

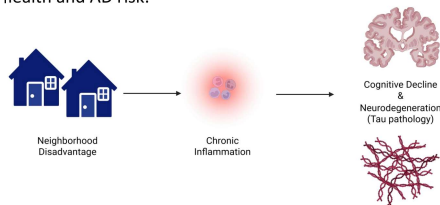
Neighborhood Disadvantage is Related to Inflammation, Cognition, and Neurodegeneration in Adults with Cardiovascular Disease

Elizabeth Flynn, Arin Watson, Enid Swatson, MPH, Jordan Watson, Julia Kamara, Sofie Ragins, Chloe Park, Christopher Herring, Danielle D Verble, MA, Whitney Wharton, PhD, Brittany Butts, PhD, RN
Emory University, Atlanta, GA

Among cognitively normal adults at risk for AD, greater neighborhood disadvantage was associated with increased inflammatory markers, poorer cognition, and greater tau pathology. Black and African American participants had significantly higher ADI scores, highlighting racial disparities in neighborhood disadvantage.

Background

- Neighborhood disadvantage, the unequal socioeconomic differences between residential locations in the U.S., is linked to an increase in systemic inflammation.
- Systemic inflammation creates a prolonged immune response, releasing proteins and cytokines that have been associated with tau pathology and cognitive decline.
- Further understanding these associations may clarify pathways in which public health disparities influence brain health and AD risk.



Purpose

The purpose of this study is to examine associations between neighborhood disadvantage and:

1. Inflammation
2. AD blood-based biomarkers
3. Cognitive function

Methods

SAMPLE

- Data collected from an ongoing study of cognitively normal adults aged 40 years or older with one or more cardiovascular disease.

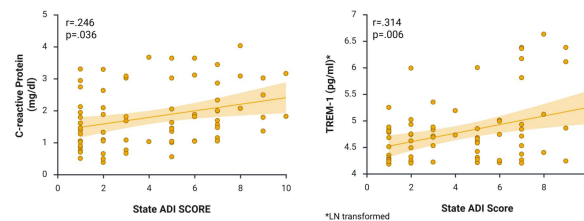
MEASURES

- Neighborhood Disadvantage** measured using the Area Deprivation Index (ADI)
- Inflammation** measured through serum inflammatory markers via ELISA assay
 - o C-Reactive Protein (CRP)
 - o Interleukin 1 beta (IL-1β)
 - o Triggering Receptor Expressed on Myeloid cells 1 (TREM-1)
- AD Blood-Based Biomarkers** measured through serum tau biomarkers via ELISA assay
 - o total-tau (t-tau)
 - o phosphorylated tau 217 (p-tau217)
- Cognitive Function** measured through test on several cognitive domains via Montreal Cognitive Assessment (MoCA)

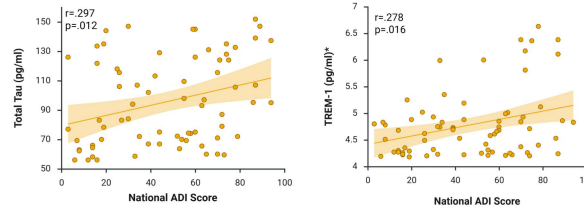
Results

- Greater neighborhood disadvantage was associated with increased inflammation, higher levels of tau, and worsened cognitive performance. Neighborhood disadvantage was greater among Black/African American participants compared to non-Hispanic white participants.

State ADI scores were positively associated with CRP and TREM-1 levels.

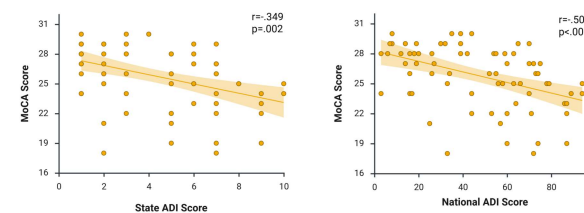


National ADI scores were positively associated with total tau and TREM-1 levels.

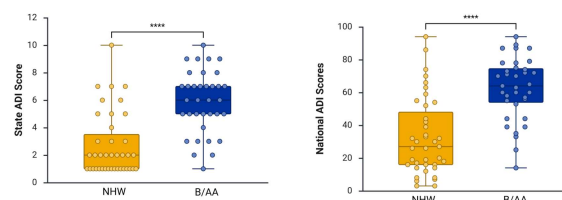


Note: There was no significance found between biomarkers IL-1β or p-tau217 with State or National ADI

Both State and National ADI scores were negatively associated with MoCA scores.



Both State and National ADI scores were higher among Black/African American participants.



State ADI: 8.77±12.7 vs 3.44±4.935, p=.018; National ADI: 59.4±22.99 vs 32.21±24.27, p<.001) with large effect sizes (Cohen's d=-.566 (state); -1.149 (national)).

Demographics

Characteristic	Mean ± SD (Range) / N (%)
Age (Years)	67±8 (44-84)
Female	46 (61%)
Black/African American	35 (47%)
State ADI	5.96±9.74 (1-10)
National ADI	45.07±27.19 (2-94)

Discussion

- Greater neighborhood disadvantage was associated with increased inflammation, cognitive decline, and markers of neurodegeneration
- Individuals living in disadvantaged communities may need earlier cognitive screening and intervention.
- Future studies should explore how neighborhood disadvantage may increase health risks and how to decrease this socioeconomic disparity, particularly for black individuals.

Acknowledgements

- This study was supported by National Institute on Aging grant number K23AG076977 & the BrightFocus Foundation Standard Award in Alzheimer's Disease Research
- I would like to thank my wonderful mentors, Dr. Butts and Dr. Wharton, for their support and guidance in this project.

Contact

