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Quality of Life of Chronic Hemodialysis Patients at the Chu-R and Chu-RN of N'Djamena, Chad

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Abstract

Introduction: End-stage renal disease (ESRD) is a major public health problem, particularly in developing countries. Chronic hemodialysis, the main replacement method, significantly affects patients' quality of life. In Chad, no study had previously evaluated this aspect. The objective was to assess the quality of life of chronic hemodialysis patients. **Patients and Methods:** This was a cross-sectional, descriptive, and analytical study conducted over a period of 12 months (May 2024 to April 2025) in the nephrology and hemodialysis departments of the Renaissance University Hospital Center and the National Reference University Hospital Center of N'Djamena. All patients over 18 years of age who had been undergoing chronic hemodialysis for more than three months were included in the study. Their quality of life (QoL) was assessed using the validated KQDOL-SF36 questionnaire. The variables studied were sociodemographic, clinical, paraclinical, and therapeutic. The data were analyzed using SPSS 27.0, with a significance threshold set at $p < 0.05$. Ethical and administrative considerations were respected. **Results:** Out of 96 hemodialysis patients, 68 were included in the study, representing a prevalence of 70.8%. The average age was 43.7 years with a sex ratio of 1.4. The age group of 36 to 45 years represented 35.3% (n = 24). Arterial hypertension was the most common comorbidity, with 89.7% (n = 61). Regarding treatment, 76.5% (n = 52) received two hemodialysis sessions per week, while 11.8% (n = 8) received three. For 92.6% (n = 63) of these patients, each session lasted four hours. The average overall QoL score was 66.18 out of 100. Physical functioning (26.85/100) and the burden of the chronic kidney disease (26.47/100) were the most impaired dimensions. Factors associated with a significant impairment in quality of life included age, education level, frequency of hemodialysis, anemia, and hypoalbuminemia. **Conclusion:** This study highlights a marked deterioration

in the quality of life of chronic hemodialysis patients in Chad, with multiple socio-clinical and biological determinants. Improving care conditions and psychosocial support are essential to optimize their experience.

Keywords

Chronic Hemodialysis, Quality of Life, KDQOL-SF36, Chad

1. Introduction

According to KDIGO 2023, chronic kidney disease (CKD) is defined by the presence, for more than 3 months, of biological, morphological, or histological renal abnormalities. Chronic kidney failure is defined by a reduction in glomerular filtration rate (GFR) < 60 ml/min/1.73 m^2 persisting for more than 3 months [1]. CKD evolves into 5 stages of severity according to the GFR, and end-stage renal disease (ESRD) represents the ultimate stage when the GFR is less than 15 ml/min/1.73 m^2, requiring replacement treatment, essentially hemodialysis in our context. According to the World Health Organization (WHO), quality of life (QoL) is an individual's perception of their position in life in the cultural context and the value system in which they live, in relation to their goals and concerns [2]. Data from studies conducted in France [3], Madagascar [4], and Congo [5] have shown that hemodialysis significantly alters several dimensions of quality of life, notably physical, psychological, and social. In Chad, no study to date has specifically assessed the QoL of patients on chronic hemodialysis, hence the interest of this work, the objective of which was to conduct an analytical study of the impact of chronic hemodialysis on the quality of life of patients at the CHU-R and CHU-RN of N'Djamena based on the validated KDQOL-SF36 questionnaire (Kidney Disease Quality Of Life Short-Form 36) [6].

2. Patients and Methods

This was a cross-sectional, multicenter, descriptive, and analytical study conducted over a period of 12 months (May 2024 to April 2025) in two hemodialysis units of two tertiary hospitals in N'Djamena: the Nephrology and Hemodialysis Department of the CHU-R and the CHU-RN, which are two level 3 hospitals. Patients aged 18 years or older who were undergoing chronic hemodialysis and had provided informed consent were included in the study. Chronic hemodialysis was defined as the patient's duration of more than 3 months on hemodialysis. Patients on hemodialysis for less than three months or those who did not provide consent were excluded. The KDQOL-SF36 questionnaire was used to measure patients' quality of life. It combines the SF36, the generic part with 8 dimensions (physical functioning, limitations due to physical condition, physical pain, perceived health, limitations due to mental condition, mental health/psychological well-being, life and social relationships, vitality) and the KDQOL, the kidney disease-specific part

with 11 dimensions (physical symptoms and problems, effects of kidney disease, burden of kidney disease, quality of social interaction, cognitive functions, sexual function, quality of sleep, social support, professional status, encouragement/support from the dialysis team). Patients' answers were converted into a score ranging from 0 to 100, where a global score below 70 defined an impaired quality of life. The variables studied were sociodemographic (age, sex, marital status, level of education), clinical (history/background, associated signs, duration of hemodialysis, number of hemodialysis sessions per week, duration of each session), paraclinical (hemoglobin level, C-reactive protein, calcemia, phosphatemia, albuminemia) and therapeutics (calcium channel blockers, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, blood transfusion, iron, erythropoietin, phosphate binders, calcium). Data The data were entered and managed using Word and Excel 2016 and subsequently analyzed by SPSS software version 27.0. A p-value of less than 0.05 was considered statistically significant.

3. Results

Of the 96 hemodialysis patients screened, 68 were included in the study, for a prevalence of 70.8%. The mean age was 43.7 years, with extremes ranging from 18 to 75 years. The sex ratio was 1.4 (40 men). The age group 36 to 45 years was represented with 35.3% (n = 24). The most common comorbidities were arterial hypertension 89.7% (n = 61) and diabetes 10.3% (n = 7). The duration of hemodialysis was between 3–12 months in 45.6% (n = 31), with 76.5% (n = 52) and 11.8% (n = 8) of patients who benefited respectively from 2 and 3 hemodialysis sessions per week, of which 92.6% (n = 63) had a duration of 4H per session and 57.4% (n = 39) had an arteriovenous fistula (AVF) as vascular access.

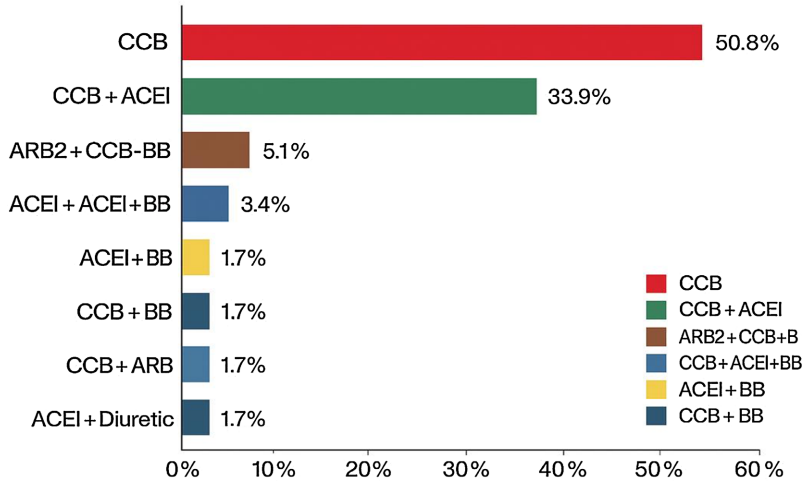
Clinically, 66 patients (97.1%) were noted to have clinical anemia; 86.8% of patients (n = 59) had headaches; 44 patients (64.7%) had cramps, and 36.8% of patients (n = 25) had pruritus.

Paraclinically, all patients 100% (n = 68) presented with anemia (hemoglobin < 11 g/dl). Phosphataemia and C-reactive protein (CRP) were elevated in 37.0% (n = 25) and 35.3% (n = 24) of cases, respectively. Hypoalbuminemia was observed in 34.0% (n = 23) of patients and hypocalcemia in 37.0% (n = 25) of cases.

Therapeutically, 50.8 % of patients (n = 35) were treated with a calcium channel blocker, and 33.9 % of patients (n = 23) were taking the combination of angiotensin-converting enzyme inhibitor (ACE) and calcium channel blocker (CCB) (see Figure 1).

The quality-of-life measurement found that the overall mean KDQOL-SF36 scores of all patients ranged from 17 to 74, with a mean of 51.66 and a mean overall score of 66.18/100 (see Table 1).

The univariate study showed a correlation between the occurrence of an alteration in QoL with the following 12 variables: age (43.3 ± 14.9 years) ($p < 0.01$), marital status ($p < 0.001$), education level ($p < 0.005$), family situation ($p < 0.001$), inactivity ($p < 0.001$), catheter vs. AVF ($p < 0.03$), financial barriers ($p < 0.03$),



CCB (Calcium Channel Blockers); ACEI (Angiotensin-Converting Enzyme Inhibitors); ARB2 (Angiotensin Receptor Blocker type 2); BB (Beta-Blockers). Duiretic.

Figure 1. Distribution of patients according to therapeutic modalities.

Table 1. Distribution of mean scores by dimension of the KDQOL-SF36 of hemodialysis patients.

Components	Dimensions	Average score (/100)
Physical health	Physical functioning (PF)	26.85
	Physical Condition Limitations (PCL)	17.06
	Physical pain (PP)	48.72
	Perceived health (PH)	62.24
Mental health	Limitations due to mental state (LMS)	58.82
	Mental Health/Psychological Well-being (MH)	53.53
	Life and social relations (LSR)	46.69
	Vitality (V)	53.53
KD Specific	Physical Symptoms and Problems (PSP)	71.32
	Effects of KD (EKD)	46.23
	Burden of KD (BKD)	26.47
	Quality of Social Interaction (QSI)	59.75
	Cognitive functions (CF)	46.23
	Sexual function (SF)	59.75
	Sleep quality (SQ)	63.53
	Social Support (SS)	76.96
	Professional status (PS)	24.27
	Dialysis team encouragement/support (DTE)	74.76
Overall QoL score		**66.18**

Table 2. Factors influencing the QOL of chronic hemodialysis patients.

Variables	Affected KDQOL-SF domains	P-value
Age (43.3 ± 14.9 years)	Physical functioning (PF)	0.01
	Mental Health (MH)	0.03
	Burden of KD (BKD)	0.02
	Overall score	0.08
Education level (60% illiterate)	Overall satisfaction with care (OSC)	0.005
	Dialysis team encouragement/support (SE)	0.04
Family situation (92.6% in family)	Social Support (SS)	0.001
Inactivity (97.1% inactive)	Professional status (PS)	0.001
	Physical functioning (PF)	0.01
	Overall QoL score	0.02
Catheter vs. AVF	Effects of KD (EKD)	0.03
Financial barriers	Effects of KD (EKD)	0.03
Haemoglobin < 11 g/dL (100%)	Physical functioning (PF)	0.001
	Vitality (V)	0.005
High CRP (52.2%)	Burden of KD (BKD)	0.03
Low albuminemia (74.2%)	Physical functioning (PF)	0.002
Low blood calcium (51%)	Physical pain (PP)	0.04
High phosphatemia (53.2%)	Physical pain (PP)	0.03
Dialysis frequency (76.5% at 2 sessions/week)	Burden of MR (BMR)	0.001

anemia ($p < 0.001$), High CRP ($p < 0.03$), hypoalbuminemia ($p < 0.02$), hypocalcemia ($p < 0.001$), dialysis frequency (2 sessions/week) ($p < 0.001$) (Table 2).

4. Discussion

Limitations of the study include the expression of significant fatigue during the dialysis session, making it difficult for them to participate immediately in the survey, data collection in a shared dialysis room without privacy, and heterogeneous level of education.

The prevalence of patients on chronic hemodialysis in this study was 70.83%. This prevalence rate is close to that of Alhajim in Iraq in 2017 [7], who found 70%. However, Tannor in Ghana in 2020 [8] reported a prevalence higher than 95%.

Young age is represented in our study with a range of 36–45 years and an average age of approximately 43.7 years ± 14.9 years, with extremes ranging from 18 to 75 years. This result is similar to that of Yaya [9] in Senegal in 2019, which reports an average age of 43.3 ± 14.9 years. This can be explained, on the one hand, by the growing presence among young adults' comorbidities, including high blood pressure and diabetes, which are causes of chronic kidney disease [10]

worldwide, and, on the other hand, by infectious diseases such as HIV and hepatitis B and C in our context. This slice age group of 36 - 45 years is significantly associated with impaired physical functioning (p = 0.01), mental health (p = 0.03), and kidney disease burden (p = 0.02). These results contrast with those of Sukandar *et al.* [11] in Indonesia in 2019 observed no correlation between age and quality of life (p = 0.082).

The majority of patients undergo 2 hemodialysis sessions per week, *i.e.*, 76.5%. This high frequency in our study can be explained by the logistical constraints (only 2 hemodialysis centers in Chad) compared to the number of chronic renal failure patients, limiting the frequency to 2 sessions per week, far from the 3 recommended sessions [12]. The frequency of hemodialysis sessions in our study significantly influenced the burden of kidney disease (p = 0.001). This could be explained by the fact that under-dialysis would expose patients to complications of chronic uremia, including asthenia, insomnia, nausea and vomiting, and pruritus, among others, thereby impairing their quality of life [13].

Anemia, which is a common complication of chronic kidney disease due to reduced renal production of erythropoietin, was found in 100% of patients in our study and significantly impairs physical functioning (p = 0.001). Our result can be explained by the difficulty of access to erythropoiesis-stimulating agents (ESAs) due to their high cost compared to the average income of our patients, as well as nutritional deficiencies, blood loss during hemodialysis sessions, and limited access to adequate hemodialysis [14].

Hypocalcemia is present in 51%. These phosphocalcic metabolism disorders in our study are explained by several factors characteristic of resource-limited countries. These include suboptimal dialysis (reduced frequency and insufficient duration of sessions), limited access to phosphorus binders, calcium supplementation and active vitamin D, which could be explained by the fact that most patients on chronic hemodialysis are poor and these products are expensive [15].

In our study, the average overall quality of life (QoL) score measured by the KDQOL-SF36 is 66.18/100. The lowest mean KDQOL scores were in the areas of "professional status" and "burden of kidney disease". These are exactly the same observations made by Yaya *et al.* [9] (2019). The domain of "physical functioning" (FP = 26.85) and "limitations due to physical condition" (LEP = 17.06) are particularly low.

5. Conclusion

This study, conducted among chronic hemodialysis patients in two reference university hospitals in N'Djamena, highlights a significant deterioration in their quality of life, with a low average overall score measured by the KDQOL-SF36. The most affected areas are physical functioning, kidney disease burden, professional status, and physical limitations. Several factors significantly influence this quality of life, including age, education level, anemia, hypoalbuminemia, frequency of dialysis sessions, and patients' social and economic conditions. These results high-

light the urgent need for comprehensive, multidisciplinary care for chronic hemodialysis patients in Chad, integrating not only medical treatment but also nutritional, psychological, and social support.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Abbreviation

KDIGO	Kidney Disease Improving Global Outcomes
KDQOL-SF36	Kidney Disease Quality of Life Short Form-36
CKD	Chronic Kidney Disease
GFR	Glomerular Filtration Rate
ESRD	End-Stage Renal Disease
WHO	World Health Organization
CHU-R	Renaissance University Hospital Center
CHU-RN	National Reference University Hospital Center