Parent-reported Pain Intensity Predicts Cognitive Flexibility in Paediatric Patients with Sickle Cell Disease

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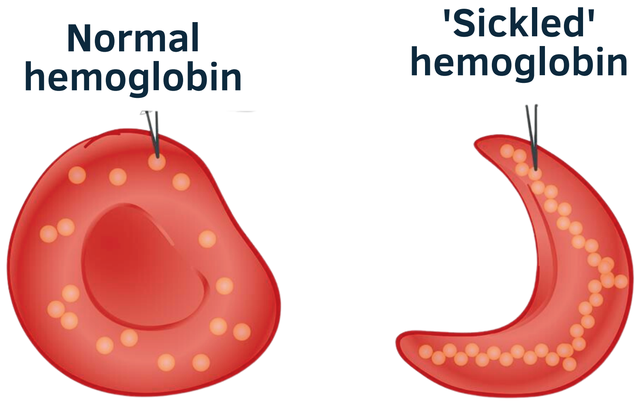
Yuhui Chen, Anna M. Hood, Avi Madan-Swain, Deanna D. Rumble, Tine Vervoort, Lori E. Crosby, Jeffrey Lebensburger, Megan M. Millere, Zina Trosth

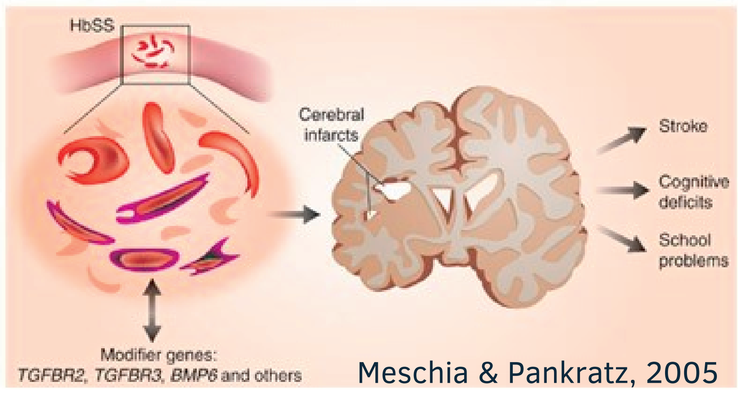
Introduction

What is sickle cell disease?



The 'sickled' hemoglobin impedes blood flow and consistently reduces **oxygen delivery**

Outcomes of sickle cell disease



Meschia & Pankratz, 2005

1. Low O2 Saturation of Brain
2. Acute and Chronic Pain
3. Executive Function (EF) Challenges

Research Objective

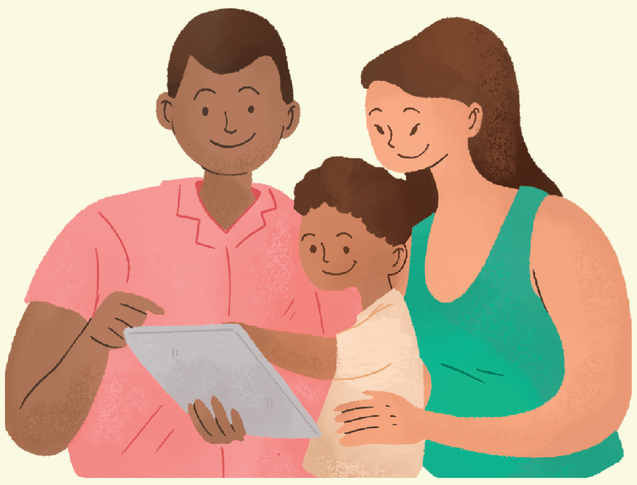
Whether **long-term pain burden** predicts **cognitive flexibility**, a key aspect of EF, in children living with sickle cell disease.

Methods

Caregivers

Caregivers of **29** children between **8-16.99 years** completed:

- **Behavioural Rating Inventory of Executive Function - Global Executive Composite Subscale** (BRIEF-GEC)
- **Pain intensity** of their children over the past 6 months



Children

29 children between **8-16.99 years** completed:

- Three subsets of the **Delis-Kaplan Executive Function System (D-KEFS)** to evaluate children's **cognitive flexibility**
  - The Trial Making Test
  - Verbal Fluency Test
  - Colour-Word Interference Test

Data on **control variables** (Hydroxyurea [HU] or blood transfusion) were collected from the **medical record**.
Four **linear regressions** examined whether **pain intensity and control variables predicted cognitive flexibility**.

Results

Parent-reported **pain intensity** predicted **Trail Making Test** scores ($p = .03$).

Pain intensity **trended towards predicting** category-switching in the **Verbal Fluency Test** ($p = .06$).

Pain intensity **did not significantly predict** the **Colour-Word Interference Test** ($p = .80$).

Finally, **pain intensity** did not significantly predict **BRIEF-GEC** ($p = .44$).

However, **treatment type** was a significant predictor ($p = .02$); patients treated with **HU had worse executive function** than those who received blood transfusion.

Discussion

Higher pain intensity significantly predicted **worse cognitive flexibility** in children living with sickle cell disease.

References

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