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Profile of Pediatric Neurology Consultations at The University Clinics of Kinshasa Retrospective Descriptive Study From 2018 To 2023

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ABSTRACT

Neurological disorders in children represent a major public health challenge, especially in resource-limited countries where infectious, perinatal, and genetic causes remain common. Pediatric neurology, a medical specialty dedicated to diagnosing and managing neurological conditions in children, helps guide clinical and preventive interventions.

Keywords: Pediatric Neurology, Neurology Consultations, Children, Child Health, Clinical Profile

Introduction

Neurological disorders in children represent a major public health challenge, especially in resource-limited countries where infectious, perinatal, and genetic causes remain common. Pediatric neurology, a medical specialty dedicated to diagnosing and managing neurological conditions in children, helps guide clinical and preventive interventions. In the Democratic Republic of Congo (DRC), few studies describe the profile of pediatric neurology consultations in referral hospital settings [1]. This retrospective descriptive study aims to analyze the sociodemographic, clinical, and outcome characteristics of children consulting the pediatric neurology department of the University Clinics of Kinshasa (CUK) from January 2018 to January 2023.

Methodology

Study Setting

This study was carried out in the pediatric neurology department of the Pediatrics Division at the University Clinics of Kinshasa (CUK) [2]. The CUK is a major tertiary hospital and academic referral center in the Democratic Republic of Congo (DRC), serving as a national benchmark for advanced clinical care, medical training, and research.

Geographic Location

The University Clinics are located on Mont-Amba, in the Lemba commune of Kinshasa. The institution occupies a surface area of 27,110 square meters and is situated within a densely populated urban setting, making it accessible to patients from across Kinshasa and the surrounding provinces [3].

Study Design and Period

This was a retrospective descriptive study covering a five-year period from January 2018 to January 2023. It focused on analyzing data from pediatric patients who consulted the pediatric neurology service during the specified timeframe.

Study Population

The study population consisted of children aged 0 to 17 years who presented for a first-time consultation at the pediatric neurology unit during the study period.

Inclusion and Exclusion Criteria

Inclusion Criteria: All new patients aged 0 to 17 years seen in the pediatric neurology department between January 2018 and January 2023 were included in the analysis.

Exclusion Criteria: Patients who were already known cases, those under active follow-up, or who came for recurrence of previously diagnosed conditions were excluded from the study to ensure analysis focused on initial consultations [4-6].

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Sampling Method

A non-probabilistic exhaustive sampling approach was used. Patient records were manually counted and reviewed

Results

Table 1: Sociodemographic Characteristics

Variable	Value
Mean age (months)	14.92 (range 1–30 months)
Mean age (years)	7.59 (range 3–17 years)
Sex	64.2% male (n=140); 35.8% female (n=78)
Geographic origin	Ngaliema (15%), Mont-Ngafula and Lemba (14% each)
Province of origin	Kongo Central (20.1%), Kwilu and Equateur (10% each), Kasai Oriental (9.1%)

Age: The bimodal representation (mean age in months and years) suggests the cohort includes both infants and older children. The wide range (1 month to 17 years) reflects the full pediatric age span, emphasizing the diversity of neurological pathologies across age groups.

Sex: A male predominance (64.2%) was observed, which is common in pediatric neurology, particularly for conditions like autism spectrum disorders and ADHD. This aligns with existing literature indicating higher prevalence in boys.

Geographic and Provincial Origin: Majority of patients came from Ngaliema, Mont-Ngafula, and Lemba, likely due to proximity to CUK. Provincially, Kongo Central (20.1%) was most represented among those from outside Kinshasa, possibly indicating regional referral patterns or migration toward Kinshasa for care [7-9].

Table 2: Patient History

Variable	Frequency (n)	Percentage (%)
Full-term births	195	89.5
Eutocic deliveries	146	66.9
No cry at birth	49	22.4
Neonatal infections	47	21.5
Neonatal jaundice	27	12.3
Meningitis (postnatal)	21	9.6
Cerebral malaria	17	7.7

Perinatal Factors: A high rate of full-term births (89.5%) and eutocic deliveries (66.9%) is reassuring. However, the 22.4% incidence of 'no cry at birth' could suggest significant perinatal asphyxia, potentially contributing to long-term neurological sequelae like cerebral palsy.

Neonatal Infections and Jaundice: Neonatal infections (21.5%) and jaundice (12.3%) are key risk factors for neurodevelopmental complications and hearing loss. These findings highlight the need for improved neonatal care and early screening.

Postnatal Complications: Postnatal meningitis (9.6%) and cerebral malaria (7.7%) underscore the burden of infectious diseases on pediatric neurological health in the DRC.

Table 3: Complaints at Admission

Complaint	Frequency (n)	Percentage (%)
Psychomotor disorders	159	73
Convulsions	45	20.6

The predominant complaint leading to pediatric neurology consultation was psychomotor disorders, reported in 73% of cases. This high prevalence reflects a substantial burden of neurodevelopmental delays in the pediatric population referred to the CUK [10-19]. It also suggests that caregivers and health professionals are more likely to seek specialized care when motor or cognitive delays become evident in early childhood.

Convulsions, noted in 20.6% of cases, were the second most frequent complaint. This aligns with the known burden of epilepsy and seizure-related conditions in low-resource settings, where perinatal complications, infections, and febrile illnesses remain common causes. The relatively high frequency of seizure complaints reinforces the need for accessible electroencephalogram (EEG) diagnostics and ongoing caregiver education [20-24].

Table 4: Diagnosed Pathologies

Diagnosis	Frequency (n)	Percentage (%)
Cerebral palsy	73	33.5
Epilepsy	46	21.1
Autism spectrum disorders (ASD)	30	13.8
Global developmental delay	22	10.1
ADHD	17	7.8

Among the pathologies diagnosed, cerebral palsy (33.5%) was the most prevalent, highlighting the continuing impact of preventable causes such as perinatal asphyxia, neonatal infections, and inadequate obstetric care [25,26]. This finding is consistent with data from similar referral facilities across sub-Saharan Africa, where resource limitations affect maternal and neonatal outcomes.

Epilepsy (21.1%) was the second most common diagnosis, corroborating the frequent presentation of seizures at admission. The prevalence of epilepsy in this context may be underestimated due to under-referral, stigma, or limited community knowledge of the condition.

Autism spectrum disorders (13.8%), global developmental delay (10.1%), and attention deficit hyperactivity disorder (7.8%) represent a growing spectrum of neurodevelopmental conditions increasingly recognized in the Congolese context [27]. The relatively high rate of ASD diagnoses is notable, likely reflecting growing awareness and improved clinical suspicion, although diagnostic confirmation remains challenged by a lack of standardized tools and specialized personnel.

Table 5: Complementary Exams

Exam	Frequency (n)	Percentage (%)
EEG performed	203	93.1
Pathological EEG	140	64.2
Brain CT scan	44	20.1
Brain MRI	8	3.6

An EEG was performed in 93.1% of cases, demonstrating its central role in the diagnostic workup of neurological symptoms, particularly seizures, ADHD, and ASD. The high use of EEG also suggests good technical capacity within the pediatric neurology department at CUK. Among the EEGs performed, 64.2% were pathological, which further justifies the clinical indications for the exam and supports the high burden of epileptiform or abnormal neurophysiological activity among the study population [28-31].

Brain imaging (CT and MRI) was less frequently used (CT: 20.1%; MRI: 3.6%), likely due to cost, availability, or prioritization based on clinical severity. Nonetheless, the integration of neuroimaging, when accessible, remains crucial for the accurate diagnosis of structural or developmental anomalies.

Table 6: Patient Outcomes

Outcome	Frequency (n)	Percentage (%)
Stationary	136	62.3
Good evolution	59	27
Lost to follow-up	23	10.7

The analysis of patient outcomes shows that a majority (62.3%) of children experienced a stationary clinical status, indicating no significant clinical improvement over time [32-34]. This finding may reflect the chronic, irreversible, or complex nature of most neurological conditions managed at the University Clinics of Kinshasa (CUK), such as cerebral palsy and autism spectrum disorders, where curative options are limited and care is largely supportive. Only 27% of patients had a good evolution, suggesting that a subset of children-particularly those with treatable conditions like certain types of epilepsy or mild psychomotor delays-benefited from interventions [35-38]. This underlines the importance of early diagnosis, access to appropriate treatment, and multidisciplinary follow-up. Meanwhile, 10.7% were lost to follow-up, highlighting continuity-of-care challenges common in low-resource settings. Factors such as financial constraints, transportation issues, caregiver fatigue, or lack of perceived improvement may contribute to dropout. This attrition limits the ability to monitor long-term outcomes and undermines the effectiveness of ongoing treatment plans [39].

Comparative Analysis

Sociodemographic Characteristics:

The observed male predominance (64.2%) is consistent with trends reported in several studies across sub-Saharan Africa. However, Mupuala et al. [40] noted a slightly higher proportion of female patients (51.9%) in a more peripheral healthcare setting, suggesting potential differences in healthcare-seeking behaviors or referral patterns.

Clinical Complaints

The predominance of psychomotor disorders (73%) and convulsions (20.6%) as presenting complaints contrasts with findings from Mupuala et al. [40], who reported lower rates. This discrepancy could be attributed to the specialized and referral-based nature of the University Clinics of Kinshasa (CUK), which tends to receive more complex and advanced neurological cases [41].

Diagnosed Conditions

Cerebral palsy (33.5%) and epilepsy (21.1%) were the most frequently diagnosed neurological disorders in our study. This aligns with regional data, although Jibril [42] reported a notably higher prevalence of epilepsy (54%) in pediatric neurology consultations at the Albert Royer Children's Hospital in Dakar. The difference may reflect variations in diagnostic criteria, population characteristics, or service availability.

Complementary Examinations

Electroencephalography (EEG) was the most frequently used diagnostic tool, performed in over 93% of cases, with pathological findings in 64.2% of those tested. This is in line with Jibril's findings [42], which also highlighted EEG as a cornerstone in diagnosing pediatric neurological disorders in resource-limited settings.

Conclusion

This retrospective study highlights the clinical and epidemiological profile of pediatric neurology consultations at the University Clinics of Kinshasa over a five-year period. The findings reveal a predominance of male patients and a high frequency of consultations for psychomotor delays and convulsions. Cerebral palsy and epilepsy emerged as the most commonly diagnosed neurological conditions, with a significant proportion of patients undergoing EEG testing-often yielding pathological results. These data underscore the burden of neurodevelopmental disorders in children within this setting and the critical role of early diagnosis and specialized care. The high number of stationary outcomes and notable rate of loss to follow-up reflect ongoing challenges in long-term management and access to rehabilitation services. Given the limited availability of advanced neuroimaging and therapeutic interventions, these results emphasize the need to strengthen pediatric neurology services, enhance early childhood screening, and improve follow-up systems. Further multicenter and prospective studies are recommended to better understand etiological factors and to guide national health policy toward more inclusive neurodevelopmental care.

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