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Quality of Life Among Chronic Hemodialysis Patients in the Taza Region, Morocco

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Abstract

Background and objectives: Chronic kidney disease (CKD) has been increasingly recognized as a significant worldwide public health concern. Quality of life (QoL) is an essential component in its management, particularly for patients undergoing hemodialysis. As the ultimate goal of public health is to enhance patients' QoL since it is associated with extended survival and improved treatment outcomes, nephrologists must systematically assess QoL and its determinants to optimize care. To achieve this objective, this study was conceived to assess and describe QoL of patients undergoing dialysis in a Moroccan population and identify sociodemographic and clinical factors affecting it.

Methods: Following a cross-sectional design, this study was conducted in the province of Taza, located in northeastern Morocco, across two dialysis facilities to ensure better representation of both public and private sectors. The study population included all patients undergoing treatment at both selected facilities during the study period (N = 120). The study collected data using a questionnaire divided into three main sections: socio-demographic characteristics, clinical data, and QoL, which was assessed using the Kidney Disease Quality of Life Short-Form (KDQoL-SF™) version 1.3, translated and validated in Moroccan dialect by Bouidida et al. The factors associated with KDQoL were determined by univariate analysis with appropriate statistical tests to assess the impact of various variables on the QoL of hemodialysis patients.

Results: A total of 120 chronic hemodialysis patients were included. The mean age of participants was 49.26 ± 16.02 years, with a male predominance. Hypertension and diabetes were the most prevalent comorbidities (31.7% and 25.8%, respectively). The overall global score of the KDQoL-SF™ was 60.83 ± 10.39. Patients aged 60 years or less (p-value < 0.001), as well as educated patients (p-value = 0.031), had significantly higher mean scores for the overall global score of the KDQoL-SF. Moreover, several clinical variables were also significantly associated with QoL. Notably, participants with diabetes (p-value < 0.001), hypertension (p-value = 0.002), or diabetic nephropathy (p-value < 0.001) reported significantly lower overall scores. Additionally, participants who had been receiving hemodialysis for six years or more (p-value = 0.008), as well as those having three sessions of HD or more (p-value < 0.001), reported lower scores of QoL. In this adjusted model, older age, rural residence, high number of weekly sessions, and diabetes were negatively associated with the KDQoL score.

Conclusion: Advanced age, rural residence, diabetes, and session frequency were significantly linked to poorer QoL. Our study showed that assessing QoL in chronic hemodialysis patients is highly valuable to guide clinicians in understanding the disease and treatment burden and its impact on dialysis patients' QoL.

Categories: Public Health, Nephrology
Keywords: chronic kidney disease, cross-sectional study, dialysis patients, end-stage renal disease, hemodialysis, kdqol, morocco, quality of life

Introduction

Chronic kidney disease (CKD) has been increasingly recognized as a significant worldwide public health concern. According to "The Kidney Disease: Improving Global Outcomes" (KDIGO), CKD is defined as abnormalities of kidney structure or function present for at least three months with implications for health. As the disease progresses and renal function declines, patients enter another phase known as end-stage renal disease (ESRD) [1].

Nearly 850 million people worldwide suffer from CKD, the majority of whom live in low-income countries (LLCs) and lower-middle-income countries (LMICs), and a substantial percentage of these individuals lack access to kidney disease diagnosis, prevention, or treatment [2]. CKD affects between 10% and 16% of the general adult population in Asia, Australia, Europe, and North America [3]. In Africa, the overall prevalence in the general population was 15.8% for CKD stages 1-5 and 4.6% for CKD stages 3-5 [4]. In Morocco, the MAREMAR (Maladies rénales chroniques au Maroc) study reported a CKD prevalence of 2.9% [5].

CKD ranked as the 16th leading cause of death in 2016 and is expected to be the fifth leading cause by 2040

[6]. Currently, there is a significant decrease in mortality of patients with CKD due to modern renal replacement therapy (RRT), especially hemodialysis [7]. In 2010, more than two million patients worldwide were undergoing RRT [8]. In Morocco, the number of patients undergoing hemodialysis (HD) was more than 32,838 in 2022, according to the Moroccan Society of Nephrology [9].

Patients suffering from ESRD are usually compelled to follow a lifetime RRT, either by dialysis (HD or peritoneal dialysis (PD)) or by renal transplantation. They usually complain about poor quality of life (QoL). Therefore, assessing QoL is essential for understanding the disease's overall impact, since it is associated with extended survival and improved treatment outcomes [10].

Unfortunately, dialysis patients' QoL has been the focus of very few studies in Morocco. Results show that patients undergoing maintenance HD have significantly impaired QoL across all domains, particularly physical and psychological health [11-13]. Our study provides updated local data on HD patients, aiming to explore their QoL using the KDQoL score and identify its associated factors, thereby contributing to the limited Moroccan evidence on QoL in this population.

Materials And Methods

Study design

Following a quantitative, analytical cross-sectional design, this study was conducted between September and October 2024 in the province of Taza, located in northeastern Morocco within the Fès-Meknès region, across two dialysis facilities to ensure better representation of both public and private sectors: the HD unit of the Ibn Baja Provincial Hospital Center (CHP) in Taza and a private HD center in the same city.

Study population

The study population included all patients undergoing treatment at both selected facilities during the study period, with every eligible individual invited to participate. All hemodialysis patients met the following inclusion criteria: age ⩾ 18 years old, duration of hemodialysis ⩾ 3 months, and patients able to communicate and provide consent to participate in the study. Patients unable to respond or in a coma, patients with psychiatric disorders, patients with serious comorbidities, terminal illnesses, or other severe medical conditions that could disproportionately affect their QoL, and non-consenting patients were excluded from the study.

Instruments and data collection

The study collected data using a structured questionnaire divided into three main sections: socio-demographic characteristics, clinical data, and QoL. The socio-demographic data included age, gender, marital status, education level, medical coverage, and living arrangements. Clinical parameters covered comorbidities (hypertension, diabetes, cardiovascular diseases, and systemic diseases), medical history, alcohol and tobacco use, underlying nephropathy, treatment duration, dialysis frequency, and vascular access.

QoL was assessed using the Kidney Disease Quality of Life Short-Form (KDQoL-SF™) version 1.3, translated and validated in the Moroccan dialect by Bouidida et al. [14]. It consists of two parts: the generic core and the specific core.

The Generic core was assessed using the Medical Outcome Study-Short Form 36; it intends to assess the general state of health of HD patients and has two dimensions: mental component summary (MCS) and physical component summary (PCS). It contains 36 items in different areas: physical function (10 items), general health (five items), pain (two items), role function (four items), social functioning (two items), well-being and role (three items), physical role (five items), and energy/tiredness (four items). Two summary scores are generated: the PCS and the MCS. The score was obtained using the mean value of the two obtained scores.

The specific core was assessed using the kidney disease-specific questionnaire (Kidney Disease Quality of Life - KDQoL-SFTM) and targets kidney disease-related concerns through the Kidney Disease Component Summary (KDCS). It includes 43 items across different domains: symptoms/dysfunctions related to the renal failure scale (12 items), effects/charges in connection with the renal failure scale (eight items), sleep (four items), the burden of kidney disease (four items), quality of social interactions (three items), work status (two items), sexual (two items), cognitive function (three items), dialysis staff encouragement (two items), social support (two items), and patient satisfaction (one item).

The eight generic scores, as well as the kidney disease-specific scores, are standardized on a scale from 0 to 100, where 0 represents the worst QoL and 100 the best. Thus, a low score indicates poor QoL, while a high score reflects better QoL. For the SF-36 questionnaire, a mean variation of at least 5 points is considered clinically significant.

Interviews were conducted face-to-face with patients during their HD sessions after obtaining their consent. The study objectives, response procedures, and the possibility of obtaining additional information were explained. Additionally, clinical data concerning the patients' end-stage chronic kidney disease (ESCKD) were extracted from their medical records. This dual approach ensured the accuracy and reliability of the information collected.

Statistical analysis

Data were stored and analysed at the Laboratory of Epidemiology, Clinical Research, and Public Health of the Faculty of Medicine and Pharmacy in Oujda, with data entry and statistical analysis performed using Statistical Product and Service Solutions (SPSS, version 21.0; IBM SPSS Statistics for Windows, Armonk, NY).

A descriptive analysis was conducted, presenting quantitative variables as means and standard deviations and qualitative variables as frequencies and percentages.

Factors associated with KDQoL were identified through univariable analysis using appropriate statistics to assess the impact of various variables on the QoL of HD patients. Mean comparison tests, such as Student's t-test for comparing two means and ANOVA for comparisons between more than two groups, were applied to evaluate differences in scores based on socio-demographic and clinical factors. All tests were two-tailed, with a p-value < 0.05 considered statistically significant.

Following this univariable analysis, a multiple linear regression model was performed to assess independent associations with the KDQoL score. Variables with a p-value < 0.20 in the univariate analysis were candidates for inclusion in the multivariate model. Backward stepwise multiple linear regression was then applied to determine factors independently associated with patients' QoL. The final model reported adjusted R^2, the F statistic from ANOVA for overall significance, and unstandardised B coefficients with 95% confidence intervals for significant predictors.

Results

Population characteristics

A hundred and twenty patients were included in our study. The mean age of participants was 49.26 ± 16.02 years. More than half of them were males (53.3%, n = 64), corresponding to a male-to-female ratio of 1.14. Among the 120 patients, more than half of them were married (54.2%, n = 65) and lived in rural areas (51.7%, n = 62). Most of them lived with their families (90.8%, n = 109) and had health insurance (98.3%, n = 118). Among the 120 participants, 48.3% (n = 58) had no formal education, while 22.5% (n = 27) had primary-level education, 20.8% (n = 25) had reached secondary school, and only 8.3% (n = 10) had attained tertiary education.

With respect to comorbidities, hypertension and diabetes were the most prevalent, affecting 31.7% (n = 38) and 25.8% (n = 31) of participants, respectively. Other comorbidities included cardiovascular diseases (7.5%) and systemic disorders (5.8%). The underlying nephropathy was diabetic in 20.8% (n = 25) of cases, vascular nephropathy in 26.7% (n = 32), glomerular disease in 18.3% (n = 22), polycystic kidney disease (PKD) in 9.2%, and nephropathy of unknown etiology in 26.7% (n = 32).

Among the 120 patients, 33.3% (n = 40) had been undergoing hemodialysis for six years or more, while 66.7% (n = 80) had been receiving it for between three and five years. Most patients (71.7%, n = 110) received hemodialysis three times or more per week, while 8.3% (n = 10) had one to two sessions. Additionally, 75.8% (n = 91) of participants had a distal arteriovenous fistula, 20.8% (n = 25) had a proximal fistula, and only 3.3% (n = 4) were using a tunnelled central venous catheter.

In the general core component (SF-36), the lowest mean score was observed in the PCS, with a mean score of 45.01 ± 23.35. In contrast, the MCS had higher scores, with a mean score of 60.97 ± 21.95. In the kidney disease-specific core, symptoms, cognitive function, social interactions, dialysis staff encouragement, and patient satisfaction reported the highest scores. Conversely, kidney disease effect, kidney disease burden, and sleep showed significant deterioration (Table *1*).

KDQoL-SF dimension	Mean score	SD
PCS	45.01	23.35
MCS	60.97	21.95
D09: Symptoms	75.48	15.25
D10: Kidney disease effect	56.12	19.85
D11: Kidney disease burden	49.77	24.31
D12: Work	30.8	29.8
D13: Cognitive function	75.13	18.49
D14: Social interactions	72.33	18.58
D15: Sexual function	62.94	26.96
D16: Sleep	38.22	11.07
D17: Social support	66.94	27.58
D18: Dialysis staff encouragement	72.5	22.77
D19: Patient satisfaction	70.97	18.77

TABLE 1: Mean scores for each subject of the three mean domains of the KDQoL-SF36 instrument among the studied hemodialysis patients (N = 120)

KDQoL-SF: Kidney Disease and Quality of Life Short Form; PCS: Physical Component Summary; MCS: Mental Component Summary; SD: standard deviation

The overall global score of the KDQoL-SF™ v1.3, which reflects the combined impact of both general health and kidney disease-specific domains, was 60.83 ± 10.39.

Patients aged 60 years or less had significantly higher mean scores for the overall global score of the KDQoL-SF, PCS, and MCS components than older participants (p-value < 0.001). Regarding education, results showed that educated participants reported significantly higher QoL scores only in the PCS component (p-value < 0.001) and the global KDQoL-SF score (p-value = 0.031). Rural residence was significantly associated with a poorer QoL for the overall global score (p-value = 0.013), PCS (p-value = 0.039), and MCS (p-value = 0.010) (Tables *2*-*3*).

Variable	Group	Mean	SD	T-test	p-value
Age (years)	≤60	51.94	20.96	4.83	<0.001
	>60	32.12	22.27		
Gender	Male	45.07	22.06	-0.032	0.974
	Female	44.93	24.94		
Marital status	Married	41.24	23.78	1.94	0.054
	Unmarried	49.46	22.23		
Educational level	Uneducated	35.38	20.82	-4.75	<0.001
	Educated	54.01	22.09		
Place of residence	Urban	49.55	23.5	2.09	0.039
	Rural	40.76	22.58		
Diabetes	Diabetic	31.11	17.35	4.71	<0.001
	Non-diabetic	49.85	23.3		
Hypertension	Hypertensive	35.5	23.77	3.15	0.002
	Non-hypertensive	49.41	21.93		
Diabetic nephropathy	Yes	31.9	18.8	-3.28	0.001
	No	48.45	23.29		
Duration of dialysis	3-6 years	50.09	20.99	3.53	<0.001
	≥6 years	34.84	24.75		
Frequency of dialysis/week	1-2 sessions	71.12	9.86	3.91	<0.001
	≥3 sessions	42.63	22.78		

TABLE 2: Factors associated with the physical component summary (PCS)

Variable	Group	Mean	SD	T-test	p-value
Age (years)	≤60	63.37	22.61	1.64	0.103
	>60	56.52	20.17		
Gender	Male	59.07	22.99	1.01	0.312
	Female	63.15	20.68		
Marital status	Married	58.87	21.76	1.14	0.25
	Unmarried	63.46	22.11		
Educational level	Uneducated	57.12	19.16	-1.81	0.062
	Educated	64.58	23.86		
Place of residence	Urban	66.28	20.83	2.62	0.01
	Rural	56.01	21.97		
Diabetes	Diabetic	49.21	21.3	3.64	<0.001
	Non-diabetic	65.07	20.7		
Hypertension	Hypertensive	53.16	22.22	2.72	0.007
	Non-hypertensive	64.6	20.98		
Diabetic nephropathy	Yes	47.7	22.05	-3.56	<0.001
	No	64.47	20.65		
Duration of dialysis	3-6 years	63.18	22.38	1.56	0.121
	≥6 years	56.57	20.63		
Frequency of dialysis/week	1-2 sessions	74.32	8.94	2.03	<0.001
	≥3 sessions	59.76	22.4		

TABLE 3: Factors associated with the mental component summary (MCS)

Beyond demographic factors, several clinical variables were also significantly associated with QoL. Notably, participants with diabetes, hypertension, or diabetic nephropathy reported significantly lower QoL across all three domains (Global KDQoL SF36, MCS, and PCS; Table *4*). Additionally, participants who had been receiving hemodialysis for six years or more, as well as those having three sessions of HD or more, reported lower scores of QoL. In contrast, there was no significant effect on scores regarding gender, marital status, and site access.

Variable	Group	Mean	SD	T-test	p-value
Age (years)	≤60	59.54	15.84	3.8	<0.001
	>60	48.28	14.79		
Gender	Male	55.01	16.7	0.426	0.671
	Female	56.29	16.03		
Marital status	Married	53.43	16.96	1.59	0.114
	Unmarried	58.17	15.32		
Educational level	Uneducated	50.38	14.41	-3.55	<0.001
	Educated	60.49	16.63		
Place of residence	Urban	59.4	15.99	2.52	0.013
	Rural	52.05	15.98		
Diabetes	Diabetic	46.03	13.42	4.02	<0.001
	Non-diabetic	58.94	16		
Hypertension	Hypertensive	48.94	16.89	3.15	0.007
	Non-hypertensive	58.69	15.21		
Diabetic nephropathy	Yes	45.84	14.45	-3.51	<0.001
	No	58.17	15.89		
Duration of dialysis	3-6 years	58.38	15.92	2.71	0.008
	≥6 years	50.04	15.91		
Frequency of dialysis/week	1-2 sessions	71.26	7.83	3.29	<0.001
	≥3 sessions	54.18	16.18		

TABLE 4: Factors associated with the Global KDQoL-SF score

KDQoL-SF: Kidney Disease Quality of Life Short-Form

Multivariable analysis

In the multivariable linear regression, an exploratory model included all univariable significant variables and clinically relevant covariates: age, gender, marital status, educational level, place of residence, medical insurance coverage, number of weekly hemodialysis sessions, treatment duration, diabetes, and hypertension.

Backward stepwise selection was applied to the exploratory model. This yielded a final model that retained statistically significant and clinically important variables: age, place of residence, number of weekly sessions, diabetes, duration of dialysis, and marital status. The model explained approximately 31.5% of the variance of the KDQoL score.

In this adjusted model, advanced age, rural residence, high number of weekly sessions, diabetes, long duration of dialysis, absence of medical insurance, and single marital status were negatively associated with KDQoL score, as shown in Table 5.

Variable	B coefficient	95% CI	p-value
Age			
< 60 years	Ref.		
≥ 60 years	-8.97	(-14.34; -3.60)	0.001
Place of residence			
Urban	Ref.		
Rural	-7.6	(-12.58; -2.63)	0.003
Frequency of dialysis sessions (per week)			
1-2 sessions	Ref.		
≥ 3 sessions	-10.02	(-19.29; -0.75)	0.034
Diabetes mellitus			
No	Ref.		
Yes	-12	(-17.75; -6.25)	<0.001
Duration of dialysis			
3-6 years	Ref.		
≥ 6 years	-4.17	(-9.73; 1.39)	0.14
Marital status			
Married	Ref.		
Single	-4.33	(-9.26; 0.60)	0.085

TABLE 5: Multiple linear regression analysis of the KDQOL score (N = 120)

Adjusted for the following variables: age, gender, educational level, marital status, place of residence, diabetes, hypertension, number of dialysis sessions, and duration of dialysis treatment.

B coefficient: unstandardized regression coefficient; CI: confidence interval for β; Ref: reference category; KDQOL: Kidney Disease Quality of Life

Discussion

Kidney disease represents a mounting global challenge, affecting vulnerable populations to a disproportionate extent and resulting in elevated costs to individuals, healthcare systems, and society as a whole [3]. In CKD patients receiving hemodialysis, improving QoL is a primary care objective aligning with modern nephrology recommendations [15].

In this study, the mean score of KDQoL was 60.83 ± 10.39 points, indicating moderately impaired QoL. Our findings are consistent with those reported in South Africa [16], in Tunis [17], and in Vietnam [18], which yielded scores of 65.1 ± 11.7, 55.22 ± 18.49, and 51.3 ± 13.0 points, respectively. Conversely, regional Moroccan investigations, including those in Souss-Massa (40.74 ± 9.44) [13] and Kenitra (47.07 ± 14.91) [19], have reported substantially lower scores, indicating considerably worse health-related QoL among hemodialysis patients.

This study revealed that patients undergoing hemodialysis demonstrated substantially impaired physical health (45.01 ± 23.35), while mental health scores were relatively preserved (60.97 ± 21.95). This could be explained by the significant impact of chronic hemodialysis on patients' physical abilities, particularly through chronic fatigue, functional limitations, and associated comorbidities. On the other hand, many patients appear to gradually develop psychological coping mechanisms that enable them to better manage their chronic condition. The significant family and social support in our context could also contribute to this relative preservation of mental well-being. These findings are consistent with several studies conducted among patients on chronic hemodialysis [11,19,20].

Furthermore, the highest subscale scores were observed for symptoms, cognitive function, social interactions, dialysis staff encouragement, and patient satisfaction, while kidney disease burden and

sleep lagged markedly behind, with sleep displaying the greatest relative impairment. These findings are consistent with several studies reporting similar patterns of greater physical impairment compared to mental health domains [9,17,19]. Conversely, while certain studies indicate marked deterioration in social support, dialysis staff encouragement, and patient satisfaction subscales, our results align with Moroccan investigations reporting the highest scores in these domains [9,19].

In our study, several factors emerged as independently associated with QoL among chronic hemodialysis patients in the multivariate analysis. Older age was significantly associated with poorer QoL; this finding has been consistently reported in previous studies, reflecting the cumulative burden of comorbidities and functional limitations observed in older patients. Place of residence was also found to be a determinant, with patients living in rural areas reporting lower QoL compared to those in urban areas. This may be due to restricted access to healthcare services, longer travel distances to dialysis centers, and limited resources. Furthermore, the number of hemodialysis sessions per week was independently associated with QoL. This could be due to the significant physical toll imposed by repeated dialysis sessions. Chronic hemodialysis frequently leads to post-dialysis fatigue, reduced physical capacity, and limitations in daily activities, all of which contribute significantly to a decline in QoL [21].

Diabetes mellitus retained its significance as a predictor after adjustment, confirming its impact as a major comorbidity adversely affecting QoL. This is likely due to the significant burden of diabetes-related complications and comorbidities, particularly cardiovascular, neurological, and vascular conditions, which exacerbate functional limitations and impair overall health, and thus reduce patients' QoL [22].

Although neither dialysis duration nor marital status were independently associated with QoL in the adjusted model, they were still included as confounding variables in the final model. Several studies have shown that marital status is significantly associated with the QoL of hemodialysis patients, with patients living with a spouse generally reporting higher QoL scores, likely due to the emotional, social, and financial support provided by their partner [23]. Similarly, dialysis duration is consistently identified as a factor independently influencing QoL, with some studies showing a progressive decline linked to the accumulation of physical complications and the chronic burden of treatment, while others suggest a long-term psychological adaptation effect [24-27].

Strengths and limitations

Several limitations should be acknowledged. First, the cross-sectional design of the study means that its results only show the association of factors with KDQoL, rather than providing causal inferences. Second, the study focused on patients from one Moroccan region, potentially introducing selection bias due to local healthcare access or cultural factors influencing self-reported QoL. Third, reliance on self-reported KDQoL measures may introduce response bias, and unmeasured confounders could influence results despite multivariable adjustment.

However, even though our study presents several limits, its strengths should be acknowledged. First, this study design provides a snapshot of the hemodialysis situation at a single point in time, enabling associations to be examined and hypotheses to be generated. Second, its relatively large sample size provided sufficient data to assess QoL and explore its associations. It is also worth noting that our study uses a validated instrument, KDQoL, to assess patients' QoL.

Conclusions

This is the first study that was conducted in this region of Morocco that aimed to assess the QoL of patients undergoing hemodialysis. Advanced age, rural residence, diabetes, hypertension, diabetic nephropathy, and frequent dialysis sessions were associated with lower QoL. Awareness of the global burden of hemodialysis is crucial for acceptance by the community, policymakers, and public health groups, leading to a commitment to implementing public health approaches that improve health outcomes and QoL.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Stevens PE, Ahmed SB, Carrero JJ, et al.: KDIGO 2024 clinical practice Guideline for the evaluation and management of chronic kidney disease. Kidney Int. 2024, 105:S117-314. 10.1016/j.kint.2023.10.018
2. Francis A, Harhay MN, Ong AC, et al.: Chronic kidney disease and the global public health agenda: an international consensus. Nat Rev Nephrol. 2024, 20:473-85. 10.1038/s41581-024-00820-6
3. Bikbov B, Purcell CA, Levey AS, et al.: Global, regional, and national burden of chronic kidney disease, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2020, 395:709-33. 10.1016/S0140-6736(20)30045-3
4. Kaze AD, Ilori T, Jaar BG, Echouffo-Tcheugui JB: Burden of chronic kidney disease on the African continent: a systematic review and meta-analysis. BMC Nephrol. 2018, 19:125. 10.1186/s12882-018-0930-5
5. De Broe ME, Gharbi MB, Elseviers M: Maremar, prevalence of chronic kidney disease, how to avoid over-diagnosis and under-diagnosis. Nephrol Ther. 2016, 12:S57-63. 10.1016/j.nephro.2016.02.013
6. Foreman KJ, Marquez N, Dolgert A, et al.: Forecasting life expectancy, years of life lost, and all-cause and cause-specific mortality for 250 causes of death: reference and alternative scenarios for 2016-40 for 195 countries and territories. Lancet. 2018, 392:2052-90. 10.1016/S0140-6736(18)31694-5
7. Turaev SZI, Rakhimov S: Assessment of the quality of life in patients with chronic kidney disease in the practice of hemodialysis. J Mod Educ Achiev. 2023, 6:6.
8. Liyanage T, Ninomiya T, Jha V, et al.: Worldwide access to treatment for end-stage kidney disease: a systematic review. Lancet. 2015, 385:1975-82. 10.1016/S0140-6736(14)61601-9
9. Chrifi Alaoui A, Touti W, Al Borgi Y, Sqalli Houssaini T, El Rhazi K: Comparison of quality of life in end-stage renal disease patients undergoing hemodialysis and peritoneal dialysis in a Moroccan city. Semin Dial. 2022, 35:50-7. 10.1111/sdi.13034
10. Jankowska-Polanska B, Uchmanowicz I, Wysocka A, Uchmanowicz B, Lomper K, Fal AM: Factors affecting the quality of life of chronic dialysis patients. Eur J Public Health. 2017, 27:262-7. 10.1093/eurpub/ckw193
11. Bakzaza B, Lemmih H, Rachiq S, Raoui SM: Quality of life of patients with end-stage renal disease undergoing hemodialysis in Morocco: cross-sectional study. Ann Afr Med. 2026, 25:590-5. 10.4103/aam.aam_136_25
12. Tran PQ, Nguyen NT, Nguyen B, Bui QT: Quality of life assessment in patients on chronic dialysis: comparison between haemodialysis and peritoneal dialysis at a national hospital in Vietnam. Trop Med Int Health. 2022, 27:199-206. 10.1111/tmi.13709
13. Boukhira I, Jidane S, Belyamani L: Associations of socio-demographic, clinical, and biochemical parameters with quality of life among hemodialysis patients in Morocco. Middle East J Rehabil Health Stud. 2022, 9:122559. 10.5812/mejrh-122559
14. Bouidida B, Rhou H, Ezaitouni F, et al.: Translation, cultural adaptation and validation of the kidney disease quality of life-short form 1.3 in an African country. Transplant Proc. 2014, 46:1295-301. 10.1016/j.transproceed.2014.02.011
15. Gebrie MH, Asfaw HM, Bilchut WH, Lindgren H, Wettergren L: Health-related quality of life among patients with end-stage renal disease undergoing hemodialysis in Ethiopia: a cross-sectional survey. Health Qual Life Outcomes. 2023, 21:36. 10.1186/s12955-023-02117-x
16. Tannor EK, Archer E, Kapembwa K, van Schalkwyk SC, Davids MR: Quality of life in patients on chronic dialysis in South Africa: a comparative mixed methods study. BMC Nephrol. 2017, 18:4. 10.1186/s12882-016-0425-1
17. Nasr M, Hadj Ammar M, Khammouma S, Ben Dhia N, Ghachem A: Haemodialysis and its impact on the quality of life. Nephrol Ther. 2008, 4:21-7. 10.1016/j.nephro.2007.07.008
18. Doan KV, Nguyen HT, Nguyen NT, Dang KC, Yang SH, Duong TV: Associations of socio-demographic, clinical and biochemical parameters with healthcare cost, health- and renal-related quality of life in hemodialysis patients: a clinical observational study. Int J Environ Res Public Health. 2020, 17:6552. 10.3390/ijerph17186552
19. Touil D, Boulam A, El Harchaoui I, Louragli I, Aouane M, Ahami AOT: Quality of life and its generating factors in hemodialysis patients hospitalized at the Regional Hospital Idrissi Kénitra Morocco. Acta Neuropsychol. 2022, 20:67-79. 10.5604/01.3001.0015.8110
20. Al Salmi I, Kamble P, Lazarus ER, D'Souza MS, Al Maimani Y, Hannawi S: Kidney disease-specific quality of life among patients on hemodialysis. Int J Nephrol. 2021, 2021:8876559. 10.1155/2021/8876559
21. Bossola M, Hedayati SS, Brys AD, Gregg LP: Fatigue in patients receiving maintenance hemodialysis: a review. Am J Kidney Dis. 2023, 82:464-80. 10.1053/j.ajkd.2023.02.008

22. Osthus TB, von der Lippe N, Ribu L, Rustøen T, Leivestad T, Dammen T, Os I: Health-related quality of life and all-cause mortality in patients with diabetes on dialysis. BMC Nephrol. 2012, 13:78. 10.1186/1471-2369-13-78
23. Molsted S, Wendelboe S, Flege MM, Eidemak I: The impact of marital and socioeconomic status on quality of life and physical activity in patients with chronic kidney disease. Int Urol Nephrol. 2021, 53:2577-82. 10.1007/s11255-021-02826-6
24. Shumbusho G, Hategeka C, Vidler M, Kabahizi J, McKnight M: Health related quality of life of patients undergoing in-centre hemodialysis in Rwanda: a cross sectional study. BMC Nephrol. 2022, 23:345. 10.1186/s12882-022-02958-6
25. Islam G, Shah GH, Saeed N, Jones JA, Karibayeva I: A cross-sectional multivariable analysis of the quality of hemodialysis patients' life in Lahore City, Pakistan. Healthcare (Basel). 2025, 13:186. 10.3390/healthcare13020186
26. Rączewski S, Caban W, Lemiszewska N, Kuncewicz M, Mosakowska M, Kotwica-Strzałek E, Niemczyk S: Beyond dialysis adequacy: transportation time and pain as quality-of-life predictors in Polish hemodialysis patients-a single-center study. J Clin Med. 2026, 15:1423. 10.3390/jcm15041423
27. Gutiérrez-Peredo GB, Martins MT, da Silva FA, Lopes MB, Lopes GB, Lopes AA: Functional dependence and the mental dimension of quality of life in hemodialysis patients: the PROHEMO study. Health Qual Life Outcomes. 2020, 18:234. 10.1186/s12955-020-01464-3