

Relationship between Cellular Aging, Perceived Stress and Cardiovascular Risk Factors in Black and African American Family Caregivers of Persons living with Dementia

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Background: Family caregivers (CGs) of individuals living with dementia are instrumental to the emotional, social, and physical health of their loved ones. As the disease progresses, the demands of caregiving intensify. Research suggests dementia CGs have an increased risk of cardiovascular dysfunction, chronic stress, and accelerated cellular aging, and Black and African Americans are known to have a greater cardiovascular risk. The purpose of this study is to examine the relationship between cellular aging (total telomere length), HPA-axis dysfunction, inflammation, sleep, and cardiometabolic markers in Black and African American dementia CGs.

Methods: This secondary analysis used previously collected questionnaires (Perceived Stress Scale and Pittsburg Sleep Quality Index) and stored biologic samples. Cortisol awakening response (CAR) was collected via salivary cortisol. Inflammatory (hsCRP, IL-6) and cardiometabolic markers (PAI-1, insulin, resistin, adiponectin) were quantified with immunoassay. Total telomere length was quantified with qPCR. Linear regression was used controlling for age, gender, and Charlson Comorbidity Index.

Results: Caregivers were 55 ± 10 years of age, mostly women (86%), well-educated (71%), and 71% lived with the dementia care recipient. Total telomere length was negatively associated with age ($r = -.350$, $p = .003$), perceived stress ($\beta = -.258$, $p = .003$), CAR ($\beta = -.341$, $p < .001$), hsCRP ($\beta = .225$, $p = .009$), insulin ($\beta = -.185$, $p = .035$), adiponectin ($\beta = -.157$, $p = .008$), systolic blood pressure ($\beta = -.297$, $p = .001$), and diastolic blood pressure ($\beta = -.247$, $p = .001$). Total telomere length was positively associated with PAI-1 ($\beta = .203$, $p = .027$) and resistin ($\beta = .182$, $p = .040$).

Conclusions: This study found that perceived stress was associated with measures indicative of cellular aging, inflammation, and poor cardiometabolic health. Together these findings demonstrate a need for a culturally appropriate intervention that assesses the burden of Black and African American family caregivers with the goal of increasing awareness and lowering cardiovascular risks.

Implications for Practice: Nurses can play a key role in promoting CG health through assessment and interventions aimed at reducing stress and cardiovascular risk factors.