Perceptions of Brain Health and Cognition in Older African Americans and Caucasians With HIV: A Focus Group Study

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*As people age with HIV, cognitive problems may become more prevalent and severe, but lifestyle behaviors (i.e., physical activity) have been shown to protect brain health and cognition. We examined the perceptions that older adults living with HIV have about protecting and improving brain health and cognition through lifestyle behaviors. Qualitative data were analyzed from four focus groups (*N = *30) of African Americans and Caucasians living with HIV and at least 50 years of age. An open-coding scheme using conventional content analysis was employed. Two results were found. First, many older adults with HIV in our study expressed a variety of cognitive complaints that interfered with daily function. Second, these participants reported few specific ideas about how such health behaviors were important to their own brain health and cognition. Education interventions may help older adults with HIV learn to improve and protect brain health and cognition as they age.*

(Journal of the Association of Nurses in AIDS Care, 28, *862-876*) *Copyright © 2017 Association of Nurses in AIDS Care*

Key words: *brain fitness, cognitive aging, cognitive fitness, HIV, HIV-associated neurocognitive disorder (HAND)*

With advancing age, concerns about age-related brain health and the development of cognitive disorders grow, which may be particularly troubling for those aging with HIV. By some estimates using the Frascati criteria, which is a neuropsychiatric algorithm, the prevalence of HIV-associated neurocognitive disorder (HAND) may be as high as 52% to 59% (Vance, Cody, & Moneyham, 2017), with a range of various impairments observed in this HAND classification. Using the Frascati criteria, the HAND classification is based on cognitive performance values, and adults with HIV consistently have worse cognitive performance and higher prevalence of HAND compared to those without HIV. People with HIV have been found to be 1.7 times more likely to be classified as having HAND (Tierney et al., 2017). Thus, as people age with HIV, the prevalence and severity of such cognitive disorders may be exacerbated due to more

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JOURNAL OF THE ASSOCIATION OF NURSES IN AIDS CARE, Vol. 28, No. 6, November/December 2017, 862-876
http://dx.doi.org/10.1016/j.jana.2017.07.006

comorbidities and polypharmacy, prolonged stress and depression, HIV-accelerated and/or HIV-accentuated age-related neurological changes, and prolonged exposure to HIV-associated systemic inflammation and neuroinflammation (Cody & Vance, 2016). It is important to understand how the symptoms of these cognitive disorders manifest in patients and to develop practical lifestyle interventions to protect brain health and improve cognition.

Lifestyle Factors, Brain Health, and Cognition

From the aging, HIV, and cognitive neuroscience literature, several lifestyle factors have been shown to affect brain health and cognition, including, but not limited to: (a) physical activity, (b) mental activity, (c) nutrition, (d) social engagement, (e) emotional health, (f) sleep hygiene, and (g) substance use, to name a few (Cody & Vance, 2016; Vance, Eagerton, Harnish, McKie-Bell, & Fazeli, 2011). For example, Fazeli and colleagues (2014) observed that, as adults with HIV engaged in a greater number of the lifestyle factors of physical activity, mental activity, and social engagement, the prevalence of HAND decreased significantly. Their observation suggested that lifestyle factors may promote positive neuroplasticity and be neuroprotective of cognitive reserve and, thereby, benefit brain health and cognition. Various studies have demonstrated that modifying lifestyle factors and health behaviors (e.g., reducing substance use) benefit brain health and improve cognition. Although each of these lifestyle factors easily deserve their own systematic literature review, a brief example of the relationship between cognition and these lifestyle factors as they relate to HIV is provided below.

Physical Activity

The benefits of physical activity and exercise in promoting brain health and cognition are well documented in the gerontology literature (Colcombe et al., 2006). Such benefits have been observed in adults with HIV as well. In a cross-sectional study of 335 adults with HIV, Dufour and colleagues (2013) found that those who exercised were less likely to have neurocognitive impairment compared to those who did not exercise (odds ratio = 2.63, $p < .05$). Similar findings have been found in older adults with HIV (Fazeli et al., 2015).

Mental Activity

Mental activities, such as those observed in educational attainment and occupational activities, are neuroprotective of cognitive disorders as people age (Cody & Vance, 2016). One type of mental activity, computerized brain fitness programs, represents another method to engage in mental activity. Vance, Fazeli, Ross, Wadley, and Ball (2012) randomized 46 middle-aged (at least 40 years) and older adults with HIV to either 10 hours of visual speed of processing training group or to a no-contact control group. Those who received the brain fitness intervention significantly improved on a measure of visual speed of processing (i.e., Useful Field of View test), which translated into improvement on a laboratory measure of everyday function (i.e., Timed Instrumental Activities of Daily Living test).

Nutrition

Many foods rich in sugar and lacking antioxidants may be pro-inflammatory, which can impair brain health and cognition. Studies show that foods rich in antioxidants and polyphenols, such as blueberries, may actually improve cognitive function in adults (Miller, Hamilton, Joseph, & Shukitt-Hale, 2017). Because adults with HIV may experience more low-grade, chronic, systemic, and neuronal inflammation due to chronic stimulation of the immune system by HIV (Cody & Vance, 2016), nutritional interventions rich in polyphenols and other anti-inflammatories may exert cognitive benefit.

Social Engagement

Studies have suggested that those engaged socially perform better cognitively. For example, in a study of 181 community-dwelling older adults, Stine-Morrow, Parisi, Morrow, and Park (2008) randomized participants to receive 20 weekly sessions engaged in an active social group or a no-contact control group. Those in the active social engagement group participated as a team to solve creative problems and