

Feasibility Of Digital Cognitive Assessment In Clinical Care And Its Association With Plasma p-Tau217

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BACKGROUND

- Early detection of Alzheimer's disease (AD) remains a major clinical challenge.
- Combination of plasma biomarkers such as **p-Tau217** and **Digital Cognitive Assessments (DCAs)** show promise for scalable detection
- DCAs offer real-time, cognitive screening and objective, reproducible measures
 - However, **real-world feasibility** and **biological validation** are limited.



STUDY OBJECTIVES

- Evaluate feasibility of integrating a **Digital Cognitive Assessment (DCA)** into clinical workflows.
- Examine associations between **DCA performance** and **plasma biomarkers (p-Tau217, NfL)**.

METHODS

Pilot samples were selected from the DAC-SP cohort, a real-world prospective cohort at a large urban hospital.

A.

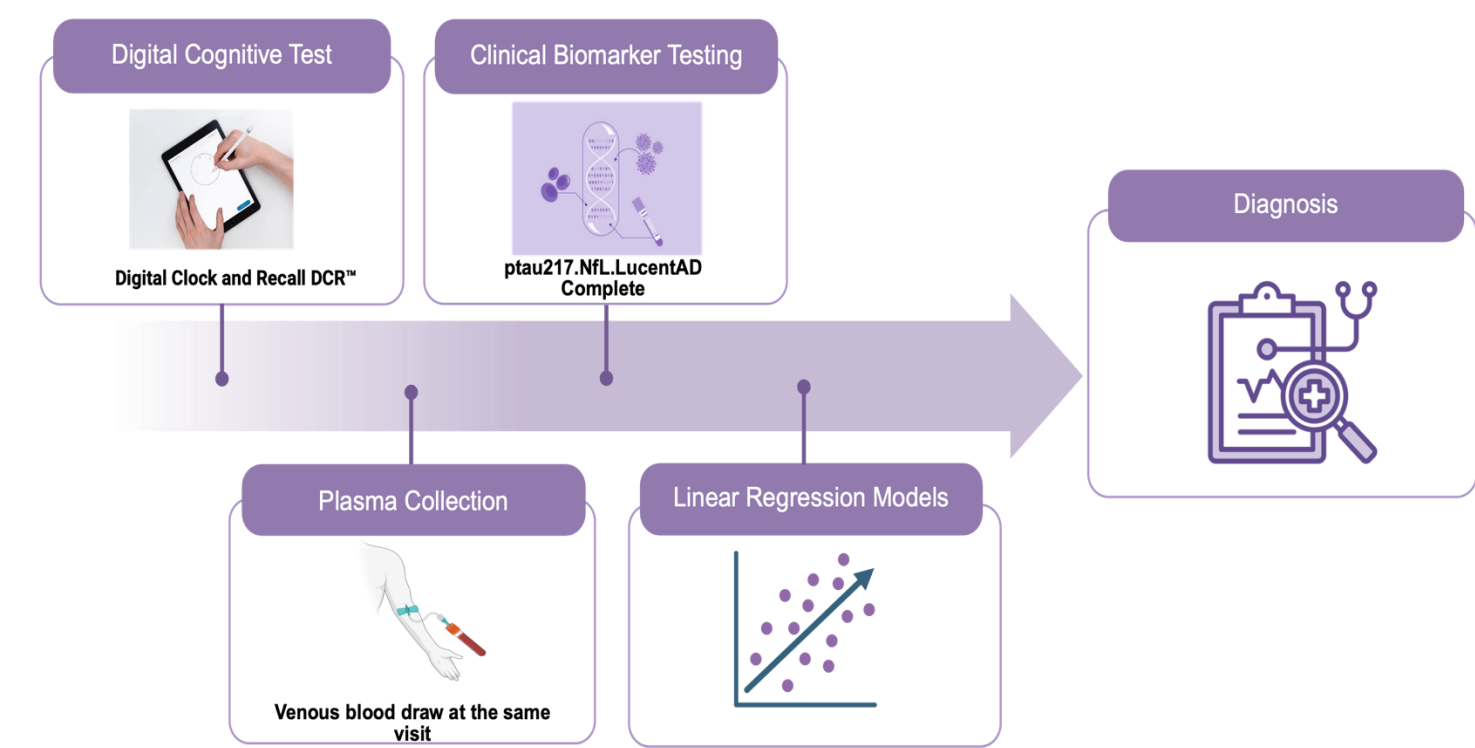


Figure 1. A. Study workflow for real-world cohort

B.

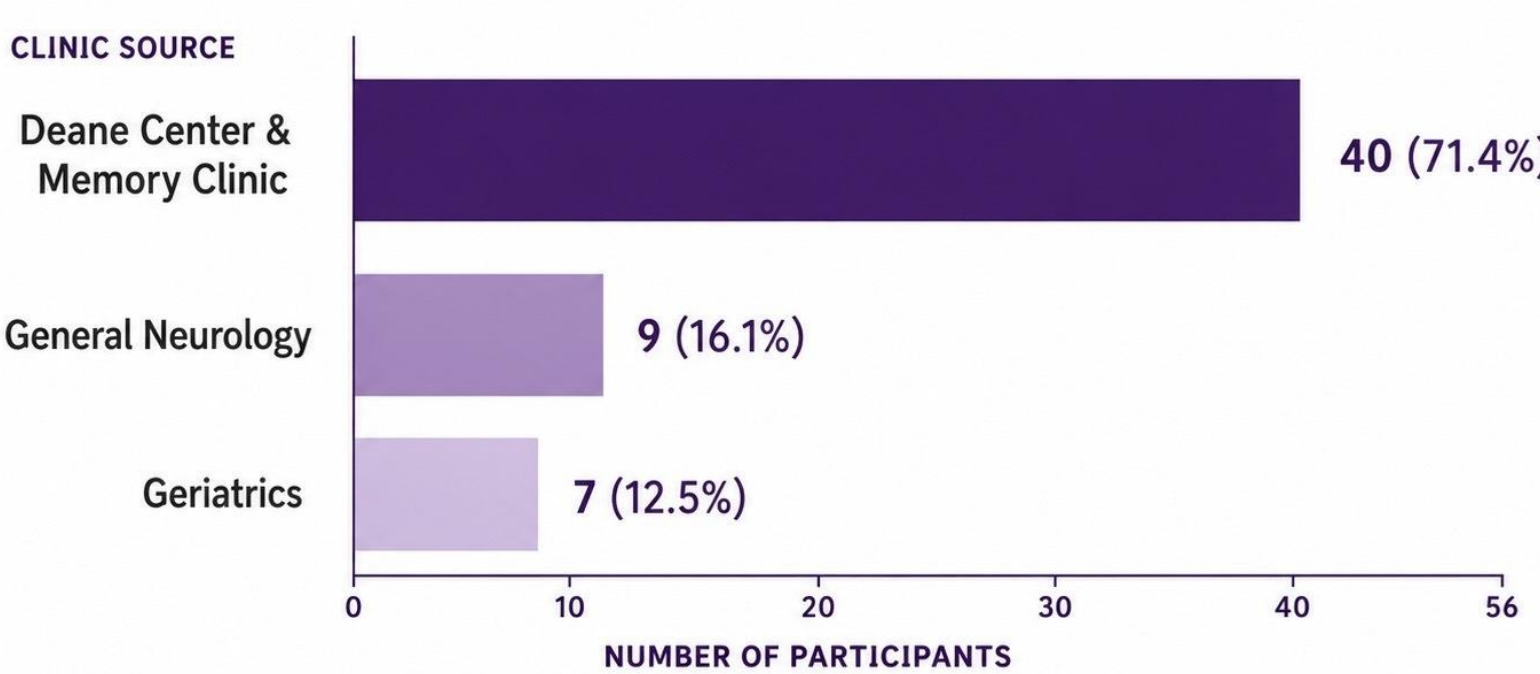


Figure 1. B. Summary of clinics participants were recruited from.

RESULTS

A.

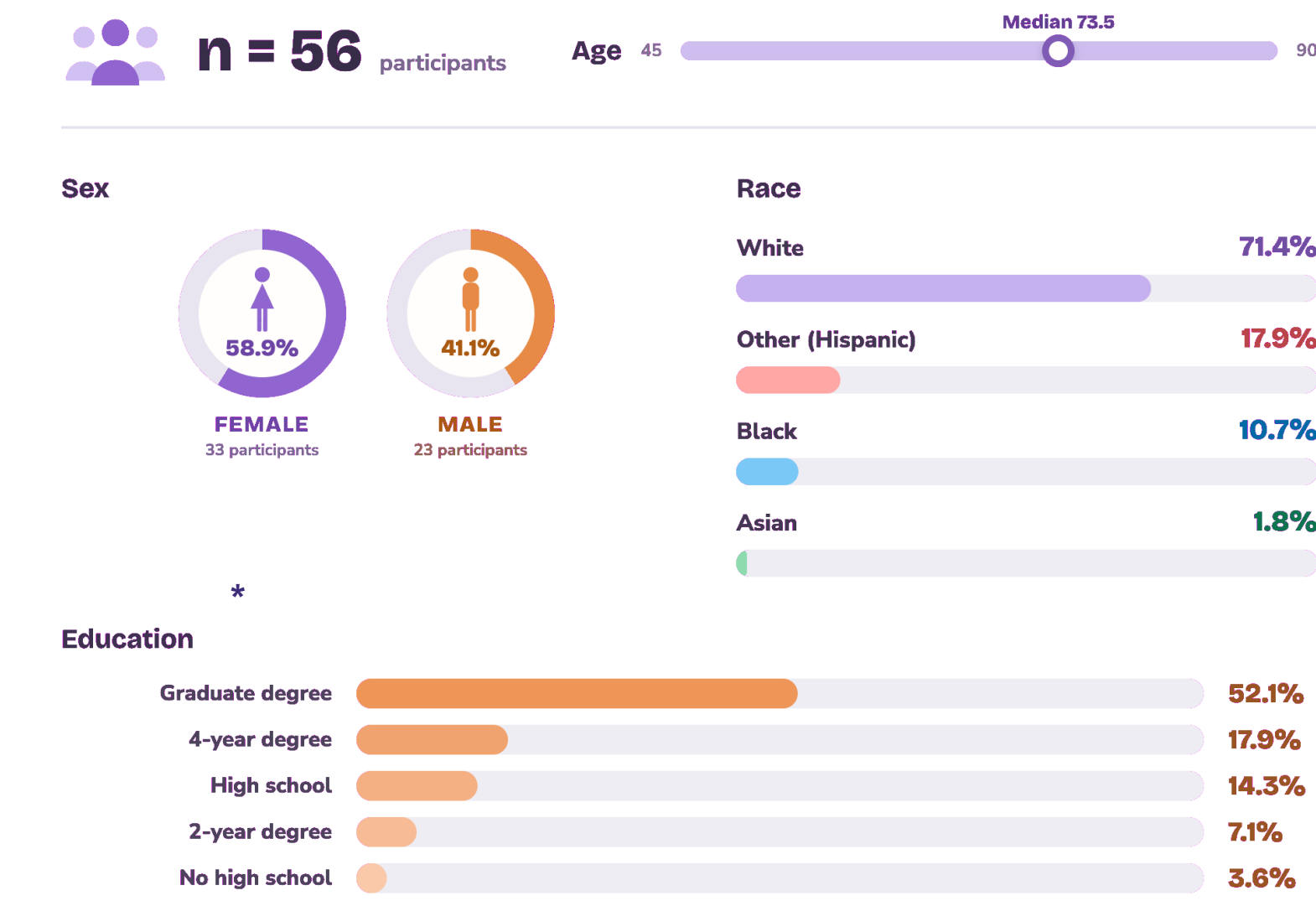


Figure 2. A. Study Population Demographics. *Education not reported for 3 participants

B.

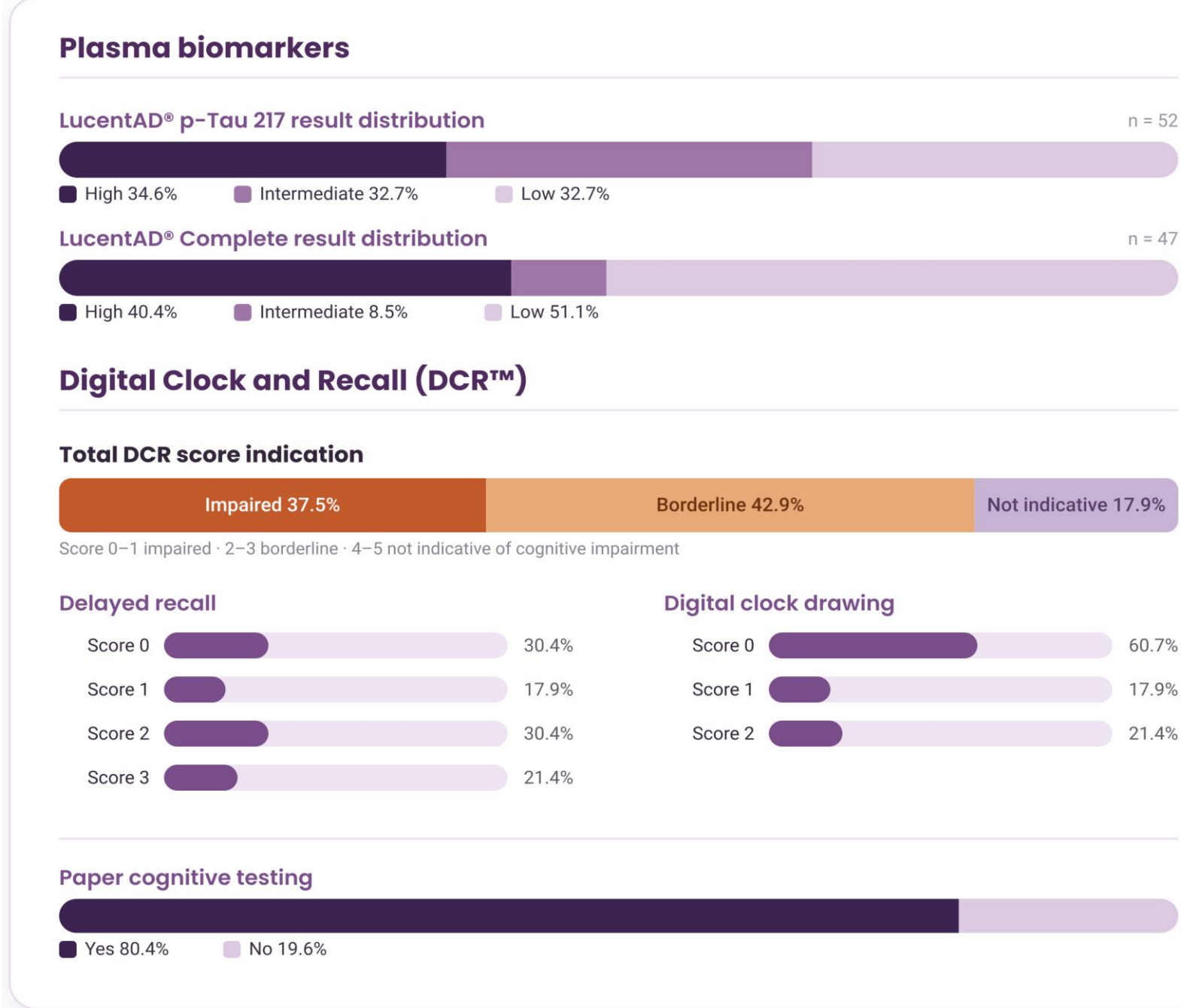


Figure 2. B. Clinical Characteristics.

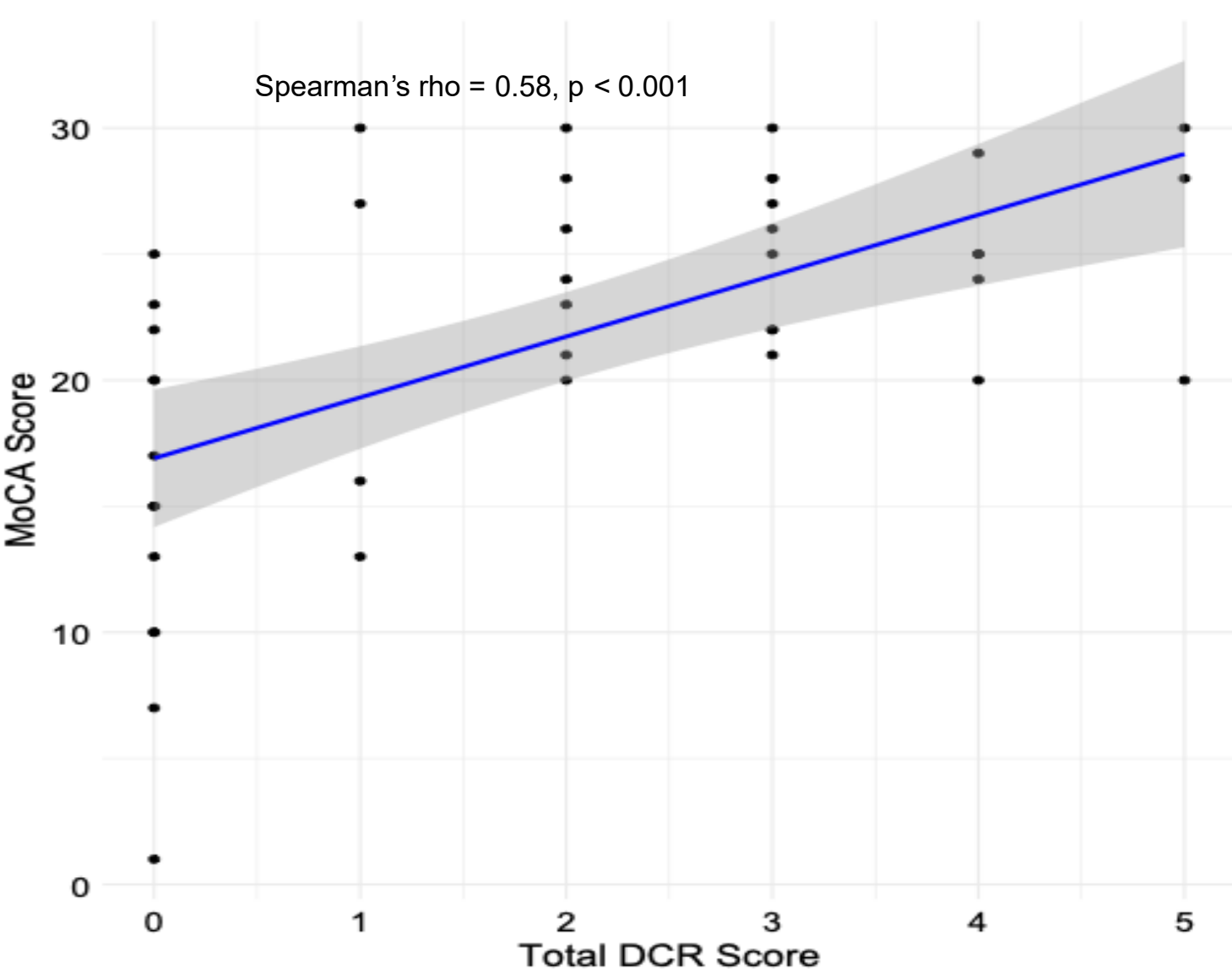


Figure 3. Correlation Between Digital Cognitive Assessment (DCR) Scores and In-Person MoCA Performance

Total DCR scores were positively associated with in-person MoCA scores, indicating that digital cognitive assessment closely aligns with traditional testing.

These findings support digital assessments as accessible, scalable, and remote alternatives to paper-based cognitive screening in clinical and research settings.

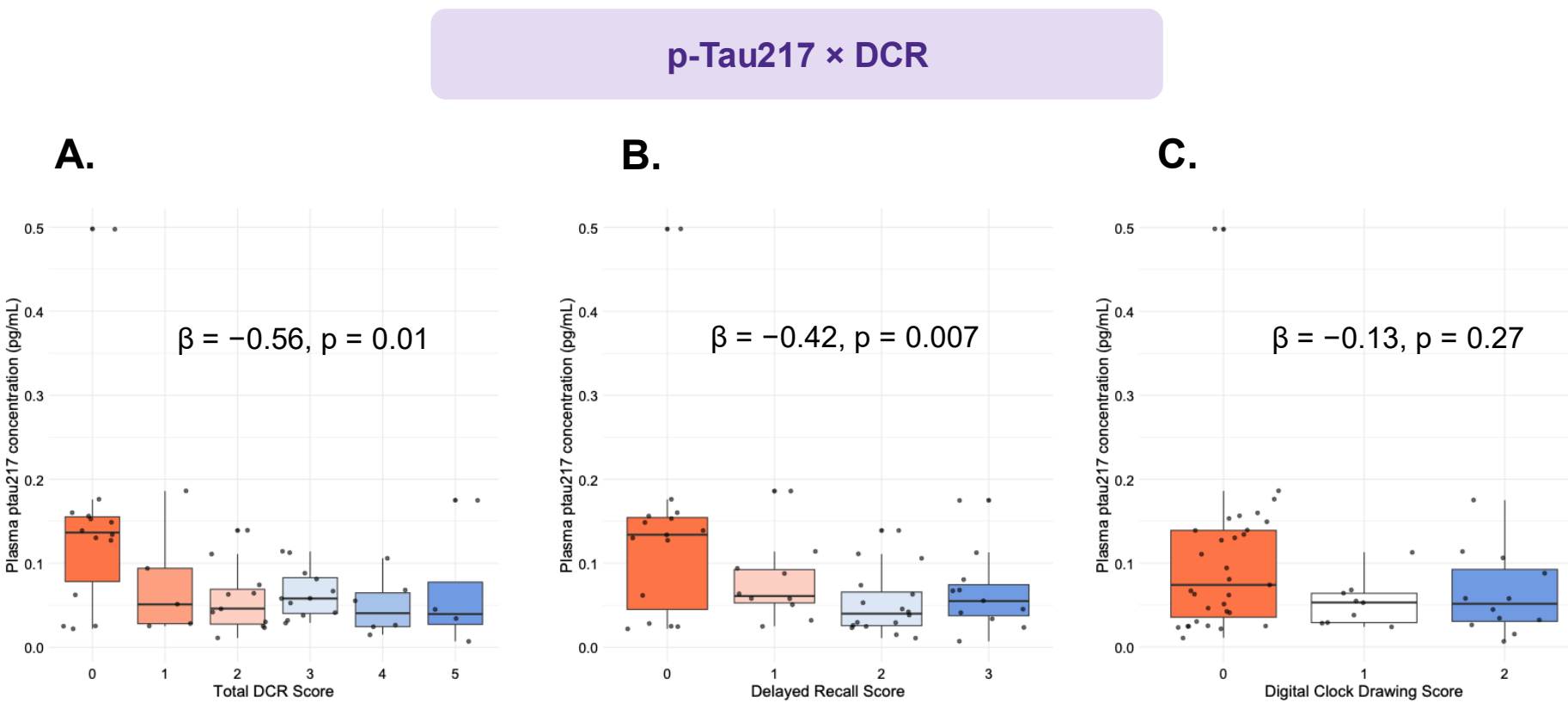


Figure 4. Boxplots presenting associations between Plasma p-Tau217 concentration and A. total DCR Score, B. Delayed Recall Score, and C. Digital Clock Drawing Score. Statistics for linear regression models provided. All models were adjusted for age, sex, and education.

Lower total DCR scores were significantly associated with higher plasma p-Tau217, and marginally with NfL ($\beta = -0.49$, $p = 0.06$). p-Tau217 was associated with delayed recall but not clock drawing.

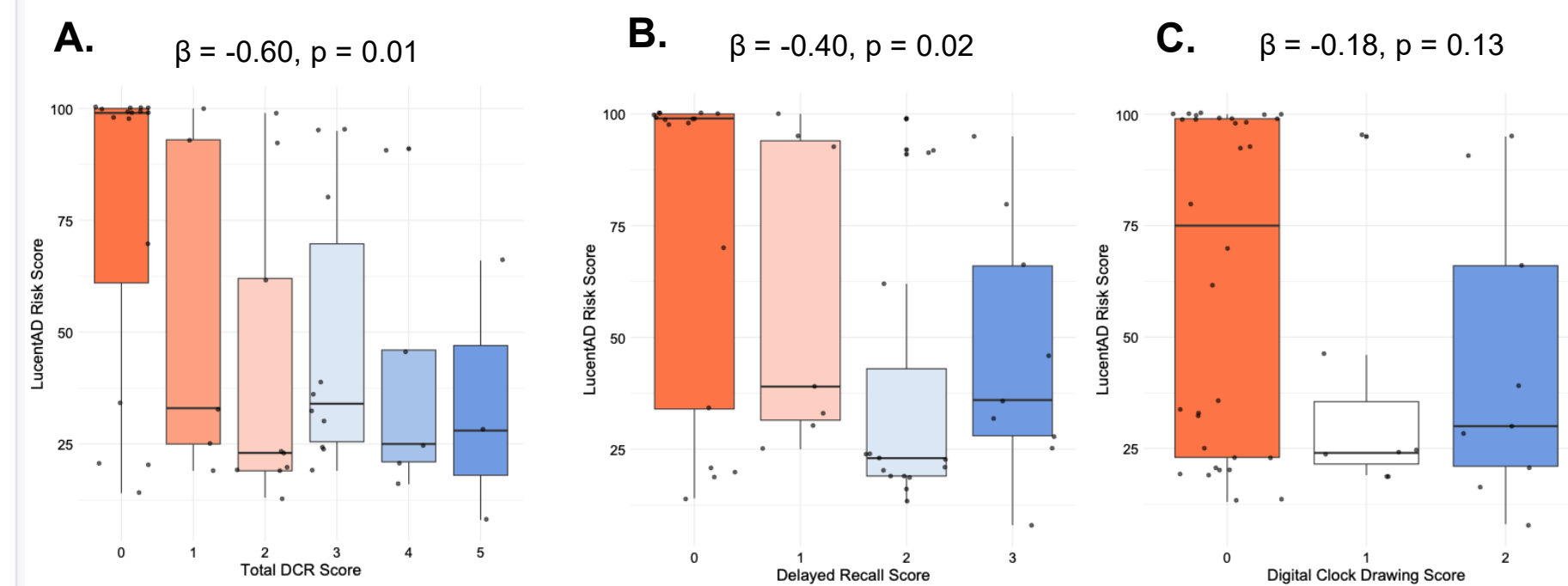


Figure 5. Boxplots presenting associations between A. LucentAD multimarker concentration and total DCR Score, B. Delayed Recall Score, and C. Digital Clock Drawing Score. Statistics for linear regression models provided. All models were adjusted for age, sex, and education.

Higher LucentAD risk scores were significantly associated with lower delayed recall and overall DCR performance, indicating that poorer cognition corresponds with greater AD risk.

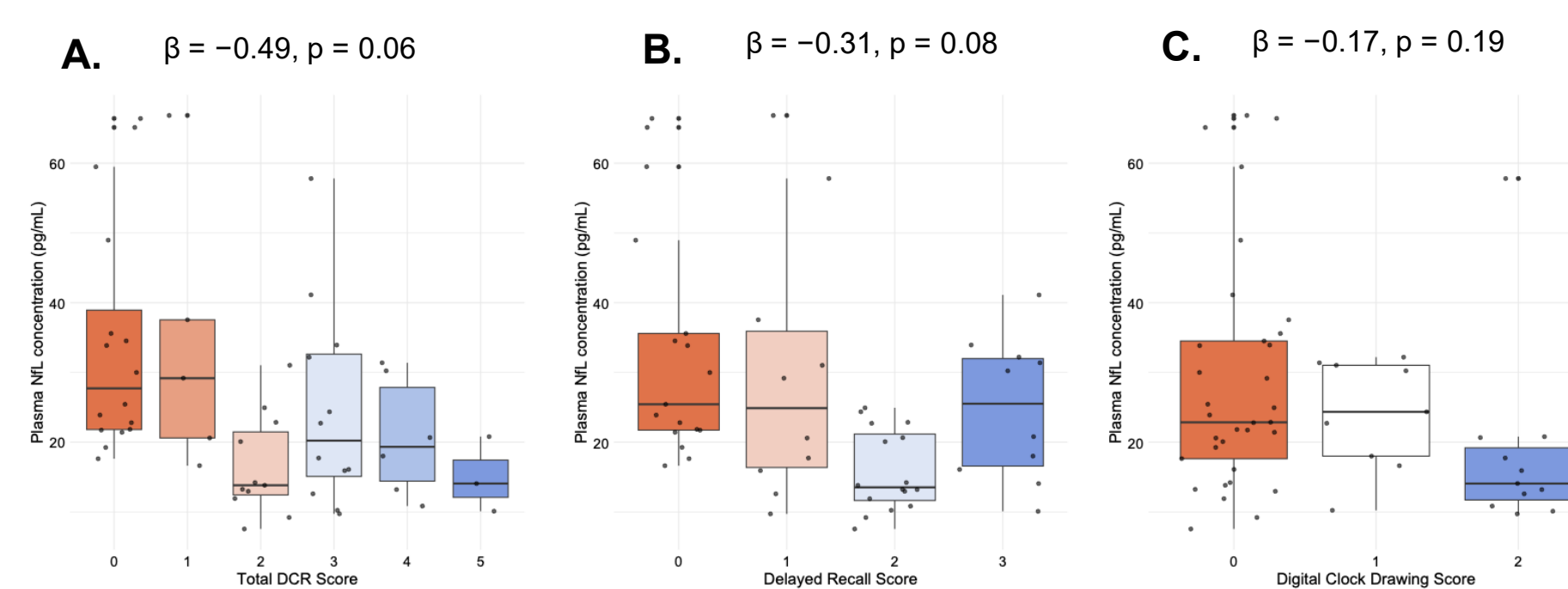


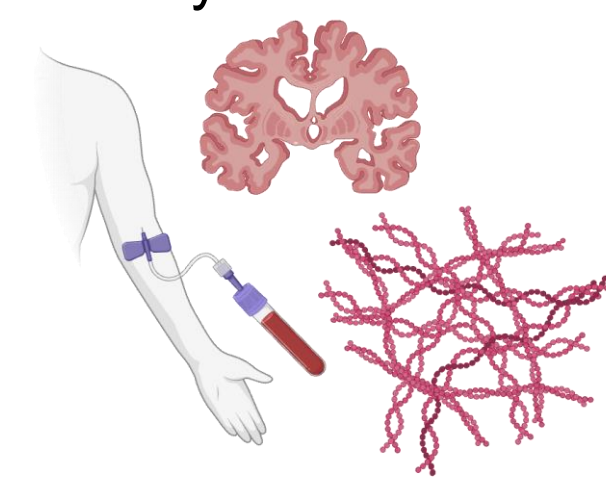
Figure 6. Boxplots presenting associations between Plasma NfL concentration and A. total DCR Score, B. Delayed Recall Score, and C. Digital Clock Drawing Score. Statistics for linear regression models provided. All models were adjusted for age, sex, and education.

Plasma NfL showed only a marginal association with total DCR performance ($p = 0.06$) and was not significantly associated with delayed recall or clock drawing, suggesting that NfL, a marker of general neurodegeneration, is less specific to early AD-related cognitive change than p-Tau217.

DISCUSSION

Combining blood-based biomarkers with targeted digital cognitive testing may improve early detection and risk stratification.

- We report on the feasibility and value of combined brief tablet-based digital assessment with plasma p-Tau217, NfL and a multi-marker amyloid score in a real-world memory clinic.
- Poor DCR performance with a high LucentAD score increases confidence in diagnosis of AD-related neurodegenerative disease.
- Both tools are scalable and could serve as valuable screening tools in large healthcare systems.



FUTURE DIRECTIONS



REFERENCES

- Thompson et al. *Alzheimer's & Dementia* 21.12 (2025): e70966.
- Vanderlip et al. *Alzheimer's & Dementia* 21.6 (2025): e70355.
- Wilson et al. *Alzheimer's & Dementia* 20 (2025): e095706.
- Jannati et al. *Alzheimer's Research & Therapy* 16.1 (2024): 2.
- Showalter et al. *Alzheimer's Research & Therapy* 17 (2025): 261.

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