Attahadi Medical Journal
2026;3(4):727-732
https://doi.org/10.69667/amj.26416

OPEN ACCESS

Original article

Hemodialysis Care, Social Support, and Physician-Documented Anxiety and Depression at Two Libyan Centers

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Keywords.
Anxiety, Depression, Hemodialysis, Libya, Social Support.

ABSTRACT

Comparative evidence on hemodialysis care and psychosocial characteristics across Libyan dialysis centers is limited. This study compared dialysis-care indicators, reported social support, and physician-documented anxiety and depression at two Libyan centers. This comparative cross-sectional study included 171 adults receiving maintenance hemodialysis at Center A (n = 101) and Center B (n = 70) between July and October 2022. Data were collected using a predesigned structured form through patient interviews and medical-record review, with clarification from treating physicians when necessary. Psychological diagnoses were ascertained for all participants; no standardized psychological screening instrument was administered. Between-center comparisons and multivariable logistic regression were performed. Arteriovenous fistula use and four-hour dialysis sessions were more frequent in Center B than Center A (91.4% vs 77.2% and 95.7% vs 83.2%, respectively). Reported social-support patterns differed between centers. Documented anxiety and depression were more frequent in Center A (48.5% vs 10.0% and 47.5% vs 10.0%, respectively). After adjustment for age, sex, and family involvement, treatment center remained associated with documented depression. Absence of family involvement was also associated with documented depression (adjusted odds ratio 3.00, 95% confidence interval 1.27–7.08). Dialysis-care indicators, reported support patterns, and physician-documented psychological diagnoses differed between the participating centers. The psychological findings cannot distinguish differences in underlying morbidity from variation in clinical recognition and documentation. Standardized assessment and larger multicenter studies are needed.

Introduction

Regional differences in hemodialysis delivery remain clinically relevant in Libya, where a national evaluation of dialysis services documented variation in dialysis capacity, staffing, and clinical practice across centers] 1]. Psychological morbidity is common among patients receiving maintenance hemodialysis [2,4], and perceived family support has been inversely associated with depression in this population [5]. However, comparative evidence linking dialysis-care characteristics, social support, and clinically documented psychological outcomes across Libyan centers remains limited.

This study compared sociodemographic characteristics, dialysis-care indicators, reported social-support patterns and physician-documented anxiety and depression among adults receiving maintenance hemodialysis at two geographically distinct Libyan centers. A secondary objective was to explore associations between documented depression and treatment center, age, sex, and family involvement in support.

Methods

Study Design and Setting

This comparative cross-sectional study was conducted between July and October 2022 in the maintenance hemodialysis units of Hemodialysis Unit – Sebha Medical Centre in Sebha, southern Libya, and Kidney Treatment and Dialysis Center – Misurata in Misurata, northwestern Libya. Both participating units provided maintenance hemodialysis services. Hemodialysis Unit – Sebha Medical Centre is designated Center A, and Kidney Treatment and Dialysis Center – Misurata is designated Center B throughout the manuscript. The study formed part of a broader research project assessing adherence to fluid restrictions and knowledge of appropriate dietary practices among patients receiving maintenance hemodialysis. The present analysis focused on dialysis-care characteristics, reported social support and physician-documented psychological diagnoses.

Participants

Eligible participants were adults aged 18 years or older who had received maintenance hemodialysis for at least three months. Patients with cognitive impairment or critical illness preventing communication, and those unwilling to provide

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Received*: 09-09-2026 -* ***Accepted****: 07-11-2026 -* ***Published****: 16-11-2026*

Attahadi Medical Journal
2026;3(4):727-732
https://doi.org/10.69667/amj.26416

informed consent, were excluded. A convenience sampling approach was employed. All patients receiving maintenance hemodialysis at the participating units during the data collection period were screened for eligibility, and all eligible patients available during this period were included. No a priori sample-size calculation was performed; the final sample size was determined by the available eligible population. No refusals or exclusions were reported during recruitment of the main study sample; all 171 eligible patients were included (101 from Hemodialysis Unit – Sebha Medical Centre and 70 from Kidney Treatment and Dialysis Center – Misurata). The 10 pilot participants described below were separate from the final study sample.

Data Collection

Data were collected using a predesigned structured form through face-to-face patient interviews and review of medical records. Interviews provided sociodemographic information and participant-reported sources of social support. Clinical and dialysis-related information was obtained from medical records, including the reported cause of kidney failure, comorbidities, dialysis vintage, session duration, session frequency, and vascular access.

The data-collection form was translated from English into Arabic. The Arabic version was reviewed for clarity, linguistic appropriateness, and consistency with the English version. The form was pilot-tested among 10 patients receiving maintenance hemodialysis to assess clarity and feasibility. Pilot participants were excluded from the final study sample.

Assessment of Psychological Outcomes

Psychological outcomes were defined as diagnoses of anxiety and depression documented by treating physicians in participants' medical files during routine clinical care. When assessment information was missing or unclear, the treating physician was contacted for clarification. The presence or absence of each diagnosis was ascertained for all participants, with no missing psychological outcome data after clarification.

No independent standardized screening instrument, such as the Hospital Anxiety and Depression Scale (HADS) or the Patient Health Questionnaire-9 (PHQ-9), was administered for this study. These outcomes were therefore interpreted as physician-documented clinical diagnoses rather than standardized measures of symptom severity. The study did not independently verify the application of recognized diagnostic criteria or establish whether diagnostic and documentation practices were equivalent between centers.

Social Support

Social support was assessed according to the source reported by participants. Categories were family only, family and friends, friends only, special care, and self-support. Special care referred to support from a person other than a family member or friend, such as a hired caregiver, or care received while residing in a healthcare institution.

For the primary regression analysis, family involvement was represented by a binary variable. Participants reporting support from family only or from both family and friends were classified as having family-involved support. Those reporting friends only, special care, or self-support were classified as having no family involvement. This classification describes the reported source of support and does not measure its quality, intensity, or perceived adequacy.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 20 (IBM Corp., Armonk, NY, USA). Categorical variables were summarized as frequencies and percentages, while continuous variables were presented as means and standard deviations. Between-center comparisons were performed using the chi-square test for categorical variables and the independent-samples *t* test for continuous variables. Fisher's exact test or Monte Carlo exact testing was used for categorical comparisons when expected cell counts were small.

Multivariable binary logistic regression was used to explore associations with physician-documented depression. The model included treatment center, sex, family involvement in support, and age. Documented depression was coded as 1 and its absence as 0. Center B, female sex, and family-involved support were the reference categories. Age was entered as a continuous variable in years. Adjusted odds ratios and 95% confidence intervals were reported. All 171 participants had complete data for the variables included in this model. Model fit was assessed using the Hosmer–Lemeshow test.

Ethical Considerations

Ethical approval was obtained from the institutional ethics committee (identifying details withheld for peer review). Permission to conduct the study was obtained from both participating hemodialysis centers, and all participants provided written informed consent before participation.

Results

A total of 171 people receiving maintenance hemodialysis were included: 101 (59.1%) from Hemodialysis Unit – Sebha Medical Centre (Center A) and 70 (40.9%) from Kidney Treatment and Dialysis Center – Misurata (Center B). The mean age was 48.94 ± 14.10 years, with no significant difference between centers (p = 0.294). Men comprised 60.2% of participants

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Received: *09-09-2026 -* ***Accepted:*** *07-11-2026 -* ***Published:*** *16-11-2026*

Attahadi Medical Journal
2026;3(4):727-732
https://doi.org/10.69667/amj.26416

and were more frequent in Center A than Center B (68.3% vs 48.6%, p = 0.009). Limited income was more common in Center B (95.7% vs 39.6%, p < 0.001), and unemployment was also more frequent in Center B than Center A (78.6% vs 62.4%, p = 0.024) (Table 1).

Table 1. Sociodemographic characteristics of participants by study center (N = 171)

Variable	Center A (n = 101)	Center B (n = 70)	Total (N = 171)	p-value
Age, years, mean ± SD	47.99 ± 13.72	50.30 ± 14.62	48.94 ± 14.10	0.294
Male sex	69 (68.3%)	34 (48.6%)	103 (60.2%)	0.009
Female sex	32 (31.7%)	36 (51.4%)	68 (39.8%)	
Current smoking	12 (11.9%)	15 (21.4%)	27 (15.8%)	0.092
University education	39 (38.6%)	25 (35.7%)	64 (37.4%)	0.700
Limited income	40 (39.6%)	67 (95.7%)	107 (62.6%)	< 0.001
Unemployed	63 (62.4%)	55 (78.6%)	118 (69.0%)	0.024

Note: Values are n (%) unless otherwise stated. SD, standard deviation.

Hypertension (31.6%) and combined diabetes and hypertension (28.1%) were the leading reported causes of kidney failure. Arteriovenous fistula use was common overall (83.0%) and higher in Center B than Center A (91.4% vs 77.2%, p = 0.015). Four-hour dialysis sessions were also more frequent in Center B (95.7% vs 83.2%, p = 0.012). Most participants received at least three sessions per week (75.4%), with no significant center difference (p = 0.428). Dialysis duration longer than one year was more frequent in Center B (88.6% vs 75.2%, p = 0.030). Anemia (75.4%), hypertension (74.9%), and diabetes (38.6%) were the most common comorbidities (Table 2).

Table 2. Clinical characteristics, comorbidities and hemodialysis parameters by study center (N = 171).

Variable	Center A (n = 101)	Center B (n = 70)	Total (N = 171)	p-value
Most common reported causes of kidney failure				
Hypertension	34 (33.7%)	20 (28.6%)	54 (31.6%)	0.481
Diabetes and hypertension	31 (30.7%)	17 (24.3%)	48 (28.1%)	—
Hemodialysis characteristics				
Arteriovenous fistula	78 (77.2%)	64 (91.4%)	142 (83.0%)	0.015
Four-hour dialysis session	84 (83.2%)	67 (95.7%)	151 (88.3%)	0.012
At least three sessions/week	74 (73.3%)	55 (78.6%)	129 (75.4%)	0.428
Dialysis duration > 1 year	76 (75.2%)	62 (88.6%)	138 (80.7%)	0.030
Comorbid conditions				
Anemia	—	—	129 (75.4%)	—
Hypertension	—	—	128 (74.9%)	—
Diabetes	—	—	66 (38.6%)	—
Bone disorder	—	—	23 (13.5%)	—
Respiratory disease	—	—	8 (4.7%)	—
Hepatitis C	—	—	7 (4.1%)	—
Nervous system disease	—	—	5 (2.9%)	—
Hepatitis B	—	—	1 (0.6%)	—
Other	—	—	26 (15.2%)	—

Note: Values are n (%). Comorbidity data are presented for the total cohort because regional stratification was limited by documentation protocols at the participating centers.

Physician-documented anxiety and depression were present in 56 (32.7%) and 55 (32.2%) participants, respectively, and were more frequent in Center A than Center B (48.5% vs 10.0% and 47.5% vs 10.0%, respectively; both p < 0.001) (Table 3).

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Received*: 09-09-2026 -* ***Accepted****: 07-11-2026 -* ***Published****: 16-11-2026*

Attahadi Medical Journal
2026;3(4):727-732
https://doi.org/10.69667/amj.26416

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Table 3. Physician-documented psychological outcomes and social-support patterns by study center.

Variable	Center A (n = 101)	Center B (n = 70)	Total (N = 171)	p-value
Physician-documented anxiety	49 (48.5%)	7 (10.0%)	56 (32.7%)	< 0.001
Physician-documented depression	48 (47.5%)	7 (10.0%)	55 (32.2%)	< 0.001
Social-support pattern				< 0.001
Family only	47 (46.5%)	15 (21.4%)	62 (36.3%)	
Family and friends	20 (19.8%)	51 (72.9%)	71 (41.5%)	
Friends only	2 (2.0%)	2 (2.9%)	4 (2.3%)	
Special care	20 (19.8%)	0 (0.0%)	20 (11.7%)	
Self-support	12 (11.9%)	2 (2.9%)	14 (8.2%)	

Note: Values are n (%). Percentages use the column totals. Anxiety and depression were ascertained from physician reports, with clarification from treating physicians when needed. Sources of social support were reported by participants.

Documented depression varied across reported social-support categories (p < 0.001). It was recorded in 23 of 62 participants reporting family-only support (37.1%), 10 of 71 reporting support from family and friends (14.1%), 3 of 4 reporting friends-only support (75.0%), 11 of 20 receiving special care (55.0%), and 8 of 14 reporting self-support (57.1%). Estimates for the smaller categories, particularly friends-only support, should be interpreted cautiously.

In the multivariable logistic regression model, the odds of physician-documented depression were higher in Center A than in Center B (adjusted odds ratio [aOR] 8.39, 95% CI 3.24–21.72, p < 0.001). Participants who reported no family involvement in support had higher odds of documented depression than those who reported family involvement (aOR 3.00, 95% CI 1.27–7.08, p = 0.012). Male sex was associated with lower odds (aOR 0.36, 95% CI 0.16–0.80, p = 0.013). Age was not significantly associated with documented depression (aOR per year 1.01, 95% CI 0.98–1.04, p = 0.399) (Table 4). The Hosmer–Lemeshow test yielded $\chi^2(8) = 8.52$, p = 0.385.

Table 4. Multivariable logistic regression of factors associated with physician-documented depression.

Variable	Adjusted odds ratio (95% confidence interval)	p-value
Center A vs Center B	8.39 (3.24–21.72)	<0.001
Male vs female	0.36 (0.16–0.80)	0.013
No family involvement vs family-involved support	3.00 (1.27–7.08)	0.012
Age, per year	1.01 (0.98–1.04)	0.399

Note: Reference categories were Center B, female sex, and family-involved support. Age was entered as a continuous variable.

Discussion

Principal Findings

This study identified differences in dialysis-care characteristics, reported social-support patterns, and physician-documented psychological diagnoses between two Libyan hemodialysis centers. Arteriovenous fistula use and four-hour dialysis sessions were more frequent in Center B, whereas documented anxiety and depression were more frequent in Center A. Treatment center and absence of family involvement were associated with documented depression in a model adjusting for age and sex. These associations describe the participating patients and centers and should not be interpreted as causal effects or nationally representative regional differences.

Variation in Dialysis Care

Arteriovenous fistula use and four-hour dialysis sessions were more common in Center B than Center A. Arteriovenous fistula is generally preferred for long-term hemodialysis because of its durability and lower infection burden compared with catheter access, although access decisions must remain individualized.6 Longer hemodialysis session duration has also been associated with better outcomes in observational research [7]. The between-center differences observed here may therefore reflect differences in local service organization, access pathways or clinical practice. Earlier evaluation of dialysis provision in Libya similarly identified regional variation in dialysis services [1].

The cohort also had a substantial burden of anemia, hypertension and diabetes, consistent with previous reports from Libyan kidney-care settings [8,9]. These comorbidities reinforce the need for multidisciplinary renal care that integrates dialysis delivery with ongoing assessment and management of chronic conditions.

Psychosocial Outcomes and Family Support

Documented anxiety and documented depression were each recorded in approximately one-third of participants. Psychological morbidity is well recognized among people receiving maintenance hemodialysis [2-4]. However, the

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Received: 09-09-2026 - **Accepted**: 07-11-2026 - **Published**: 16-11-2026

Attahadi Medical Journal
2026;3(4):727-732
https://doi.org/10.69667/amj.26416

outcomes in the present study were diagnoses recorded in medical files rather than results from standardized screening instruments; consequently, the findings represent documented clinical recognition rather than prevalence estimates based on systematic screening.

The between-center difference in documented depression requires cautious interpretation. Although the association persisted after adjustment for age, sex, and family involvement, these variables do not fully account for differences in patient characteristics or service organization. Dialysis vintage, session duration, vascular access, and socioeconomic characteristics were not included in the primary model. Differences in clinical recognition, access to psychological assessment, and documentation may also have contributed. The available data cannot determine the relative contribution of these explanations or establish that the observed difference represents a difference in underlying depression prevalence. The persistence of regional differences in service provision previously described in Libya provides a plausible contextual basis for further investigation]1].

Absence of family involvement in support was associated with approximately threefold higher odds of physician-documented depression. Previous research among people receiving hemodialysis has reported an inverse relationship between perceived family support and depressive symptoms [5]. Family members may provide emotional reassurance and practical support in managing the demands of long-term dialysis. Nevertheless, the present study measured the source of support rather than its intensity, quality, or adequacy; the finding should therefore be interpreted as an association with family involvement rather than proof that family-based support was necessarily stronger or more effective than other forms of support.

Male sex was associated with lower odds of physician-documented depression. This direction is consistent with recent evidence from people receiving maintenance hemodialysis in which significant depression was more frequent among women and female sex was independently associated with depression [10]. Sex differences may reflect biological, psychosocial, help-seeking, symptom-reporting, and clinical-recognition factors that were not directly assessed in this study.

Strengths and Limitations

A major strength of this study was the comparative assessment of people receiving maintenance hemodialysis in two geographically distinct Libyan centers. The study incorporated sociodemographic, clinical, dialysis-related, social-support, and physician-documented psychological variables, allowing regional differences to be examined across several dimensions of renal care. Data were obtained through both structured interviews and medical-record review, and the data-collection form was translated into Arabic, reviewed for linguistic clarity and consistency with the English version, and pilot-tested. Multivariable logistic regression was used to examine factors independently associated with physician-documented depression.

Several limitations should be considered. First, anxiety and depression were based on physician-documented diagnoses, with clarification from treating physicians when necessary, rather than assessment using a standardized study instrument. Although outcome information was complete, completeness does not establish uniformity of diagnostic assessment between centers. Differences in clinical recognition and documentation could therefore influence the findings. The application of recognized diagnostic criteria was not independently verified. Convenience sampling and the absence of an a priori sample-size calculation further limit the interpretation of the findings, particularly for comparisons involving small subgroups.

Second, the inclusion of only two centers limits generalizability. The participating centers should not be regarded as representative of all dialysis services in their respective regions or of Libya as a whole. Third, the cross-sectional design does not establish whether support patterns or clinical characteristics preceded the psychological diagnoses.

Fourth, the regression model adjusted for a limited set of covariates. Some collected clinical and socioeconomic variables were not included, while other potentially relevant factors were not measured. Residual confounding therefore remains possible. The wide confidence interval for the center association indicates substantial uncertainty in its magnitude.

Finally, social support was classified by source rather than assessed using a validated measure of quality, intensity, or perceived adequacy. Small numbers in some support categories limited detailed comparisons.

Implications for Clinical Practice

The findings support closer integration of psychosocial assessment into routine hemodialysis care. Standardized approaches to identifying and documenting anxiety and depression could improve clinical recognition, facilitate referral when needed, and make comparisons between renal units more meaningful. Renal-care teams should also consider routinely asking about the availability and source of social support, particularly where family involvement is absent.

Differences in arteriovenous fistula use and dialysis-session duration suggest that clinical and organizational processes may also vary between centers. Multidisciplinary review of local dialysis practices, combined with consistent clinical documentation and psychosocial assessment, may help identify modifiable gaps in care. These findings should be used to guide service evaluation rather than to attribute causality to treatment location.

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Received: *09-09-2026 -* ***Accepted:*** *07-11-2026 -* ***Published:*** *16-11-2026*

Attahadi Medical Journal
2026;3(4):727-732
https://doi.org/10.69667/amj.26416

Conclusion
Dialysis-care characteristics, reported social support, and physician-documented anxiety and depression differed between the two participating Libyan centers. Absence of family involvement was associated with documented depression after adjustment for center, age, and sex. These psychological findings reflect clinical diagnoses ascertained from records and treating physicians; they do not establish differences in underlying prevalence or causal relationships. Standardized psychological assessment and documentation, together with further evaluation of dialysis practices and support needs, could inform local service improvement. Larger multicenter studies using validated psychological and social-support measures are warranted.

Funding
This research received no external funding.

Competing Interests
The authors declare that they have no competing interests.

Data Availability Statement
The data that support the findings of this study are available from the corresponding author on reasonable request, subject to ethical and institutional requirements.
Generative AI use: During the preparation of this manuscript, the authors used ChatGPT (OpenAI) as an AI-assisted tool for language editing and to improve the clarity, organization, and presentation of portions of the manuscript. The authors reviewed, revised, and verified all AI-assisted content and take full responsibility for the scientific content, data, statistical analyses, interpretations, references, conclusions, and final version of the manuscript. ChatGPT was not used to generate study data or to perform the original statistical analyses.

Conflict of interest. Nil

References

1. Alashek WA, McIntyre CW, Taal MW. Provision and quality of dialysis services in Libya. Hemodial Int. 2011 Oct;15(4):444-52. doi: 10.1111/j.1542-4758.2011.00588.x.
2. Kimmel PL. Psychosocial factors in dialysis patients. Kidney Int. 2001 Apr;59(4):1599-613. doi: 10.1046/j.1523-1755.2001.0590041599.x.
3. Cukor D, Coplan J, Brown C, Friedman S, Cromwell C, Ericson A, et al. Anxiety disorders in adults treated by hemodialysis: a single-center study. Am J Kidney Dis. 2008 Jul;52(1):128-36. doi: 10.1053/j.ajkd.2008.02.300.
4. Khan A, Khan AH, Adnan AS, Syed Sulaiman SA, Mushtaq S. Prevalence and predictors of depression among hemodialysis patients: a prospective follow-up study. BMC Public Health. 2019 May 9;19(1):531. doi: 10.1186/s12889-019-6796-z.
5. Tezel A, Karabulutlu E, Sahin O. Depression and perceived social support from family in Turkish patients with chronic renal failure treated by hemodialysis. J Res Med Sci. 2011 May;16(5):666-73.
6. Allon M, Robbin ML. Increasing arteriovenous fistulas in hemodialysis patients: problems and solutions. Kidney Int. 2002 Oct;62(4):1109-24. doi: 10.1111/j.1523-1755.2002.kid551.x.
7. Swaminathan S, Mor V, Mehrotra R, Trivedi AN. Initial session duration and mortality among incident hemodialysis patients. Am J Kidney Dis. 2017 Jul;70(1):69-75. doi: 10.1053/j.ajkd.2016.11.017.
8. Alssageer MA, Saad MM, Mosbah OM. Prevalence of comorbidities, polypharmacy and drug-related problems among hospitalized patients with chronic kidney disease. Mediterr J Pharm Pharm Sci. 2023 Mar 31;3(1):51-63. doi: 10.5281/zenodo.7771698.
9. Gusbi E, Abrahem AF, Elfituri A, et al. Causes of end-stage renal disease among hemodialysis patients in Libya: a multicenter cross-sectional study. Libyan J Med Sci. 2021 Oct-Dec;5(4):139-43. doi: 10.4103/LJMS.LJMS_75_20.
10. Raghavan A, Billa V, Billa V. Factors contributing to the burden of depression amongst patients receiving hemodialysis at Public and Private Dialysis Centres. Indian J Nephrol. 2025 Jul-Aug;35(4):530-5. doi: 10.25259/IJN_199_2024.

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Received*: 09-09-2026 -* ***Accepted****: 07-11-2026 -* ***Published****: 16-11-2026*