ABOUT

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Position

Associate Professor of Medicine in the Departments of Internal Medicine and Neurology and Director of the Cognitive Health Services Research Program at the University of Michigan

Research Focus

Preventing stroke and dementia and reducing health disparities.

Helpful Resource

Cross-Cohort Collaboration Consortium

Most Recent Publications

- Levine DA, Gross AL, Briceño EM, et al. Association between blood pressure and later-life cognition among Black and White individuals. JAMA Neurol. 2020;77(7):810-819. PMCID: PMC7154952
- Levine DA, Gross AL, Briceño EM, et al. Sex differences in cognitive decline among US adults. JAMA Network Open. 2021;4(2): e210169. doi: 10.1001/jamanetworkopen.2021.0169. PMCID: PMC7907956

Most Recent Studies

- NIH/NINDS-funded R01 study (BP COG) of the effect of blood pressure over the life course on dementia risk in Black, Hispanic, and White individuals
- NIH/NIA-funded R01 (STROKE COG) studying the effect of vascular risk factor levels on risk of Alzheimer's Disease and related dementias after stroke

INTERVIEW WITH

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How did you get involved with researching cognitive impairment?

I got involved with research on cognitive impairment by studying the effect of stroke on cognitive decline. I was PI of an NIH/NIA-funded K23 identifying the predictors and long-term trajectory of post-stroke cognitive decline using data from the NIH-funded Reasons for Geographic and Racial Differences in Stroke (REGARDS) study.

What were the central objectives of your work?

We had two central objectives of our recent work. The first objective was to determine whether cumulative blood pressure levels explain racial differences in cognitive decline to better understand racial differences in dementia risk. Black individuals are more likely than White individuals to develop dementia. Our research question was: Do Black individuals' higher cumulative blood pressure levels contribute to their greater risk of cognitive impairment and dementia compared with White individuals? We hypothesized that Black individuals have faster cognitive decline than White individuals and Black individuals' higher blood pressure levels contribute to racial differences in later-life cognitive decline.

The second objective was to determine whether cognitive decline differs by sex to better understand sex differences in dementia risk. Sex differences in dementia risk are unclear, but some studies suggest that women have higher incidence of Alzheimer's disease. Our question was: Does the risk of cognitive decline among US adults vary by sex? We hypothesized that women have greater cognitive decline than men after adjusting for cardiovascular risk factors and educational levels, factors known to differ between men and women.

What were your major findings?

In the first study using pooled data from 19,378 participants, we found that Black individuals had significantly faster declines in global cognition than White individuals. Differences between Black and White individuals in global cognition decline were no longer statistically significant after adjusting for cumulative mean systolic blood pressure. These results suggest that black individuals' higher cumulative BP levels may contribute to racial differences in later-life cognitive decline.

We did a separate study to determine associations between sex and cognitive decline. In the second study using pooled data from 26 088 participants, women, compared with men, had higher baseline performance in global cognition, executive function, and memory. Women, compared with men, had significantly faster declines in global cognition and executive function, but not memory. These findings suggest that women may have greater cognitive reserve but faster cognitive decline than men.

What are some challenges of the research process?

- Identifying cohorts that are suited for the research question.
- Getting research funding.
- Executing data use agreements with cohorts/institutions and obtaining the secondary data.
- Harmonizing the variables across the cohorts. Identifying and managing data differences across the cohorts.

What advice would you give to those trying to harmonize data across cohorts?

- Collaborate with investigators with appropriate content expertise e.g., neuropsychologists for harmonizing cognitive data.
- Partner with investigators from the cohorts throughout the process from the beginning. Invite them to be co-investigators and co-authors on the work.
- Budget dollars for the cohorts to prepare datasets and provide material support. The cohorts have skilled data teams who know the data and can help answer questions, recommend variables to use, and help verify that your sample size numbers are accurate.
- Scrutinize original data collection procedures and data documentation forms carefully.

What excites you about being a researcher now?

What excites me about being a researcher now is the tremendous enthusiasm and research funding for dementia prevention. As a result, more people are collaborating and doing novel studies to understand and reduce dementia. The hope is that the research efforts will find effective ways to prevent or slow dementia so that fewer people face the burden of living with dementia.

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National Archive of Computerized Data on Aging

NIH
National Institutes of Health

thank you

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