Understanding Chronic Stress, Allostatic Load, and Health Outcomes in Low-Income Older Adults

Kathy Wright, PhD, RN, GCNS-BC, PMHCNS-BC, Mellen Postdoctoral Fellow

kdw39@case.edu
216-368-1928
The Population of Interest...

- Community dwelling Low-income older adults.

- Health disparities between those who are dually enrolled Medicare-Medicaid older adults are 1.7 times as likely to have six or more chronic conditions than those not dually enrolled; 55% have at least one cognitive impairment and 44% have multiple physical impairments (Kiding-Cheng & David, 2012).

- Socioeconomic disadvantage, such as low income, low education, and dwelling in poor neighborhoods, increases the cumulative stress experienced by these older adults (Centers for Medicare Medicaid Services, 2011). Additional challenges that are experienced by African-Americans in the form of racism and discrimination compound the effects of chronic stress on health outcomes.
• Challenges in measuring chronic stress
  ➢ Self-report.
  ➢ Saliva, urine, or blood to measure cortisol.

• Allostatic Load (McEwen & Gianaros, 2010)
  ➢ Calculation of allostatic load
    ➢ epinephrine, norepinephrine, dopamine, cortisol, DHEA-S, IGF-I, IL-g, systolic blood pressure, diastolic blood pressure, triglycerides, HDL cholesterol, fasting glucose, glycosylated hemoglobin, BMI & waist/hip ratio.
  ➢ Increase in allostatic load...
    ➢ e.g. cardiovascular disease, functional decline frailty, and increased mortality.
  ➢ Limitation of good measure of chronic stress (cortisol) to calculate allostatic load in community dwelling low-income older adults.
Hair Cortisol

- The collection of a hair specimen (only 2cm-3cm required) for cortisol analysis is less invasive and offers less hassle for patients than samples of blood, urine, or saliva.
- The benefits to collecting hair samples include a wide window of detection, noninvasive, easy storage, and inability to decompose like other fluid or tissue samples.

(Laudenslager, Jorgensen, Grzywa, & Fairbanks, 2011)
Further exploration of these pathways (mechanisms) will lead researchers to solutions to improve the care of vulnerable older adults.

Conduct preliminary work to establish the relationships among chronic stress, allostatic load, and physical and mental health functioning in community-dwelling, low-income older adults.

- Refine the validity and feasibility of hair cortisol as a measure of chronic stress in community-dwelling, low-income older adults.
- Compare biologic measures of chronic stress with self-report measures of chronic stress.
- Determine the associations among levels of hair cortisol, allostatic load, and physical and mental health.

Design and pilot test an intervention for low-income, community-dwelling older adults that incorporates both physical activity and stress management to reduce chronic stress and allostatic load to improve physical and mental health and quality of life.

- Conduct focus groups to obtain the views of older low-income adults regarding stress, stress management, and health behaviors that can be incorporated in culturally appropriate interventions.
- Conduct a pilot study to test the feasibility, acceptability, and initial efficacy of a new intervention to improve physical and mental health and quality of life.
- Determine the effect size of the intervention for its use in a larger trial.

Potential Impact: Findings from this study have the potential to reduce disparities in health outcomes in a vulnerable population, low-income elders, by better characterizing the effect of stressors on their physiologic and mental functioning and providing initial evidence about the effects of treatments for this population.
References


L. Dettenborn, Tietze, A., Bruckner, F., & Krischbaum, C, 'Higher Cortisol Content in Hair among Long-Term Unemployed Individuals Compared to Controls', Psychoneuroendocrinology, 35 (2010), 1404-09


Additional Reading and Resources


Video of procedure for hair collection. [http://salimetricsEurope.blogspot.com/p/hair-cortisol.html](http://salimetricsEurope.blogspot.com/p/hair-cortisol.html) (Not an endorsement of Salimetrics products)