ; 0.53
Level of education [n=289]		
illiterate	1.68	(0.74, 3.79) ; 0.21
primary	2.31	(0.98, 5.42) ; 0.05
medium	1	
Socio-economic level [n=289].		
bottom	0.53	(0.31, 0.90) ; 0.019
medium	4.94	(2.53, 9.63) ; 0.001
high	1	
Distance from home centre		
Less than 50 km	1	
50-100 km	11.89	(6.03, 23.44) ; 0.001
Sup a 100	5.49	(3.08, 9.77) ; 0.001
comorbidity [n=289]		
HTA		
yes	2.31	(1.548, 3.60) ; 0.001
no	1	
Diabetes		
yes	0.70	(0.45, 1.10) ; 0.12
no	1	
Vascular [n=289]		
catheter	2.75	(1.76, 4.30) ; 0.001
fistula	1	
Session dose [n=289]		
2/week	2.01	(1.23, 3.28) ; 0.005
3/week	1	
Regularity of sessions [n=289]		
regular	1	
irregular	2.73	(1.11, 6.68) ; 0.02
Quarter session [n=289].		
1st	0.16	(0.08, 0.29) ; 0.001
2nd quarter	0.57	(0.32, 1.02) ; 0.06
3rd quarter	1	
Duration of haemodialysis (years) [n=289].		
1-2 years	1.55	(0.75, 3.20) ; 0.23
3-5 years	1.51	(0.82, 2.78) ; 0.18
Sup 5years	1	

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Avicenna Medical Research vol 04, issue 01 (2025) (08-24)

Table 5: Multivariate analysis using ordinal logistic regression (risk factors associated with the severity of depression in haemodialysis patients).

Variable α≤ 5 %	Adjusted OR	95% CI; P-value
Duration of haemodialysis treatment (years)		
1-2	**9.46**	(2.89, 30.89) ; 0.001
3-5	**6.53**	(2.20, 19.39) ; 0.001
Sup a 5	1	
Distance to centre of residence (years) [n=289]		
Less than 50 km	1	
50-100 km	1.84	(0.36, 9.22); ns
Sup 100 km	4.78	(1.40, 16.33) ; 0.01
Frequent dialysis events [n=289].		
yes	**50.15**	(18.59, 135.29) ; 0.001
no	1	
profession[n=289]		
Assets	1	
Not active	**25.99**	(9.22, 73.22) ; 0.001
Socio-economic level [n=289].		
bottom	**0.69**	(0.42, 2.21); ns
medium	**3.75**	(1.04, 13.39) ; 0.04
high	1	

Discussion

We conducted our study on a sample of 289 haemodialysis patients in the 4 haemodialysis centres of the public hospital establishment in the wilaya of Laghouat.The profile of haemodialysis patients in our sample is predominantly male, with 165 male patients (57.1%) and 124 female patients (42.9%), with a sex ratio (M/F) of 1.33.These figures correspond to the results of studies carried out by the Indonesian team in 2019 Endris Fikre yesus et al in a descriptive cross-sectional study on a sample of 158 patients, which found a male predominance in the study population. 61.5% were male. [17].

DJIBO in 2007 and Mekomgno , 2008 and Keita Ao in 2007 found a male predominance in their studies. [18, 19,20].Sabi et al Togo found in their study a male predominance with a sex ratio of 1.6 [21].

Dialo et al Mali found similar results with a sex ratio of 1.82. [22,23].

The high proportion of males in the study population can be attributed to the overall preponderance of male patients in this study. Such a male predominance has also been observed in populations of patients with CKD in the work of Youmbissi et al [24,25].Our sample included a predominantly married population (56.11%), which is similar to the results of the Indonesian study carried out in 2019 by Endris Fikre yesuset, with a married patient rate of 53% in a population of 137 haemodialysis patients.Mekongno et al in 2008 found in their study 77% married women. [26,27]

Njah et al 2001 Tunis found in his study that 70% were married. [28,29].The high rate of married patients in the study population can be attributed to the overall preponderance of married patients in the study. [30] .table:1

In our series of studies, we report that during the data collection period 289 haemodialysis patients had depressive symptoms (DDS), i.e. a prevalence of 76.50%. Four groups of patients were identified according to the characteristics of the Hamilton psychometric scale (48.8% had mild depression, 0% no depression, 27.7% mild to moderate depression, and

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23.5% moderate to severe depression): We compared our results with those of series using the same assessment instrument, and then with other instruments. It should be noted that the populations studied are neither homogeneous nor comparable, and the evaluation methods differ from one study to another.

- In Morocco, depression was found in 67% of haemodialysis patients; in Tunisia, 44% of haemodialysis patients had depressive symptoms; our results are similar to those in the literature, ranging from 0 to 100% [31,32].

Our results are similar to those in the literature: they are also comparable and similar and mild depression was in the majority.- Gérard Coulibaly (Burkina Faso) in 2016, using the same Hamilton assessment scale on his sample of 162 haemodialysis patients in a descriptive cross-sectional study, found 86.4% depression (41% mild, 13.6% no depression, 32% mild to moderate, 13% moderate to severe).A Pakistani study carried out in 2019 by Waquar Quayum found on a sample of 88 patients and on a comparative cross-sectional study, with CKD undergoing haemodialysis treatment (76.1% were identified as suffering from depression; of these 31.8% had mild depression, 13.6% moderate depression, and 30.7% severe depression. [33,34]

Tarik Squali Houssaini et al in 2005 in Morocco found in 93 haemodialysis patients by a descriptive cross-sectional study using the memé scale found: depression was found in 67% of patients (24 cases of moderate depression, and 7 cases of severe depression, with thoughts of death in 2 cases, the mean Hamilton score was 12.7 ± 8.3). [35].Mekongno MB demonstrated in his study which took place in 2008 in 48 patients in Bamako Mali by a prospective cross-sectional study using the same Hamilton evaluation scale a depression found in 91.6% of which 62.5% mild depression, and 21.7 moderate and 8% severe and 21.7% moderate and 9% of patients who did not present depression. [36]

On the other hand, and having used another evaluation scale, recent studies carried out on a population of haemodialysis patients have shown that

-Khan et al found in their prospective multicentre study in 2019, on a sample of 213 haemodialysis patients and using the HADS, a prevalence of 71.3% at the 1st visit, 78.2% at the 2nd visit and 84.8% at the 3rd visit.

-Quéradgo Saido from Abidjan Cote d'ivoire in 2018 using the HADS scale on his sample represented by 102 haemodialysis patients found a prevalence of 61.8%[37, 38].

Yuyun Tri Wulansari et al in Indonesia found in 2020 using the BDI scale on a descriptive cross-sectional study on a sample represented by 72 haemodialysis patients found 61.1% either (41.7% mild depression, 22.2% moderate, 4.2% severe). [39].-the aldukhayel study in 2015, which showed a high prevalence of haemodialysis patients. [40].

-Research conducted by Ambasari in 2017 in Yogyakarta reported a 89.2% prevalence of depressive symptoms in haemodialysis patients.Patients undergoing haemodialysis at jemursari in Surabaya hospital followed for more than 12 months 67.3% showed depression, 41.7% of whom had mild depression.

-Research by Alkukayel [41] 2015 indicates that 39.1% of haemodialysis patients showed symptoms of mild depression using the BDI instrument.-A prospective observational study conducted in India on 93 haemodialysis patients in 2021 by Rajeev Kummer Bhatia using the Beck scale showed a prevalence of 64% (9.7% suffering from mild depression, 20.4% from moderate depression, 14% from mild depression and 20.4% from very severe depression). [42].-A Pakistani study by Bhatti Ali and Satti using the HADRS showed that depression was present in 83.8% of the haemodialysis group, while Sanathan et al found that 65% of haemodialysis patients had one of the

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depressive symptoms. [43,45]
-The prevalence of depression ranged from 14% to 83% in haemodialysis patients in the various studies and encompassed a wide spectrum from mild to severe depression [46].We now move on to a comparison with the results using two evaluation scales:Danial Cukor USA in 2007 using two evaluation scales SCID and BECK found a score of 74% and 29% using the SCID and BECK for a sample of 85 haemodialysis patients and in a cross-sectional and descriptive study, [47] .Watnik et al using the SCID found a prevalence of 26%, Hedayati 27% and Kimmel 25% using the BDI. [48].
Lobna Zouari et al conducted a cross-sectional study of 106 patients in 2011 in Tunis, which showed a prevalence of 46.2% using the HADS scale[49].-Dogan and Lopes (USA) and TaskapanTurkey report in the literature between 20% and 67% using the SCID and Beck. [50].Kop revealed in a descriptive cross-sectional study of 267 patients in 2010 using the SCIDa prevalence of 21%[51].-Cukor in 2012, USA, found in his study of 70 patients using the BDI a prevalence of 30%[52].Fischer et al USA, in a descriptive cross-sectional study carried out in 2011 on a sample of 3853 patients using the SCID and Beck had a prevalence of depression of 39.3% and 22.8%[53].Palmer et al in the USA carried out a meta-analysis of 216 studies studying 55,982 patients in 2013 using the Beck and SCID prevalence rates of 39.3% and 22.8% respectively[54].

Fouda Menye Hermine conducted an analytical cross-sectional study of 125 haemodialysis patients in 2020, using the Beck scale, and found a prevalence of 42.4%[55].-Mawufemo Yawovi Tsevi in a study carried out in 2014 in Togo Lomé on a sample of 91 haemodialysis patients, using the Beck's scale, found a prevalence of 68.2% including 47.7% severe, 15.9% moderate, 4.6% mild, 31.8% no depression. [56].

Flavio, Teles (Brazil) in 2013 on a sample of 96 patients conducted a cross-sectional study using a BDI scale found a prevalence.76%[57],Driss Touil (Morocco) in 2019 revealed in a descriptive cross-sectional study of 156 patients using the HADS a prevalence of 70% [58].Terry King in 2016 (Japan), demonstrated in his study a prevalence of 22.8% by SCID and a prevalence of 39.3% by Beck. [59].Our results are comparable with those of the majority of studies and concur with those of Gérard Coulibaly and Waquar Quayum and Squali Houssaini and Mékongo MB, where the results disagree because the population studied is not homogeneous and the evaluation methods differ from one study to another, as does the scale used.
The prevalence of depression in haemodialysis patients varies from 0 to 100%, depending on the study and the assessment tools used [60].
Some authors use the DSM5 criteria and include only major depression, which is more or less severe, while others include all depressive symptoms, even minor ones. Moreover, it is very difficult to assess somatic symptoms of depression in CKD patients because they may overlap with uraemic symptoms.
In a study carried out in Jemursari Surabaya, Indonesia over a 12-month period, 67.3% of patients experienced symptoms of mild depression, compared with 41.7%[61].Similarly Amalia (2015) reports that the majority of respondents (37.5%) had symptoms of mild depression. [62].Research by Alkukayel (2015) found that 39.1% of haemodialysis patients had Mild depression. [63].Overview of symptoms of depression in haemodialysis patients.
Analysis of the 17 items in the depressive symptoms variable shows that 267 (92.38%) had genital symptoms, 267 (92.38%) had insomnia at the beginning of the night:A similar study by Gérard Coulibaly also found that 80.9% of patients had lost interest in sex and 68.5% had trouble sleeping table:3. [64].Ritland 1996

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also found that 43.5% of patients lost interest in sex, 81.5% experienced fatigue and 62.5% sleep disturbance. [65].Yuyuntri wulnasari et al analysing the 21 elements of the depressive symptoms variable showed that 77% of patients lost interest in sex, 66.7% felt tired and 69% had sleep problems [66].A person undergoing haemodialysis treatment may lose their personal freedom and social relationships (Thong et al, 2007). Many factors trigger depression in haemodialysis patients, such as family support, age, level of education and marital status [67] ;In addition, stressors arise from the lives of haemodialysis patients themselves, and include dietary restrictions and time problems, limitations in bodily functions, loss of employment, changes in self-perception, changes in reproductive function, perceived effects of the disease, drug use, fears and worries about care, uncertainty and anxiety, and fear of death [68].

It is essential to prevent and overcome depressive symptoms in haemodialysis patients, as they are also associated with other undesirable effects such as poor nutritional status and poor compliance with treatment by the patient. [69].

Data on depressive symptoms in haemodialysis patients

In a study carried out in Jemursari Surabaya, Indonesia over a 12-month period, 67.3% of patients experienced symptoms of mild depression, compared with 41.7% [70].

Similarly Amalia (2015) reports that the majority of respondents (37.5%) had symptoms of mild depression. [71].

Research by Alkukayel (2015) found that 39.1% of haemodialysis patients had Mild depression. [72].

Overview of symptoms of depression in haemodialysis patients.Analysis of the 17 items in the depressive symptoms variable shows that 267 (92.38%) had genital symptoms, 267 (92.38%) had insomnia at the beginning of the night:A similar study by Gérard Coulibaly also found that 80.9% of patients had lost interest in sex and 68.5% had trouble sleeping. [73].Ritland 1996 also found that 43.5% of patients lost interest in sex, 81.5% experienced fatigue and 62.5% sleep disturbance. [74].Yuyuntri wulnasari et al analysing the 21 elements of the depressive symptoms variable showed that 77% of patients lost interest in sex, 66.7% felt tired and 69% had sleep problems [75].A person undergoing haemodialysis treatment may lose personal freedom and social relationships . Many factors trigger depression in haemodialysis patients, such as family support, age, level of education and marital status [76] ;In addition, stressors originate in the lives of haemodialysis patients themselves, and include dietary restrictions and time problems, limitations in bodily function, loss of employment, changes in self-perception, changes in reproductive function, perceived effects of the disease, drug use, fears and worries about care, uncertainty and anxiety, and fear of death [77].It is essential to prevent and overcome depressive symptoms in haemodialysis patients, as they are also associated with other undesirable effects such as poor nutritional status and poor compliance with treatment by the patient. [78].In our study, women were 1.5 times more likely to have depressive symptoms than men. of presenting depressive symptoms than men. . Our results are comparable to those of.-In our series, inactive depressive patients were 29.99 times more likely to present severe depressive symptoms than active patients. Our results are comparable with those of the majority of studies.

The study by Yuyun tri W 2019, reported in his study that the majority of respondents were unemployed,In contrast two other studies, Saeed et al 2012, which found that 81% of haemodialysis patients were not working and felt depressed; and Hamody et al 2013 found in his study the tendency to depression increase in inactive people.A study carried out in 2001 by Njah N, et al, Tunis revealed in their study a correlation with joblessness and depression and that

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maintaining activity alone plays a protective role in the occurrence of depression. Ouédraogo saidou 2019 cote d'ivoire revealed a statistically significant association in patients between job loss related to haemodialysis and the occurrence of depressive disorder. [79 ,80,81,82, ,83,84].
Impairment of physical capacity due to kidney disease limits the physical capacity due to chronic kidney disease, limits the ability of patients to continue working, and consequently those who are the head of the family feel depressed because they cannot fulfil their role as head of the family, so maintaining a professional activity plays a protective role against psychiatric morbidity [179,144].
Inactivity is often perceived as a source of social devaluation; work would enable the patient to broaden the scope of his relationships, assume his responsibilities and assert his independence [85].
-A number of studies have shown that low socio-economic status increases the risk of depression in haemodialysis patients.
Binbay et al in Turkey found that depression was elevated in haemodialysis patients with low socio-economic status and found no significant correlation with depression. [86].
Two other studies, Armaly and KolmG found a strong correlation between depressive disorder and average and lower socioeconomic level. [87].
On the other hand, a study by Fouda M and A MJAD Khan found that patients who admitted an average socio-economic status suffered more from depression. [88].

Our results show a predominance of patients with an average socio-economic level at 56%.and that patients with a high socio-economic level were less likely to suffer from depression and this difference was very significant.During our series of studies, patients with an average socio-economic level had a risk of 3.75 times higher to present a severe depressive symptomatology than patients with a high socio-economic level.
Financial difficulties were omnipresent and constantly reported by patients, whatever their health regime and income level. The cost and management of kidney disease often constitute a heavy burden for patients and their families, which could lead to an increased risk of developing depression.
No study was found that evaluated the socio-economic level of haemodialysis patients. The predominance of the middle socio-economic level in our study can be explained by the fact that the socio-economic classes are represented by simple civil servants, noting that the rate of inactive patients was higher than 80%, the majority of our patients admitted to the study being inactive.Living environment/Distance from haemodialysis centre/home/dialysis shift 4.78 times for patients whose distance from home is greater than 100km
-In our series of studies, the severe form of depression was predominant in subjects who received their haemodialysis treatment in the first dialysis shift (1st morning session), and also in those who lived in rural areas and had a distance of more than 100 km, with a risk of 4.78 times higher of presenting severe depressive symptoms than other patients.
Our results corroborate the findings of a study conducted by Teles which determined that patients on the morning dialysis shift (1st connection) had a higher incidence of depressive symptoms than those on the evening shift. Also in the same study the author states that patients who lived in rural areas as well as the morning dialysis shift itself, could be associated with depression, finally the author found a very significant influence between distance to the dialysis centre and depression which is recently studied and distance was not found to have an effect,In our series it was found that the majority of patients who chose the 1st quarter of dialysis lived in rural areas and also lived further from the dialysis centre and also in rural areas which may explain, the rate of depression and the severity of the 1st quarter of dialysis is those who lived in

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rural areas. [89].Sleep deprivation is so far the most possible explanation for this association; patients who live far away (rural areas) get up early and take a long time to get to the centre; they also wait longer to get to the centre, wait for their sessions and arrive home late and tired, whereas those who live nearby choose the evening dialysis shift, which explains their low depression score and the non-severe form of depression [90].

Length of haemodialysis treatment 9.45 for patients who have been on haemodialysis for between 1 and 2 years

In our series of studies, we found that severe depression was predominant in the group of patients whose duration of haemodialysis was between (1-2) years, the average duration of haemodialysis in our population was 8 years and 4 months and 2 days, and the risk of presenting severe depressive symptoms was 9.49 times higher in patients whose duration of haemodialysis was between (1-2) years than in those who had been on haemodialysis for more than 5 years.Several studies corroborate our study: Coulibaly found in his study that the risk of depression was 1.08 times higher if the patient had been on haemodialysis for less than 6 months, and the occurrence of depression was frequent in patients newly placed on dialysis. Willis found in his study a significant correlation between the duration of dialysis and depression, 62.87% had been on dialysis for less than 12 months and 24% for more than 12 months. Djibo et al 2013 found a significantly higher frequency of depression in patients with less time on haemodialysis and no association between depression and enclosure on haemodialysis. [91] .

the predominance of psychological difficulties in haemodialysis patients at the start of treatment can be explained by the upheaval of the body image caused by ESRD, as well as the difficulty in mourning the loss of urinary function, the difficulty in accepting the precedence in the body of non-functioning organs, whereas the artificial kidney is outside the body,difficulty in coping with oedema due to differences in diet and difficulty in accepting the arteriovenous fistula (Ledey Mette), as well as the severe impact of haemodialysis on patients' lives, which causes difficulties in adapting and psychological distress, particularly depression (Elfilali) . The appearance of depressive disorders during the initial period of haemodialysis treatment can be explained by a lack of acceptance and adaptation to the disease (Barrah, Jbali). [92].

Patients who had an incident during their dialysis session were 50.15 times more likely to present with severe depressive symptoms than those who did not have a dialysis incident. Our results are comparable to those of the authors.

Gérard Coulibaly et al, who found in their study that 89.3% of haemodialysis patients who had frequent dialysis events were more likely to be affected, and Mekongno MB et al, who found in their study that 62.5% of haemodialysis patients who had frequent dialysis events were more likely to be affected[93].

Poor haemodialysis sessions affect the psychological well-being and quality of life of haemodialysis patients, which can be a trigger for depression.

Perspective

systematic screening for depressive symptoms by identifying vulnerability, psychological suffering and the risk of suicide, and directing patients to the most appropriate psychological care professional at any stage of their treatment.Strengthening collaboration between the various services: liaison psychiatry, improving haemodialysis quality by preventing and reducing frequent dialysis incidents.

The need for the creation and development of liaison psychiatry, in the face of the challenge imposed by depressive morbidity in haemodialysis patients and its deleterious consequences at both physical and psychological levels.Creating other

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haemodialysis centres so that patients do not have to move around the country and travel long distances, improving the socio-economic conditions of these patients in order to improve their quality of life, integrating haemodialysis patients into the workplace, creating specially adapted posts, and providing training for doctors who have to treat patients with CKD on haemodialysis (nephrologists, general practitioners, etc).

Conclusion

This study shows that depression is common in chronic haemodialysis patients, but remains unrecognised and underestimated. Early diagnosis and management of haemodialysis patients must be multidisciplinary, and collaboration between psychiatrists and nephrologists must begin as early as possible in order to inform patients of the difficulties that are likely to arise during the course of their care, and to reduce the severity of depression

Psychological support for chronic haemodialysis patients should be considered from the initiation of dialysis, maintaining activity, improving the socio-economic conditions of patients, creating new centres close to the homes of haemodialysis patients, preventing incidents and frequent dialysis accidents by improving the quality of haemodialysis sessions, leading to an improvement in the quality of life of haemodialysis patients and an improvement in their overall care.

Limits:

This study also has a certain number of methodological limitations, as is the case with all research work. Certain limitations have crept in that must be acknowledged and deserve to be mentioned, namely:

The study was cross-sectional, so the results only indicate associations, not causality.

A cross-sectional study does not allow conclusions to be drawn about the time sequence, and the fact that the work was carried out during the pandemic meant that the patients were not seen several times.

The results of the present study must be interpreted with caution, as the duration of only one year, and the results require to be confirmed has a duration of follow-up in a Prospective study.

There was a difficulty with patients who were reluctant to take part in the study at first, they might be reluctant to take part because of their depressive symptoms or because some of them might have more depressive symptoms than patients who took part in the study.

Highlights of the study.

To our knowledge, the present study is the 1st study in Algeria to assess the psychological state of haemodialysis patients and the first to attempt to study the factors associated with the severity of depression in this population in an Algerian context in a Wilaya in southern Algeria.

The study used the structured clinical interview based on DSM5 criteria to diagnose depression in the patients included in the study, which remains the gold standard for diagnosing depression.

The patients included in the study were examined by a single examiner or observer (a psychiatrist who was the candidate) to reduce data collection bias.

To determine the factors associated with the severity of depression, a multivariate ordinal regression analysis was used.

This is a multicentre study and the sample size is considered to be large.

Nevertheless, a multicentre study with a large sample size and a longer follow-up period is needed to confirm the current results.

To our knowledge, no other study has demonstrated the existence of factors associated with the severity of depression in haemodialysis patients in Algeria. And this is one of the few studies to identify different levels of depression.

Our study has enabled us to identify factors associated with the severity of clinical and socio-demographic depression, which

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contribute to the prevention of depressive symptoms in haemodialysis units in 4 centres in the wilaya of Laghouat.
This study was carried out during the pandemic period, and the data can be used for other studies and as a basis for scientific research.
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Avicenna Medical Research vol 04, issue 01 (2025) (08-24)

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