NEUROIMAGING (NI) IN CHILDREN WITH NEURODEVELOPMENTAL (NDDs) IN THE AFRICAN POPULATION

Aleya Remtulla[1], Emma Eastman[1], Deepika Goolab[1], Este Sauerman[1], Raphaela Itzikowitz[1], Brigitte Melly[1], Charles Newton[2], Amina Abubakar[2], Elise Robinson[3], Kirsten A Donald[1]

1. **Department of Paediatrics and Child Health, 4th Floor ICH Building, Red Cross War Memorial Children's Hospital and University of Cape Town, Rondebosch, South Africa**
2. **Neurosciences Unit, Clinical Department, KEMRI-Wellcome Trust Collaborative Research Programme, PO Box 230-80108, Kilifi, Kenya**
3. **Stanley Centre for Psychiatric Research, Broad Institute of MIT and Harvard, 75 Ames Street, Cambridge, MA 02142, USA**

INTRODUCTION

- NDDs are a group of conditions with onset during the developmental period. They are characterised by developmental deficits which lead to impaired **personal, social, academic and occupational** functioning.
- Pooled prevalence rates for NDDs per 1000 population are as follows; **Asia-pacific 7.5%, Africa 4.4%, Latin America 33.4% and other countries at a cumulative 9.4%**
- **Genetic, environmental** and **intrinsic factor**s are believed to underlie most NDDs and there is a **complex interpla**y of different risk factors which may cause functional limitations that define NDDs.
- Neuroimaging (NI) for NDDs, remains a scarce resource and its value in LMICs is unknown.
- It aids in understanding the elements of **timing of insult, type of etiology, degree of abnormality as well as to exclude progressive neurological conditions.**
- Although NI may have a narrow clinical impact, it aids in contributing towards **diagnosis, prognosis and treatment monitoring** for NDDs.
- We investigated the spectrum of NI findings in a clinical population of children with NDDs in South Africa.

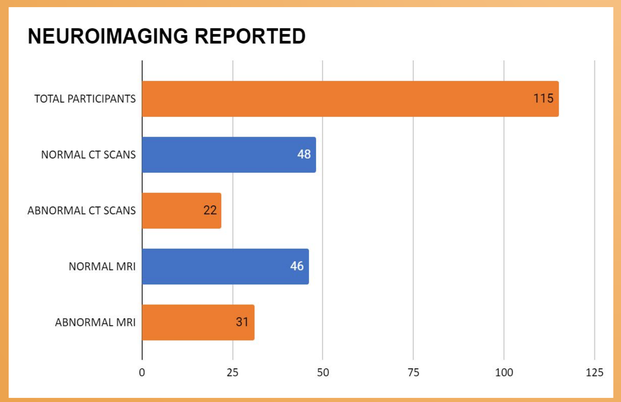
OBJECTIVES

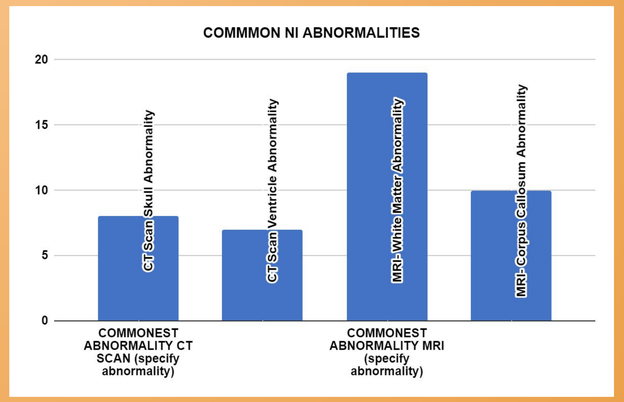
- To identify what role neuroimaging has contributed towards understanding the **profile, etiology and management** of NDDs in a clinical population.

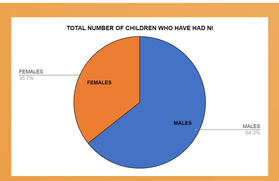
MATERIALS AND METHODS

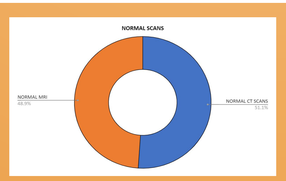
- A **retrospective case research design**
- Embedded in a much larger study called the **NeuroDev study** (the South African arm), a project exploring **genetic variation** amongst children with NDDs in African populations.
- **Clinical information** regarding aetiology, management and NI findings were collected from records of children (**cases only**) attending a tertiary developmental clinic over the period of three years (August 2018-August 2021).
- The clinical records were obtained from the NeuroDev study database- used to identify the **indication** of the NI studies- describing the **range of NI findings and clinical outcomes** of these children.
- NI findings were categorised according to the **most commonly affected parts of the brain.**
- The scans had been individually reported by **specialist paediatric neuro-radiologists**.
- **Secondary data analysis** was conducted and the NI information collected is that which is part of standard clinical protocols in a state project.

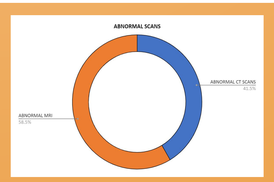
RESULTS (preliminary)

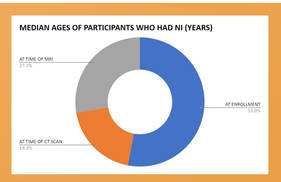












CONCLUSION

- Preliminary results show **non-specific abnormalities of cerebral white matter** (especially corpus callosum) on brain MRI as the most common pattern in our cohort.
- This was in keeping with several studies which link such findings to an array of NDDs whose exact aetiology remains **unidentified for >50%** of the cases.
- NI may be of value in understanding underlying regions of the brain implicated -or particularly vulnerable to processes- resulting in functional developmental disorders.

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