International Journal of Nephrology Research

ISSN Print: 2664-6692
ISSN Online: 2664-6706
Impact Factor (RJIF): 6.22
IJNR 2025; 2025; 7(2): 41-45
www.nephrologyjournal.in
Received: 15-07-2025
Accepted: 18-08-2025

Kadiatou Mamadou Bobo Barry
Gamal Abdel Nasser
University of Conakry Guinea

Amadou Yaya Diallo
Gamal Abdel Nasser
University of Conakry Guinea

Mamadou Saliou Baldé
Gamal Abdel Nasser
University of Conakry Guinea

Aly Traoré
Gamal Abdel Nasser
University of Conakry Guinea

Soriba Bangoura
Gamal Abdel Nasser
University of Conakry Guinea

Mohamed Lamine Tégui Camara
Gamal Abdel Nasser
University of Conakry Guinea

Mohamed Lamine Kaba
Gamal Abdel Nasser
University of Conakry Guinea

Alpha Oumar Bah
Gamal Abdel Nasser
University of Conakry Guinea

Corresponding Author:
Kadiatou Mamadou Bobo Barry
Gamal Abdel Nasser
University of Conakry Guinea

End-stage chronic kidney disease: Epidemiological and clinical aspects at donka university hospital

Kadiatou Mamadou Bobo Barry, Amadou Yaya Diallo, Mamadou Saliou Baldé, Aly Traoré, Soriba Bangoura, Mohamed Lamine Tégui Camara, Mohamed Lamine Kaba and Alpha Oumar Bah

DOI: https://www.doi.org/10.33545/26646692.2025.v7.i2a.32

Abstract
Introduction: The objective was to describe the epidemiological and clinical profile of patients with chronic renal failure in the nephrology department of the Donka University Hospital Center.
Materials and Methods: We conducted a retrospective descriptive study in which we included all complete records of patients labeled as having chronic renal failure with a glomerular filtration rate < 15 ml/min/1.73 m2 hospitalized in the nephrology department of the Donka University Hospital.
Results: The prevalence of end-stage renal disease was 96% among these patients.
The average age was 46 years, with 113 men and 93 women, 34% housewives, 26% civil servants, and 83% married.
The main cardiovascular risk factors found were dominated by hypertension (91%), followed by gender (55%).
The top three presumed causes of CRF were chronic glomerulonephritis (40%), benign nephroaniosclerosis (28%), and diabetic nephropathy.
In terms of paraclinical findings, the average hemoglobin level was 7 g/dL, the average creatinine level was 1124 µmol/L, and the average glomerular filtration rate was 5 mL/min. Hypocalcemia was present in 80% of cases and renal atrophy in 86%.
There were 116 cases of uremic poisoning. The immediate outcome was marked by a 20% mortality rate, with a correlation between metabolic acidosis, uremic pericarditis, and death.
Conclusion: The prevalence of end-stage chronic kidney disease is significant and constantly growing, affecting young, economically active adults in our context.

Keywords: End-stage chronic kidney disease, guinea

Introduction
Chronic kidney disease (CKD) is a major contributor to morbidity and mortality from noncommunicable diseases, and must be actively addressed to achieve the United Nations Sustainable Development Goal of reducing premature mortality from noncommunicable diseases by one-third by 2030 [1].
Globally, more than 5 million people die each year due to lack of access to essential treatments for kidney disease. By 2040, chronic kidney disease is expected to be the fifth leading cause of death worldwide. Kidney disease is particularly difficult to treat because it is pathologically diverse and often asymptomatic. As such, kidney failure is often diagnosed late, and the global burden of kidney failure continues to be underestimated [2].
End-stage chronic kidney disease is the final stage of kidney failure. It is a major global public health issue due to its morbidity and mortality rates [3].
The incidence of this condition has continued to increase over time.
In France, in 2018, there were nearly 90,000 patients with end-stage chronic kidney disease undergoing treatment [4].
End-stage chronic kidney disease (ESCKD) in Africa accounts for 4 to 22% of deaths in Burkina Faso. In Mali, the prevalence of CRF rose from 1.9% in 1990 to 12.8% in 2003, and is currently 20.1% in hospitals. In Côte d'Ivoire, ESRD is the second leading cause of death in the internal medicine department of the Treichville University Hospital Center (CHU) [4].
In Guinea, the prevalence of end-stage chronic kidney disease was 65% in 2014 [5].

The objective was to describe the epidemiological and clinical profile of patients with chronic renal failure in the nephrology department of Donka National Hospital.

Methods

We conducted a retrospective descriptive study over a five-year period from July 1, 2016, to June 30, 2021, in which we included all complete records of patients labeled as having chronic kidney disease with a glomerular filtration rate < 15 mL/min/1. 73 m2 hospitalized in the nephrology department of Donka National Hospital.

The glomerular filtration rate was calculated using the MDRD (Modification of Diet in Renal Disease) formula.

The eligibility criteria for each case were that it must contain the following tests: serum creatinine, blood urea, complete blood count, calcium, urine strip test, urine cytology and bacteriology, electrocardiogram, fundus examination, and abdominal and pelvic ultrasound.

Recruitment was exhaustive.

Variables Studied

The variables studied were:

- **Epidemiological:** Prevalence of CRF, gender, age, occupation, and marital status;
- **Clinical:** Reasons for consultation, cardiovascular risk factors (hypertension, male gender, age > 50 in men and ≥ 60 in women, diabetes, smoking and tobacco use), causal nephropathies, complications of CRF, therapeutic and evolutionary variables.
- **Paraclinical:** Hemoglobin level in g/dL, creatinine level in µmol/L, urea in mmol/L, calcium level in mmol/L, and kidney size in millimeters (mm).
- Chronic kidney disease (CKD) has been defined according to KDIGO 2012 (Kidney Disease: Improving Global Outcomes).
- End-stage chronic kidney disease: defined as a glomerular filtration rate < 15 ml/min/1.73 m2 estimated using the MDRD formula and persisting for three (3) months or more (KDIGO 2012).

High blood pressure (HBP) was defined according to WHO criteria.

In the absence of renal biopsies, the etiological classification of renal failure was based on clinical and paraclinical evidence. We therefore selected:

- **Chronic glomerular nephropathies:** In the presence of long-standing and/or recurrent edema syndrome, glomerular proteinuria ≥ 2 g/24 hours, with or without hematuria.
- **Benign nephroangiosclerosis:** This was selected on the basis of hypertension lasting at least three (3) years, often with visceral involvement (left ventricular hypertrophy, stage I or II Kirkendall hypertensive retinopathy) and poor urinary syndrome (absent proteinuria or ≤ l g/24 h, without hematuria or leukocyturia, and hypertensive retinopathy).
- **Diabetic nephropathy:** This is a glomerular nephropathy specific to diabetes. It is diagnosed when microalbuminuria of 30 to 300 mg/24 hours or proteinuria ≥ 2 g is associated with diabetic retinopathy at the back of the eye.
- **Chronic tubulointerstitial nephropathies:** Were selected based on a history of repeated urinary tract infections, long-term use of nephrotoxic drugs, chronic obstructive disease, a history of malformative uropathy associated with tubular proteinuria (≤ 1 g/24 h) and leukocyturia without bacteria.
- **Vascular nephropathies:** These include a range of heterogeneous diseases characterized by damage to the renal vessels. They are considered when hypertension is the primary symptom, followed by proteinuria ≤ 1 g/24.
- **Undetermined nephropathies:** These include nephropathies that cannot be classified based on clinical and paraclinical evidence.
- Polycystic kidney disease: this is based on a family history of kidney cysts, large kidneys whose contours are distorted by multiple bilateral cysts, with or without hepatic cysts.
- **Treatment:** This included conservative treatment of CRF (antihypertensive drugs, calcium + vitamin D3, parathyroid hormone inhibitors, iron supplementation, erythropoietin, potassium and phosphorus chelators, loop diuretics, blood transfusions) and renal replacement therapy by hemodialysis.

Data Analysis

Data entry, collection, and the creation of tables and figures were carried out using Word 2010 and Excel 2013 software.

Data analysis was performed using Statistical Package for Social Science (SPSS) version 20 software. For quantitative variables, we calculated the mean and standard deviation; for qualitative variables, we verified the association between one variable and the other parameters. The association was considered significant when the p-value was < 5%.

Difficulties and Limitations

Incomplete records and the absence of renal biopsies were the main difficulties and limitations we encountered.

Ethical considerations: the data were used for purely scientific purposes.

Results

Of the 214 hospital records with a diagnosis of chronic renal failure, 206 were in the terminal stage, representing a prevalence of 96% of end-stage renal failure in these patients.

We noted 113 men versus 93 women, with a mean age of 46 ± 12.9 years, ranging from 22 to 75 years, 34% housewives, 26% civil servants, and 83% married.

Table 1: Sociodemographic characteristics of patients

Sociodemographic characteristics	Workforce (N =206)	Percentage
Gender		
Male	113	55
Female	93	45
Age		
20-34	48	23
35-49	74	36
50-64	66	32
65-79	18	9
Occupation		
Housewives	70	34
Civil servants	53	26
Shopkeepers	41	20
Manual workers	23	11
Farmers	11	5
Pupils/students	8	4
Marital status		
Married	171	83
Single	25	12
Widowed	10	5

The reasons for consultation were elevated creatinine levels (89%), vomiting (81%), physical asthenia (70%), anorexia (58%), and hiccups (53%).
The main cardiovascular risk factors identified were dominated by hypertension (91%), gender (55%), age (30%), diabetes (20%), and smoking (20%).

Chronic glomerulonephritis (40%) was the most common presumed cause of CRF, followed by benign nephroaniosclerosis and diabetic nephroaniosclerosis, with respective frequencies of 28% and 13%. However, we observed 7% of cases of undetermined nephropathy, as shown in Table 2.

Table 2: Distribution of patients according to presumed causes of renal failure

Causal Kidney Diseases	Workforce	Percentage
Chronic glomerulonephritis	83	40
Benign nephroangiosclerosis	57	28
Diabetic nephropathy	27	13
Vascular nephropathies	14	7
Undetermined nephropathies	14	7
Chronic tubulointerstitial nephropathies	9	4
Polycystic kidney disease	1	1
Total	206	100

In terms of paraclinical findings, the average hemoglobin level was 7g/dl, the average creatinine level was 1124µmol/l with an average glomerular filtration rate of 5 ml/min, ranging from 1 ml to 8 ml/min. Hypocalcemia was present in 80% of cases and renal atrophy in 86%.
Complications of renal failure were dominated by uremic poisoning (116 cases), followed by hyperkalemia (42 cases) and acute pulmonary edema (25 cases).

Only 55% of patients received replacement therapy by hemodialysis.
The immediate outcome was marked by 12% discharge against medical advice and 20% death.
We found a correlation between metabolic acidosis, uremic pericarditis, and death (Table 3).

Table 3: Correlation between complications of CRF and clinical outcome

Complications of CRF	Evolution				
	Improved	Discharge against medical advice	Death	Total	P- value
Uremic poisoning					
No	58	14	18	90	0,377
Yes	82	11	23	116	
Total	140	25	41	206	
Acute pulmonary edema					
No	125	22	34	181	0,31
Yes	15	3	7	25	
Total	140	25	41	206	
Hyperkalemia					
No	112	20	32	164	0,9433
Yes	28	5	9	42	
Total	140	25	41	206	
Metabolic acidosis					
No	135	21	36	192	0,0264
Yes	5	4	5	14	
Total	140	25	41	206	
Uremic pericarditis					
No	136	21	37	194	0,0441
Yes	4	4	4	12	
Total	140	25	41	206	

Discussion

Of the 214 hospital records with a diagnosis of chronic kidney disease, 206 were in the end-stage, representing a prevalence of 96%.
This result is higher than that reported by Kaba M.L. in 2015 in Guinea, who observed that among a group of 424 patients with chronic kidney disease, that 289 of them (68%) were in the terminal stage of the disease [6], as well as that reported by Bah AO in Guinea, who reported 64% ESRD in 2014 [5]. These data do not reflect the situation of ESRD in the general population, as very few patients have access to the nephrology department located in the capital. This result shows that end-stage chronic kidney disease is a very common disease in our population and that its prevalence is increasing.
Similar results were reported by Tia M.W. in Côte d'Ivoire and Maiga D. in Mali, who reported frequencies of 91% and 87% respectively [7, 8].
The predominance of males during IRCT, as in our context, has been observed by several African authors, with frequencies varying from one author to another [6, 9, 3, 10].
The average age of 46 years in our series is consistent with that reported by Ramilitiana in Madagascar and Gbaguidi in Benin, who reported average ages of 39 years and 45.44 years, respectively [10, 11]. This result shows that CKD affects young adults in Africa but differs from data from Western

and Eastern countries, where the frequency of chronic kidney disease increases with age. CKD affects 28% of people over 65 in France, only 5% of 20-39 year olds in Taiwan, compared to 37% of people over 60 [12].

The main cardiovascular risk factors identified in our study were high blood pressure (91%), male gender (55%), advanced age (30%), diabetes (20%), and smoking (20%).

In the study by Ramilitiana *et al*., conducted in Madagascar, high blood pressure was also the predominant risk factor (59.83%), followed by smoking (38.49%), age (24.26%), and diabetes (13%) [10].

The reasons for consultation were elevated creatinine levels (100%), vomiting (81%), physical asthenia (70%), anorexia (58%), and hiccups (53%).

Maiga reported the following reasons for consultation: vomiting 57.9%, headaches 55.8%, dyspnea 49.2%, dizziness 37.6%, tinnitus 25.4%, and oligoanuria 21.8% [8].

In our series, the presumed etiologies of chronic kidney disease (CKD) were dominated by chronic glomerulonephritis (40%), followed by benign nephroangiosclerosis (27%), diabetic nephropathy (13%), nephropathies of undetermined etiology (7%), tubulointerstitial nephropathies (4%), and, more rarely, polycystic kidney disease (1%).

In comparison, in the study conducted by Kaba M.L. in Guinea in 2015, vascular nephropathy was the main cause (67%), ahead of chronic glomerulonephritis (7.3%), diabetic nephropathy (7%), and nephropathies of unknown etiology (16.3%) [6].

For their part, Ramilitiana *et al*., in Madagascar in 2016, reported a predominance of chronic glomerulonephritis (36.64%), followed by benign nephroangiosclerosis (32.44%), diabetic nephropathy (12.6%), and chronic interstitial nephritis (10.69%) [10].

In Tunisia, a retrospective, multicenter, descriptive study conducted in patients undergoing hemodialysis between July and December 2018, all of whom had been on hemodialysis for at least three months, identified chronic glomerulonephritis (47.8%), diabetic nephropathy (25.9%), chronic tubulo-interstitial nephropathy (20%), and vascular nephropathy (16.1%). The etiology remained undetermined in 16.1% of cases [3].

In our context, the weakness of the technical platform, rendering renal biopsy unavailable, could partly explain the relatively high proportion of indeterminate nephropathies.

In our series, the main complications found were uremic poisoning (116 cases), hyperkalemia (42 cases), acute pulmonary edema (25 cases), metabolic acidosis (14 cases), uremic pericarditis (12 cases), uremic encephalopathy (7 cases), and uremic coma (5 cases). This high frequency of complications can be explained by the often delayed management of patients admitted at an advanced stage of chronic renal failure.

Of the 206 patients included in our study, 116 (55%) received renal replacement therapy by hemodialysis. No patients had access to peritoneal dialysis or kidney transplantation, as these treatment options are not yet available in our country.

This frequency is significantly higher than that reported by Ramilitiana in Madagascar, where, in 2016, only 1.26% of 239 patients had received hemodialysis [10]. By comparison, in the United States, the number of dialysis patients was estimated at 650,000 in 2010 [10].

Although chronic kidney disease is a global public health problem, access to renal replacement therapy remains very uneven, depending mainly on socioeconomic status and the resources available in each country.

We recorded 41 deaths, representing a mortality rate of 20%.

This result is identical to that of Bah A.O. *et al*. in the same department, who found a mortality rate of 20% [5].

Among the complications of CRF, we found a statistically significant association between mortality and metabolic acidosis (P-value: 0.0264) as well as uremic pericarditis (P-value: 0.044).

Conclusion

The prevalence of end-stage chronic kidney disease is significant. It affects mainly young, economically active males, with glomerulonephritis being the primary cause. Access to renal replacement therapy was only 55%, with a mortality rate of 20%.

Acknowledgments

My sincere thanks to our mentors and the entire team at the Nephrology-Hemodialysis-HTA and Systemic Diseases Department at Donka.

Conflict of interest

There is no conflict of interest.

Informed Consent Statement

All authors listed on this article agree to the publication of this article in your journal.

References

1. Bikbov B, Purcell CA, Levey AS, Smith M, Abdoli A, Abebe M, *et al*. Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. The Lancet. 2020 Feb;395(10225):709-733.
2. Luyckx VA, Al-Aly Z, Bello AK, Bellorin-Font E, Carlini RG, Fabian J, *et al*. Sustainable Development Goals relevant to kidney health: an update on progress. Nat Rev Nephrol. 2021 Jan;17(1):15-32.
3. Chaabouni Y, Yaich S, Khedhiri A, Zayen MA, Kharrat M, Kammoun K, *et al*. Profil épidémiologique de l'insuffisance rénale chronique terminale dans la région de Sfax. Pan Afr Med J [Internet]. 2018 [cited 2024 Apr 14];29:64. Available from: http://www.panafrican-med-journal.com/content/article/29/64/full/
4. N'Zoue KS, Manan SYB, Mankoh YCK, Toure M, N'Goran MK, Konan SD, *et al*. Paludothérapie chez l'insuffisant rénal chronique. Néphrologie Thérapeutique. 2021 Dec;17(7):520-525.
5. Bah AO, Balde MC, Diallo TA, Bah KH. Morbidité et mortalité hospitalières dues à l'insuffisance rénale chronique dans un pays dont l'accès à la dialyse est limité. Néphrologie Thérapeutique. 2014 Sep;10(5):394-399.
6. Kaba ML, Amm N, F D, Ao B, M T, I C, *et al*. Prévalence de l'insuffisance rénale chronique terminale traitée à Conakry. Néphrologie Thérapeutique. 2015 Sep;11(5):362-367.
7. Tia MW, Nda JK, Kouame GR, Kobenan R, Daingui D, Ouattara B, *et al*. Insuffisance rénale chronique: Aspects épidémiologique, diagnostique, thérapeutique

et évolutif au CHU de Bouaké de 2016 à 2020. Revue Africaine de Médecine Interne. 9:60-66.
8. Maïga D, Goïta D, Samaké M, Dolo AM. Aspects épidémiologiques et cliniques de l'insuffisance rénale chronique dans le service médical de l'hôpital de Sikasso. Revue Ouverte de Néphrologie. 2023 Mar;13(1):1-8.
9. Tokpanoude CNI, Ahoui S, Georgia DB, Djossou SEE, Djibo S, Agossoukpe B, *et al*. Epidemiological, Clinical and Therapeutic Aspects of Chronic Renal Failure at the Departmental University Hospital of Borgou and Alibori (CHUD/B-A) in Parakou (Benin). OALib. 2023;10(10):1-14.
10. Ramilitiana B, Ranivoharisoa EM, Dodo M, Razafimandimby E, Randriamarotia WF. Une étude rétrospective sur l'incidence de l'insuffisance rénale chronique dans le service de Médecine Interne et Néphrologie du Centre Hospitalier Universitaire d'Antananarivo. Pan Afr Med J [Internet]. 2016 [cited 2025 Aug 31];23:141. Available from: http://www.panafrican-med-journal.com/content/article/23/141/full/
11. Gbaguidi G, Houehanou CY, Amidou SA, Vigan J, Houinato DS, Lacroix P. Insuffisance rénale chronique: prévalence et facteurs associés dans une population rurale au Bénin. Néphrologie Thérapeutique. 2020 Sep;16(5):252-258.
12. Naicker S. Challenges for nephrology practice in Sub-Saharan Africa. Nephrol Dial Transplant. 2010 Mar 1;25(3):649-650.

How to Cite This Article
Barry KMB, Diallo AY, Saliou M, Baldé, Traoré A, Bangoura S, Camara MLT, Kaba ML, Bah AO. End-stage chronic kidney disease: Epidemiological and clinical aspects at donka university hospital. International Journal of Nephrology Research 2025; 7(2): 41-45.