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## ACKNOWLEDGEMENTS AND FUNDING

This work would not have been possible without the guidance and efforts of my supervisor and mentors, Mrs. G. Umuhoza, Mrs. J. Kayirangwa, the Rwandan neurologists and residents, King Faisal Hospital, all study participants, community health workers, and staff from Gikonko Health Center, and our funders:



## CURRICULUM VITAE

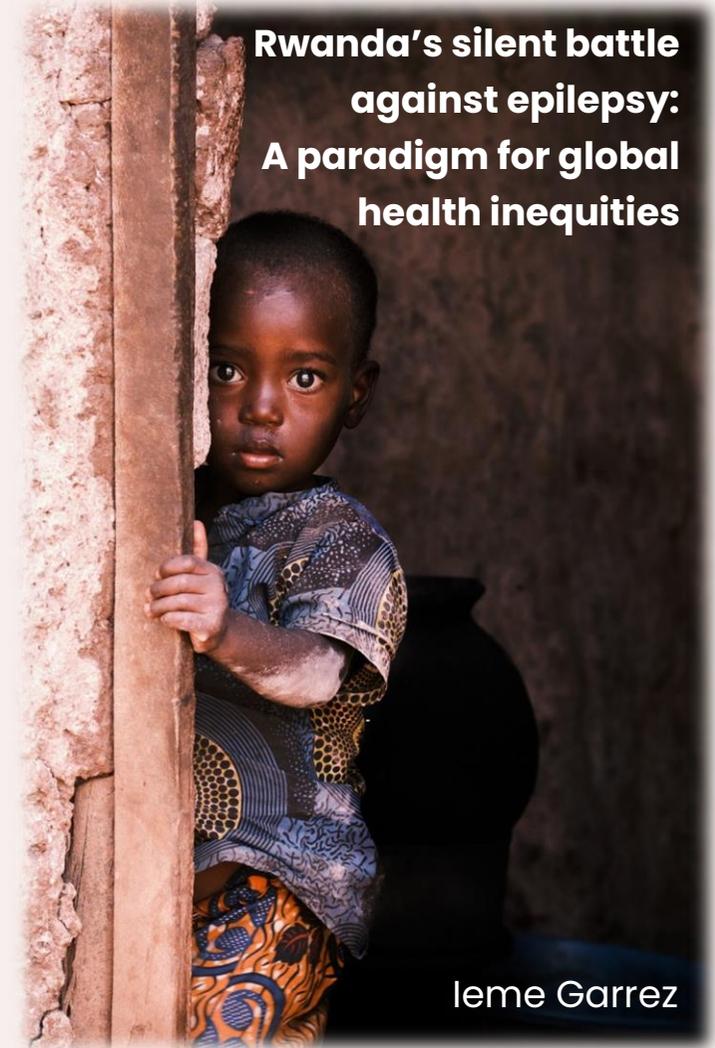
Ileme Garrez (°Nov 23, 1995) obtained her Master's in Medicine at Ghent University (2014–2020), graduating in the 95<sup>th</sup> percentile of her year.

In 2020, she began her Master's in Neurology while concurrently pursuing her PhD Fellowship. During her fellowship, she contributed to several research projects on epilepsy in Rwanda, led two VLIR UOS projects focused on access to epilepsy care in Rwanda, and provided ongoing support for the initiation and continuation of the Rwanda National Neurology curriculum to improve access to high-quality neurological care across the country.

She is also part of the 2024 Cohort of Belgium's 40 under 40, which brings together 40 societal leaders below 40 to embark on a journey of personal and leadership development centred on meaning, societal responsibility, and impact.

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Dissertation submitted to obtain the degree  
'Doctor in Health Sciences'

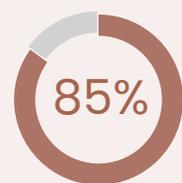
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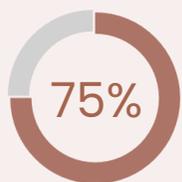
## The prevalence, risk factors, and aetiologies of epilepsy in rural Rwanda

### EPILEPSY ACROSS ECONOMIC DIVIDES

Epilepsy is one of the most common neurological disorders, affecting 50–70 million people worldwide. The brain disease is characterised by abnormal electrical activity causing recurrent seizures with neurological, cognitive, psychological, and social impact. **Up to 85% of all people with epilepsy live in low- and middle-income countries.** In comparison to an estimated **prevalence of epilepsy throughout a lifetime of 5 per 1000 persons in high-income countries**, the epilepsy prevalence in low- and middle-income countries is two to three times higher. For instance, the prevalence of lifetime epilepsy in **sub-Saharan Africa (SSA) is estimated to be 16 per 1000 persons**, with numbers twice as high in rural as opposed to urban areas. Despite the availability of effective and low-cost anti-seizure medicines, **more than 75% of people living with epilepsy in low-income countries do not have access to treatment.** Left untreated, affected individuals face devastating social consequences, including stigma, discrimination, and human rights violations.



of all people with epilepsy live in low- and middle-income

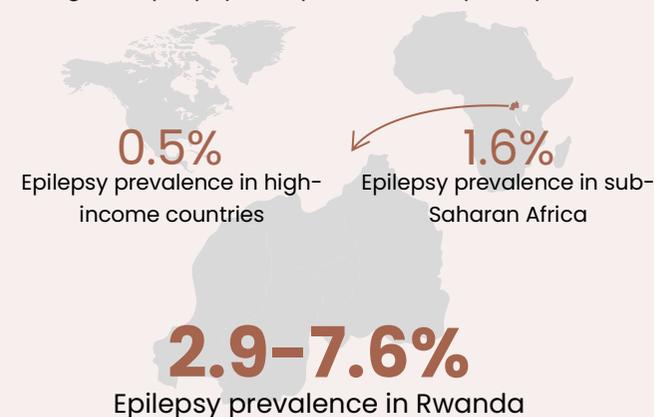


epilepsy treatment gap in low- and middle-income countries

### THE HIGH EPILEPSY PREVALENCE IN RWANDA

In **Rwanda**, a low-income country in Central/East Africa, the estimated **epilepsy prevalence** ranges **from 29.0 to 49.0 per 1000 people**, up to three times the SSA average. Epidemiological studies across Africa often reveal wide variability in prevalence. While methodological differences contribute to this heterogeneity, the variation also indicates geographical disparities in epilepsy causes including infectious diseases, traumatic brain injuries, perinatal events, or genetic predispositions.

Under the premise that the epilepsy prevalence geographically varies, our research investigated the **epilepsy prevalence in Southern rural Rwanda** using a cross-sectional, two-stage door-to-door methodology similar to that of our previous survey in Northern rural Rwanda. Whereas the Northern study observed a lifetime epilepsy prevalence of 47.7 per 1000 people (95% CI: 39.8–56.8‰), our Southern study demonstrated a lifetime epilepsy prevalence of **76.2 per 1000 people** (95% CI: 64.2–89.7‰). In addition, our study observed **over 92% of the identified epilepsy cases not being adequately treated with anti-seizure medication**, consistent with prior Rwandan findings. These results contribute to the **accumulating evidence of an alarmingly high burden in Rwanda**, urging political commitment to recognise epilepsy as a public health priority.



### THE CAUSES OF EPILEPSY IN RURAL RWANDA

Although Rwandan prevalence estimates rank among the highest on the continent, the reason for the high burden remains unexplored. Using a case-control design, we investigated **risk factors for epilepsy in Southern rural Rwanda**. Additionally, we integrated **clinical, electroencephalography, and magnetic resonance imaging findings** (MRI) to classify epilepsy types and determine their underlying pathologies. While such diagnostic assessments are standard practice in high-resource settings, they remain unique in the SSA region.

A **history of relatives with epilepsy, febrile seizures, and cerebral infections, primarily severe malaria, and cerebral infections, primarily severe malaria**, were identified as risk factors associated with epilepsy. **Focal epilepsy was diagnosed in 72.9% of our cases**, indicating identifiable and potentially preventable underlying causes. Concordantly, neuroimaging revealed abnormalities in 52.7% of epilepsy cases, with 27.9% presenting epileptogenic lesions, including **neurocysticercosis, head injuries, and perinatal lesions**. These findings affirm the potential for site-specific preventive health policies to alleviate the epilepsy burden in resource-limited settings. A potential interplay between environmental and genetic factors warrants further research.

### HEALTH AS A RIGHT: THE PATH TO EQUITY

Once again, we lift the veil on a deeply entrenched burden. The **staggering epilepsy prevalence in Rwanda, with stark gaps in treatment and prevention**, is not merely a statistical anomaly but a resounding call to action, echoing the **urgent need for multi-sectoral, sustained interventions**. Prioritising epilepsy as a public health imperative presents an opportunity to address entrenched health inequities and view something so precious as health as a fundamental human right.