5 Vascular Depression in Older Black Adults: White Matter Hyperintensities, Cognition, and Gait Speed

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Objective: Decreased brain white matter integrity as a result of vascular burden is associated with a form of late-life depression, known as vascular depression (VaDep). Black older adults may be particularly vulnerable to developing VaDep due to a higher prevalence of vascular conditions compared to White older adults. The current study examined whether clinical and imaging markers of vascular burden predicted depressive symptoms in an older Black sample. Based on the literature in primarily White samples, we expected greater clinical vascular burden and white matter hyperintensity (WMH) volume to predict greater depressive symptoms both cross-sectionally and over 4-year follow-up. We additionally hypothesized that participants with operationally-defined VaDep would have worse cognitive performance and slower gait speed compared to those without VaDep. Exploratory analyses examined race (Black vs. White) as an additional predictor.
Participants and Methods: This study used publicly available data from 113 Black older adults who were followed for four years in the Healthy Brain Project (a substudy of the Health, Aging, and Body Composition Study). Clinical vascular burden was defined as the number of vascular conditions (e.g., hypertension, diabetes, stroke); total WMH volume and WMH volume in the uncinate fasciculus, superior longitudinal fasciculus, and cingulum were considered imaging markers of vascular burden. Clinical and imaging-defined vascular burden were used to predict baseline depressive symptoms and average depressive symptoms over follow-up as measured by the Center for Epidemiologic Studies Depression Scale (CES-D). We then formed groups based on cutoffs for vascular burden (two or more conditions) and depressive symptoms (upper tertile of CES-D scores) to compare cognitive (Digit Symbol Substitution Test and 15-Item Executive Interview) and gait speed performance at baseline and changes over four years in VaDep, non-vascular depression, vascular only, and healthy groups. Exploratory analyses included 179 White older adults from the Healthy Brain Project dataset to examine race differences.
Results: Total WMH volume and WMH volume in the uncinate fasciculus predicted higher depressive symptoms both cross-sectionally and longitudinally. However, no similar pattern emerged when using clinically-defined vascular burden as the predictor. The VaDep group had the slowest processing speed but the trajectory of decline over time did not differ between groups. The non-vascular depression group's executive performance improved over time while performance by the other groups remained stable. Both VaDep and non-vascular depression groups' gait speed declined over time. There was a stronger association between depression and uncinate fasciculus WMH in Black compared to White individuals, and the Black VaDep group had the slowest baseline processing speed of all groups.
Conclusions: This research supports the validity of the VaDep framework in Black older adults by showing the impact of WMH, particularly in the uncinate fasciculus, on depressive symptoms and identifying cognitive risks associated with VaDep in this population. Moreover, results suggest WMH may confer a greater risk for depression in Black compared to White older adults, and that VaDep disproportionately impacts processing speed in Black older adults. This work addresses an important gap in the VaDep literature by examining a group that has historically been underserved.

Categories: Mood & Anxiety Disorders
Keyword 1: depression
Keyword 2: cerebrovascular disease
Keyword 3: minority issues
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6 The Role of CPAP Treatment on Associations Between Obstructive Sleep Apnea and Cognition Among Black and White Older Adults

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Objective: Obstructive sleep apnea (OSA) may be a modifiable risk factor for late-life cognitive impairment. We previously demonstrated that non-Hispanic Black older adults are less likely to be diagnosed with OSA despite having equal or greater health risk for OSA compared to non-Hispanic White older adults, and this disparity in diagnosis was strongest among individuals with lower education. Here, we aimed to determine 1) whether there are racial differences in continuous positive airway pressure (CPAP) treatment, 2) how CPAP treatment may influence OSA-cognition associations, and 3) whether CPAP differentially influences OSA-cognition associations across racial groups.
Participants and Methods: Cross-sectional data were obtained from 424 socioeconomically diverse community-dwelling adults ages 55-83 (63.4±3.2 years, 41.7% male, 53.5% Black) from the Michigan Cognitive Aging Project. Physician-diagnosed OSA and current CPAP use were self-reported. Global cognition was operationalized as a composite of five factor scores derived from a comprehensive neuropsychological battery. Racial group differences were investigated with chi-square and Fisher's exact tests with statistical significance set at the .05 level. Associations between OSA and cognition (adjusted for age, gender, race, and years of education) were investigated with linear regressions. Subsequent models isolated effects of uncontrolled OSA by excluding individuals using CPAP. Racial differences in OSA-cognition associations were investigated with race-stratified models.
Results: Fewer Black participants (9.2%) reported diagnosed OSA compared to White participants (12.3%; $\chi 2$ (1, N=424) =5.314, p=.021, φ=.112). In the whole sample, 47.3% of participants with diagnosed OSA reported CPAP use, and this proportion did not differ across race ($\chi 2$ [1, N=86] =.048, p=.826). In the whole sample, OSA diagnosis was only associated with cognition when CPAP users were excluded (excluding CPAP users: β=-.085, SE=.037, p=.024; including CPAP users: β=-.067, SE=.036, p=.062). In race-stratified models, diagnosed OSA was only associated with cognition among Black participants, and this association was stronger when CPAP users were excluded (excluding CPAP users: β=-.142, SE=.060, p=.018; including CPAP users: β=-.126, SE=.058, p=.030). Diagnosed OSA was not associated with cognition among White participants, irrespective of whether CPAP users were included (excluding CPAP users: β=-.084, SE=.068, p=.215; including CPAP users: β=-.056, SE=.064, p=.378).
Conclusions: Our findings support CPAP treatment as a potential intervention to mitigate late-life cognitive impairment among those with OSA. Despite being less likely to receive a diagnosis of OSA, Black older adults were equally likely to engage in CPAP treatment as White older adults when diagnosed. The detrimental impact of OSA on cognition may be more salient among Black older adults, which may reflect racial disparities in cardiovascular risk and/or resources that promote cognitive reserve. However, CPAP appears to be an effective treatment to reduce OSA-related cognitive impairment for Black older adults, highlighting the critical importance of diagnosis and treatment in this group. Intervention efforts that abate racial inequalities in access to quality healthcare in order to facilitate acquisition of a formal OSA diagnosis and CPAP treatment may help to reduce preventable cognitive health disparities among older adults.

Categories: Sleep and Sleep Disorders
Keyword 1: minority issues
Keyword 2: aging disorders
Keyword 3: sleep disorders
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Paper Session 20: COVID related topics

10:45am - 12:10pm
Saturday, 4th February, 2023
Town & Country Ballroom D

Moderated by: Lucette Cysique

1 Perceived Cognitive Impairment in High School Students in the United States During the COVID-19 Pandemic

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