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RESEARCH ARTICLE

Loss to Follow-Up in Pediatric Nephrology: Associated Factors at Yopougon University Hospital

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Abstract

Introduction: Loss to follow-up in children with kidney disease—defined in our context as an interruption of care exceeding three months without medical or administrative justification—compromises both treatment and prognosis. This study aimed to identify factors associated with follow-up discontinuation in pediatric nephrology at the Yopougon University Hospital.

Method: A prospective and analytical study was conducted among children initially followed in the department between 2016 and 2020 and subsequently lost to follow-up. Data were extracted from medical records and supplemented by telephone interviews. Multivariate analysis was performed using SPSS ($p < 0.05$).

Results: Of the 127 children included, 70 participated (61.4%). Nephrotic syndrome was the predominant condition (65.7%). Discontinuation was often motivated by a perceived improvement in health (45.7%). Factors associated with non-resumption of care included residence outside Abidjan (OR = 2.63), low parental education level (OR = 1.92), logistical constraints (OR = 3.41), a diagnosis other than nephrotic syndrome (OR = 1.68), and a clinically stable condition. Social difficulties reflected precarious family contexts.

Conclusion: Discontinuation of follow-up care stems from organizational, social, and perceptual determinants. Targeted strategies are needed to strengthen continuity of care.

Keywords: Loss to follow-up, Pediatric Nephrology, Child, Côte d'Ivoire

1. Introduction

According to the World Health Organization (WHO), a patient is considered lost to follow-up when they fail to return for consultations within a defined timeframe, without formal justification (death, transfer, voluntary discontinuation), thereby compromising continuity of care and distorting performance indicators [1]. In chronic diseases, a three-month threshold is often used in resource-limited countries, although it is not officially standardized [1].

In sub-Saharan Africa, loss to follow-up rates among children with chronic conditions can exceed 50% [2], reflecting the challenges of maintaining connections between families and healthcare facilities in contexts marked by poverty, mobility, and low health literacy.

Pediatric follow-up relies on close coordination between families, healthcare professionals, and hospital structures, but this continuity is often hindered by social, economic, and organizational factors, leading to diagnostic delays, treatment interruptions, or avoidable hospitalizations, with sometimes severe clinical consequences [3,4]. The use of traditional medicine and systemic limitations further exacerbate this vulnerability [5].

In pediatric nephrology, the required regular monitoring exposes children to follow-up disruptions,

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compromising their development and access to care [6,7]. Yet, in West Africa, data on the profiles of children lost to follow-up and the reasons for abandonment remain limited.

At the University Hospital of Yopougon, an internal study conducted in 2020 revealed a loss to follow-up rate of 65.6% in pediatric nephrology. The present study aims to identify the factors associated with this discontinuity in order to propose contextually appropriate solutions for Côte d'Ivoire.

2. Materials and Methods

We conducted a prospective and analytical study at the pediatric nephrology unit of the University Hospital of Yopougon (CHU de Yopougon), which was temporarily relocated to the National Institute of Public Health in Adjamé. Affiliated with the medical pediatrics department, this unit serves as the national referral center for pediatric renal diseases in Côte d'Ivoire, within a resource-limited setting.

The study focused on children aged 0 to 15 years who were newly admitted and followed for a renal condition at CHU de Yopougon between January 2016 and December 2020. Patients who had attended at least two consultations and whose follow-up had been interrupted for more than three months without medical or administrative justification were considered lost to follow-up, in accordance with regional criteria [5,8,9], and were included.

Selection was based on the review of medical records. Cases with insufficient clinical data, unusable telephone contacts, or explicit refusal to participate by legal guardians were excluded. When telephone contact was possible, verbal consent was obtained in accordance with principles of confidentiality and voluntary participation, followed by a structured interview with the family. Data from medical records were supplemented by these interviews, allowing documentation of family profile, diagnosis, care trajectory, events preceding the discontinuation, clinical status at the time of contact, reported reasons, and outcome of the re-engagement attempt.

The data were anonymized and entered into Excel and SPSS, then analyzed in three stages:

- Univariate descriptive analysis (means, standard deviations, proportions)
- Bivariate analyses (χ^2, Fisher's exact test, Student's t-test) to explore associations between return to consultation and explanatory variables
- Multivariate logistic regression for significant variables, with estimation of odds ratios (OR), 95% confidence intervals, and a significance threshold set at $p < 0.05$.

Two complementary analyses were conducted: one compared children in remission with those in active disease phase at the time of abandonment; the other examined links between certain social variables (education, employment, family structure) and pre-abandonment difficulties (non-adherence, low attendance, financial constraints), using cross-tabulation association tests.

3. Results

Between January 2016 and December 2020, a total of 519 children were registered, of whom 127 were classified as "lost to follow-up." Following telephone outreach, 70 children were included in the study, representing a participation rate of 61.4%. (Figure 1)

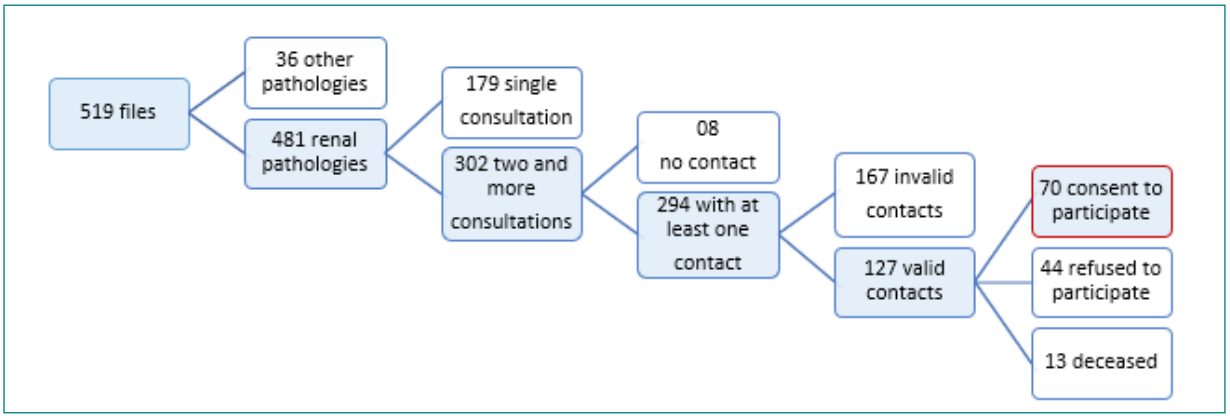

Figure 1. *Flow diagram – Selection process of included children lost to follow-u*

3.1 Characteristics of Children and Family Context

Among the included children, 61.4% were male. The age group of 5 to 14 years accounted for 47.1% of cases. Ivorian nationality was reported for 83.7% of the children, of whom 74.3% resided in Abidjan. Primary

education level was reported in 61.8% of cases. The average age of mothers was 35.6 ± 6.2 years, and that of fathers was 45.5 ± 8.1 years. Secondary education was observed in 44.3% of mothers, and higher education in 45.7% of fathers. Employment was not reported for 57.1% of mothers. In 72.9% of cases, the child lived with both parents.

3.2 Clinical Data, Follow-up Disruption, and Post-Abandonment Status

Nephrotic syndrome accounted for 65.7% of cases, followed by congenital anomalies of the kidney and urinary tract (CAKUT: 10%) and glomerulonephritis (8.6%). Other etiologies included 2 cases of chronic kidney disease, 1 acute kidney injury, 1 HIV-associated nephropathy, 1 isolated proteinuria, 4 renal lithiasis, and 2 cases of enuresis. The average duration of follow-up was 392.6 ± 343 days. Corticosteroids were the most commonly prescribed treatment (67.1%).

Prior to discontinuation, 37.1% of medical records did not mention any contributing factor. Reported difficulties included adverse effects (22.9%), non-adherence (15.7%), socioeconomic constraints (12.9%), and poor attendance (10%). At the time of abandonment, 44.3% of children with nephrotic syndrome were in remission, 38.6% were receiving corticosteroids, and 32.8% were following a hygienic-dietary approach. Eight children with CAKUT were awaiting surgery (8.6%). Two children had a history of previous follow-up interruption.

Telephone interviews revealed the main reasons for abandonment as: perceived satisfactory improvement (45.7%), consultation with another healthcare provider (20%), relocation (7%), and death (11.4%). No cases of stigmatization or explicit refusal of care were reported. Following the call, general health status was considered good in 85.7% of cases, although 70% were no longer following the prescribed treatment. A new consultation was accepted by 55.7% of families.

3.3 Factors Associated with Non-Resumption of Follow-Up

Among the 70 children included, 33 (47.1%) did not resume consultations. The factors significantly associated with non-resumption are listed in the following table:

Table I. *Factors Associated with Non-Resumption of Medical Follow-Up*

Analyzed Variable	n (cases with non-resumption of follow-up)	OR	95 % CI	p-value
Residence outside Abidjan	18	2,63	[1,35 – 5,12]	0,004
Parental education < secondary level	20	1,92	[1,01 – 3,61]	0,045
Logistical constraints cited as reason	21	3,41	[1,62 – 7,17]	0,001
Type of pathology (excluding nephrotic syndrome)	19	1,68	[1,05 – 2,69]	0,030
Perception of stable or improved condition	17	2,15	[1,07 – 4,34]	0,032

3.4 Determinants of Medical Follow-Up Discontinuation Among Children in Remission

Among the 46 children followed for nephrotic syndrome, 20 were in remission. Discontinuation of follow-up within this subgroup was associated with specific determinants presented in Table II.

Table II. *Determinants of Medical Follow-Up Discontinuation Among Children in Remission*

Analyzed Variable	In remission (n=20)	Active phase (n=26)	p-value
Reason for abandonment: perceived recovery	65 %	38 %	0,017
verage follow-up duration (in days)	504 ± 283	328 ± 182	0,008
Treatment received: corticosteroids only	70 %	48 %	0,046
Parental education level ≥ secondary	58 %	32 %	0,021
Reported financial constraints	20 %	27 %	0,39

Link Between Family Characteristics and Pre-Abandonment Difficulties
The most significant statistical associations are summarized in Table III.

Table III. *Summary of Associations Between Family Variables and Pre-Abandonment Difficulties*

Family Variable	Associated Difficulty	OR	IC 95 %	p-value
Parental education < secondary level (n = 38)	Therapeutic non-adherence (n=12)	2,67	[1,09 – 6,55]	0,031
Unemployed mother (n = 40)	Low attendance at consultations (n = 9)	2,12	[1,02 – 4,41]	0,045
Single-parent household (n = 19)	Reported financial constraints (n = 7)	3,06	[1,19 – 7,89]	0,021

4. Discussion

This study, conducted in a resource-limited setting, aimed to identify factors associated with discontinuation of medical follow-up in pediatric nephrology, where interruptions compromise clinical trajectories [10].

The results highlight an interplay between clinical, familial, organizational, and perceptual factors. The main drivers identified were misperception of recovery, logistical constraints, low parental education level, and single-parent households. The observed resumption rate (55.7%) underscores the potential effectiveness of targeted outreach, as demonstrated by the experience at CHU Charles-De-Gaulle [11].

The absence of documented explanations in 94.3% of medical records reflects a lack of traceability, hindering early detection of follow-up disruptions and calling for monitoring tools aligned with recommended standards [12,13]. Although not formally standardized by WHO, the three-month threshold remains relevant given the consultation rhythm and risks associated with interruption [14]. The use of traditional medicine, though frequent, remains difficult to quantify [15].

Two social factors significantly influenced adherence: parental education below secondary level (OR = 2.67; p = 0.031) and maternal unemployment (OR = 2.12; p = 0.045), reflecting increased vulnerability to traditional beliefs and reduced exposure to public health messaging [16–18].

Single-parent households were associated with financial constraints (OR = 3.06; p = 0.021), often linked to limited professional integration and restricted access to institutional support [19,20].

Nephrotic syndrome was predominant (65.7%), with 44.3% of affected children in remission at the time of abandonment. The perception of a stable condition, cited as the main reason for discontinuation (45.7%), was significantly associated with non-resumption of follow-up (OR = 2.15; p = 0.032). Children in remission had longer follow-up durations (504 vs. 328 days; p = 0.008) and a stronger perception of recovery (65% vs. 38%; p = 0.017), suggesting a gradual disengagement [21].

Among the included children, 47.1% did not resume consultations. Associated factors included residence outside Abidjan (OR = 2.63; p = 0.004), low parental education level (OR = 1.92; p = 0.045), logistical constraints (OR = 3.41; p = 0.001), and diagnoses other than nephrotic syndrome (OR = 1.68; p = 0.030). Consulting another provider (20%) or relocating (7%) reflected a fragile connection with our unit, also observed at CHU Charles-De-Gaulle [22].

The observed resumption rate confirms the value of proactive outreach. This involves implementing early-warning protocols based on social and geographic indicators (single-parent households, residence outside Abidjan, low education level), as well as strengthening community-based support in peripheral areas. Tailored to local realities, such strategies could sustainably reduce loss to follow-up. In line with ORKiD recommendations on pediatric nephrology transition, a structured and anticipatory approach would better support at-risk children and prevent follow-up disruptions [23].

5. Conclusion

This study shows that several factors contribute to discontinuation of follow-up in pediatric nephrology, notably parental education level, family structure, and perception of recovery. The observed resumption rate indicates that targeted outreach is feasible if at-risk children are identified early.

Implementing transition protocols, with alert tools and community-based support, could strengthen continuity of care. It is also essential to tailor interventions to the social realities of families and improve follow-up traceability.

Finally, educational interventions initiated at the first signs of clinical improvement could help limit disengagement. Further studies focused on family perceptions and care practices would help refine support strategies and reinforce community engagement.

Author Contributions

Lasme-Guillao BE: study conception, manuscript writing, scientific supervision.

Ehilé-Kacou AMS: co-writing of the manuscript, validation of data collection and analysis.

Bouah-Kamon NE, Diarrassouba G: critical review of the manuscript.

Yapin TE: data collection.

Asse KV: critical review of the manuscript, scientific supervision.

Conflicts of Interest

The authors declare no conflicts of interest.

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