Cognitive and sensorimotor difficulties in well-controlled people with HIV living in Uganda

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BACKGROUND

- Individual differences in early life experiences (e.g., trauma), behaviors (e.g., substance use), the immune response of the body-brain, & HIV treatment contribute to a range of brain health complications (BHCs) in people with HIV (PWH).
- In sub-Saharan Africa, particularly in Rakai, Uganda, these individual factors are often less pronounced; substance use is low, & ART initiation & types are similar among this typically virally suppressed, middle-aged population.
- We investigated BHCs in virally suppressed, middle-aged PWH vs. people without HIV (PWoH) in Rakai, Uganda.

METHODS

- Participants enrolled through the Rakai Community Cohort Study (338 PWH with HIV RNA <200cp/ml, 249 PWoH) were administered a Research Domain Criteria (RDoC) battery focused on cognitive, sensorimotor, & social processing systems that included: Auditory Verbal Learning Test (AVLT), Symbol Digit, Color Trails, Grooved Pegboard (GPEG), Flanker, affective Go/No-Go, Figure-8, & Facial Emotion Perception Task (FEPT).
- Timed outcomes were log transformed & reverse scored, so higher scores reflect better performance.
- Demographically-adjusted norms were computed (using PWoH) for all outcomes.
- Multivariable logistic regressions were used to examine serostatus differences in impairment (≥1 standard deviation) in RDoC outcomes. Benjamini-Hochberg Procedure was used to control the false discovery rate.
- Analyses controlled for sensory symptoms (tingling, burning, numbness in hands or feet) & childhood sexual abuse (Childhood Trauma Questionnaire subscale) as they differed by serostatus & related to outcomes. No other confounders were identified.

Cognitive & sensorimotor difficulties are *significant concerns* of PWH living in Rakai, Uganda with minimal confounding conditions common in Western cohorts.

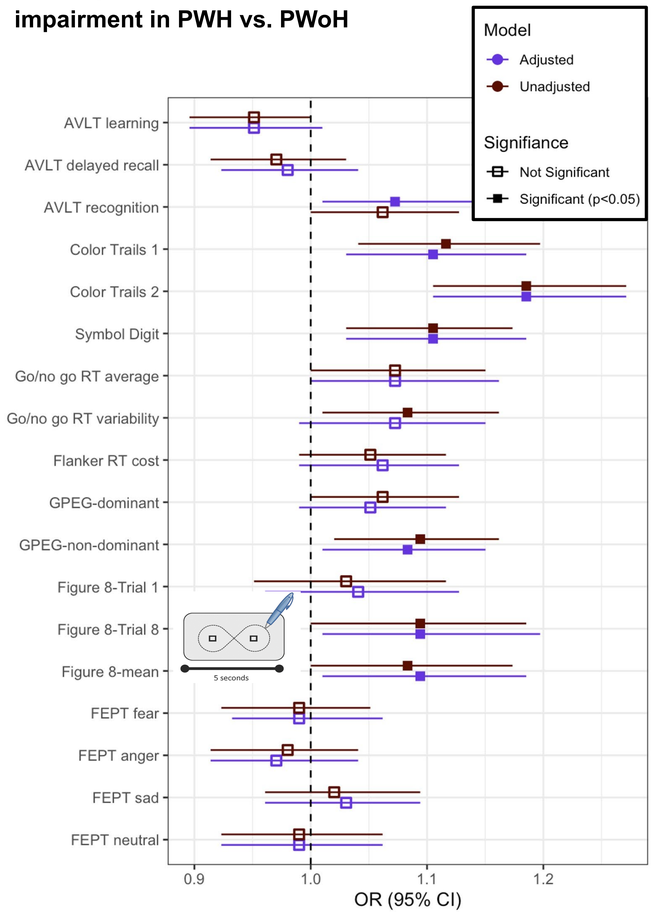
RESULTS

Table 1: Characteristics of PWH & PWoH.

	PWH (n=338)	PWoH (n=249)	P-value
Age, M (SD)	43.9 (8.0)	43.4 (8.8)	0.51
Years of education, M (SD)	6.1 (3.6)	5.8 (3.8)	0.23
Female sex, n (%)	181 (53.6)	114 (45.8)	0.06
Childhood sexual abuse, n (%) none low to moderate moderate to extreme	 248 (73.4) 40 (11.8) 50 (14.8)	 211 (84.7) 22 (8.8) 16 (6.4)	0.002
Beck Anxiety Inventory total score	3.5 (5.4)	3.7 (5.3)	0.61
PTSD Civilian Scale total score	25.3 (9.2)	25.0 (9.1)	0.74
Diabetes, n (%)	2 (0.6)	7 (2.8)	0.03
Hypertension, n (%)	17 (5.0)	16 (6.4)	0.47
Sensory symptoms, n (%)	97 (28.7)	52 (20.9)	0.03
Balance difficulty, n (%)	8 (2.4)	3 (1.2)	0.31
Smoke, n (%)	37 (10.9)	21 (8.4)	0.31
Undetectable viral load, n (%)	326 (84.4)	-	-

- Participants had minimal self-reported medical comorbidities.
- Compared to PWoH, PWH reported more sensory symptoms (29 vs. 21%, *P*=0.03) & were more likely to endorse childhood sexual abuse (27 vs. 15%, *P*=0.002).
- PWH were more likely to be impaired than PWoH on Color Trails (1&2), Symbol Digit, GPEG, Figure-8, & AVLT recognition (**Figure 1**). No differences on AVLT learning & memory or FEPT.

Figure 1: Odds ratio (OR) & 95% confidence interval (CI) of cognitive, sensorimotor, & social processing impairment in PWH vs. PWoH



AVLT=WHO Auditory Verbal Learning Test; FEPT=Facial Emotion Perception Task; GPEG=Grooved Pegboard; RT=reaction time.

CONCLUSIONS

- Cognitive & sensorimotor difficulties are significant concerns in PWH living in Rakai, Uganda with minimal confounding conditions common in Western cohorts.
- These difficulties merit clinical attention & further investigation to determine mechanisms & treatment options

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