Historical Overview of the Only Neuro-Psycho-Pathology Center in the Democratic Republic of Congo

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Key words
- Health economics
- Neurology
- Neuropsychiatry
- Neurosurgery
- Psychiatry

Abbreviations and Acronyms
KUC: Kinshasa University Clinic
NPPC: Neuro-Psycho-Pathology Center
The DRC: The Democratic Republic of Congo

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The Neuro-Psycho-Pathology Center (NPPC) in the Democratic Republic of Congo is a 450-bed neuropsychiatric clinic that pioneered efforts to synergize various disciplines: neurology, neurosurgery, neuropsychiatry, and psychiatry. It serves the brain and behavioral health needs of Congolese patients, and at its peak, the NPPC was a major domestic neuropsychiatry center that averaged 320 admissions annually. Financial and resources shortages have curtailed its functions at 10% of its real capacity. Our report accounts the NPPC's early vision, and we also highlight the ongoing challenges faced by this institution.

The Neuro-Psycho-Pathological Center (NPPC), affiliated with the University of Kinshasa, was constructed on the hill of Mount-Amba in Kinshasa, the capital of the Democratic Republic of the Congo (DRC), and it was inaugurated on January 2, 1973. The NPPC facilitates 450 beds and houses 4 departments: psychiatry, neurology, neurosurgery, and neuropsychiatry.

Before its construction, patients with mental health conditions warranting hospitalization were cared for at Mount Stanley Lazaret, an underequipped psychiatric facility built in 1926 and which became operational in 1928. Lazaret, renamed Mount Stanley Psychiatric Institute in 1960, was situated near the presidential residence of Mount Ngaliema. In 1967, President Mobutu expanded his property to host the Organization of African Unity summit. Thus he relocated all patients to Kinkole's Hospital, which lies within 20 km of downtown Kinshasa. This was not well received by some physicians, particularly the Belgian neuropsychiatrist, Dr. Guy Dechef. Inspired by his visit to the Henri Collomb Hospital in Senegal and the Neuropsychiatric Institute of the Clairiere at Betrix in Belgium, Dr. Dechef successfully negotiated the plan—and funds—to build the NPPC.[1]

NPPC contains 4 units. The external unit focuses on consultation, triage, and preliminary outpatient diagnostics. The hospital unit comprises 4 pavilions, each with 16 chambers. The first pavilion handles functional neurosurgical, neurology, and neuropsychiatric cases. The second pavilion focuses on human immunodeficiency virus/acquired immunodeficiency syndrome, tuberculosis, and meningitis. The third pavilion treats psychiatric cases such as schizophrenia, and the last pavilion is dedicated to the treatment of substance use/abuse disorders. The third unit is the psycho-socio-therapy village, which contains 90 beds. It is dedicated to patients with developmental disabilities and difficulties in social interactional behaviors. The final unit is the posttreatment center, which operates as a rehabilitation center. The neurosurgery unit had only 1 neurosurgeon, Dr. Shako Djunga, who also practiced at the Kinshasa University Clinic (KUC), the first teaching clinic of the University of Kinshasa's school of medicine. The inability to complete the construction of neurosurgical operating rooms at NPPC made it impossible to conduct neurosurgical operations.[1] Thus NPPC was used as a neuroimaging center, and surgeries were conducted at KUC located <5 miles away.[1]

Funded by the discretionary funds from the office of the president, the center was well equipped with sufficient diagnostic hardware (e.g., electroencephalogram, ultrasound). It even possessed an in-house medical laboratory that served 320 admissions annually.[1] Unlike KUC, at NPPC, neurology and neuropsychiatry were established as primary foci. From 1964 to 1985, the center trained neurologists and neuropsychiatrists, numbering over 30, creating a fertile momentum for research. For instance, in 1994, research published by the former director of NPPC, Dr. Luabeya Mesu'a-Kabwa, investigated the prominent neurologic and psychiatric cases identified in patients living with human immunodeficiency virus/acquired immunodeficiency syndrome (**Tables 1** and **2**).[2]

The turning point occurred with political turmoil in the DRC that culminated in nationwide violent insurrections demanding the president's resignation and an end to dictatorship. After the crisis, in the early 1990s, funding to the NPPC ceased and it became dependent on the ministry of health. There was no funding allocated to infrastructure and equipment. In the early 2000s, the ministry of health transferred NPPC's responsibilities, including emoluments of staff, to the ministry of education and higher educations due to NPPC's public

Table 1. Neurologic Symptoms in Congolese Patients Living with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome[2]

Clinical Symptoms	Frequency (%)
1. Cephalic syndrome	
Meningoencephalitis	55 (48.7)
Tumoral	28 (24.6)
Vascular	6 (5.3)
Dementia	4 (3.5)
Parkinsonian	1 (0.9)
2. Medullary syndrome	0 (0)
3. Neurogenic syndromes	7 (6.2)
4. Muscular dystrophy	1 (0.9)
5. Undetermined	11 (9.7)
Total	113 (100)

Table 2. Psychiatric Symptoms in Congolese Patients Living with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome[2]

Clinical Symptoms	Frequency (%)
1. Anxiodepressive symptoms	12 (44.4)
Anxiety	1
Depression	11
2. State of agitation	8 (29.6)
3. Psychosis	6 (22.2)
4. Delirium	1 (3.7)
Total	27 (100)

Table 3. Current Neurosurgical Workforce at Kinshasa University Clinic and Neuro-Psycho-Pathology Center[3]

Local Neurosurgeons (n = 2)	Local General Surgeons* (n = 5)
Dr. Antoine Beltchika Kalubye	Dr. Pierre Mfumu
Dr. Glennie Ntsambi	Dr. Evariste Likinda Bofonda
	Dr. Simon Kotoluka
	Dr. Teddy Ketani Mayindou
	Dr. Cherubin Tshiunza Mpoyi

*Local Congolese general surgeons with additional training and neurosurgical privileges.

Table 4. Neuroepidemiology and Clinical Electrophysiology of Konzo[5]

Explorations	Abnormalities
Epidemiology (putative causal factors)	Heavy and chronic dietary reliance on insufficiently processed bitter (toxic) cassava.
Neurology	Spastic para/tetraparesis.
	Pseudobulbar signs and optic neuropathy.
Motor evoked potentials (MEP)	Frequent inability to elicit MEP.* When present, central motor conduction time is often increased.†
Peripheral nerve conduction studies	Normal motor and sensory nerve conduction. Increased amplitude of F-waves.
Somatosensory evoked potentials (SEP)	Cortical responses following tibial stimulation frequently absent. If present, the latency is prolonged. Median SEP often normal.
Visual evoked potentials	Frequent delay and decreased amplitude of P100.
Electroencephalography	Frequent generalized slowing of background activity and nonspecific paroxysmal activities.

*Consistent with reduction of the upper motor neuron pool.
†Consistent with loss of pyramidal conductivity from spinal tract (axonal) damage.

identity as the University of Kinshasa's teaching hospital. Such budget reductions precluded sums available for logistics and operations, which resulted in the deterioration of the NPPC's facilities and equipment without replacement.

Today, the NPPC barely functions at 10% of its real capacity. Essential medical functions such as logistic funds derived from private donations, sponsorship by nonprofit endeavors, and medical bills. While private and employee-sponsored insurance contributes to the NPPC's revenue, the NPPC's dedication to serve large populations of uninsured patients presents a strain on the institution's economic viability. This financial hardship has been—and remains—a major barrier limiting the possibility to equip NPPC and reestablish a new neurosurgical unit.

The bulk of neurosurgical activities occur at KUC with the same cohort of neurosurgeons serving both the KUC and NPPC (the current workforce is displayed in Table 3).[3] In 2013, there were approximately 40 active neuropsychiatrists and 80 neurologists and psychiatrists in the DRC.[4] More recent census data remain unavailable. Despite such numeric disadvantages, the NPPC continues to focus on neurology, neuropsychiatry, and psychiatry. Due to resource limitations, its staff are forced to prioritize self-reliance and creative strategies to address their patients' needs. Despite these challenges, the clinical team at NPPC continues scholarship and academic due diligence. For instance, recent works involve a documentation of cyanide toxicity from cassava consumption and its possible links to Konzo ("tied-up legs" in Congolese dialect Yaka), a rare endemic upper motor neuron disease first reported in the DRC that leads to irreversible paralysis.[5] The characterization of the neuroepidemiology and clinical electrophysiology of Konzo[5] is spearheaded by the NPPC to understand and prevent the dissemination of this deadly condition (Table 4). The NPPC is proactive in its clinical and scientific endeavors as it strives to navigate around the financial barriers that obfuscate its operations.

The resuscitation and sustenance of the NPPC require more than simple investments in financial and human resources. The NPPC's history reveals the need for a robust source of financing dissociated from sociopolitical volatilities. This underscores the need to partner with both local political interests and international communities to secure a sustainable, more permanent source of funding. This should be paralleled by an

Figure 1. The front door of the Neuro-Psycho-Pathology Center located in Mount-Amba, Kinshasa.

epidemiologic appraisal of the NPPC's disease burden to properly assess its operational budget. The knowledge of disease burden will also help the stakeholders to better direct and prioritize their attention to issues that matter.

The NPPC's challenges echo those faced by a multitude of underfunded institutions servicing the needs of resource-deficient communities. Creative innovations in strategy and health care delivery are desperately needed for their ongoing maintenance and hopeful growth into centers of excellence.

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