

**PRESENTING AUTHOR'S NAME & RESEARCH TITLE**

Ezra C. Holston, PhD, MSN, BA

Describing Brain Activity of African-American Older Adults with Alzheimer's Disease: Pilot Study

**PURPOSE/BACKGROUND**

The objective was to identify a reliable electrophysiological biomarker that will reduce race-based, Alzheimer's disease (AD) related health disparity, leading to early and accurate AD screening and diagnosis for older African-American adults. It is estimated that brain activity changes recorded in Caucasian older adults (i.e., slowing of fast frequency bands (alpha) and an increase in the slow frequency bands (theta)) offer a potential window into detecting AD. However, there are few to no known studies characterizing AD-related brain activity changes for African-American older adults. Failure to document AD-related brain activity changes for older African-American adults contributes to ongoing misdiagnosis and continued generation of a preventable health disparity. Knowing these changes in older African-American adults allows for early detection, accurate screening, and appropriate diagnosing—a health disparity game-changer.

**MATERIALS & METHODS**

For this prospective cohort pilot study with a descriptive comparative design, 76 participants will be recruited and categorized into 2 groups by ethnicity (African Americans: n=38; Caucasian: n=38). Each group will consist of older adults without AD (n=19) and those with AD (n=19). A portable electroencephalogram (EEG) will be used to collect electrophysiologic data. NeuroGuide software will convert the recorded raw EEG data into quantitative electroencephalography (qEEG) measures (delta, theta, alpha, and beta frequency bands) of the brain activity at one-time point. Data will be analyzed with SPSS 26.0. Descriptive statistics and analysis of variance (ANOVA) will be used to characterize the brain activity and determine the difference in brain activity by ethnicity. The level of significance will be .05 with a power of .72.

**RESULTS**

There are no results to report since data collection has not occurred. It is projected to occur from 11/2022-06/2023 with the new funding. Over the funded period, it was possible to purchase equipment for a portable EEG laboratory and software for qEEG conversion and analysis. In addition, materials for recruitment have been printed. Networking with supporters is ongoing for their continued support and providing data collection sites.

**DISCUSSION/CONCLUSION**

Findings from this pilot study will address a substantial gap in the literature and care of older African-American adults with Alzheimer's disease (AD). Findings will be foundational for future multi-site, nationwide studies examining the ethnic influences on the onset and progression of AD as observed and measured in the brain activity changes. These studies will continue to enhance early assessment, diagnosing, and treatment of older African-American adults with AD, as well as other older adults with AD.