



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)
American Heart Journal Plus:
Cardiology Research and Practice

journal homepage: www.sciencedirect.com/journal/american-heart-journal-plus-cardiology-research-and-practice



Research paper

Cardio-oncology disparities: Interplay of psychosocial stress, inflammation, and cardiometabolic health among Black breast cancer survivors[☆]

Lakeshia Cousin^{*}

Department of Family, Community and Health Systems Science, College of Nursing, Cardio-Oncology Working Group, University of Florida Health Cancer Center, Gainesville, FL, USA



ARTICLE INFO

Keywords:

Health disparities
 Women's health
 Metabolic syndrome
 Cardio-oncology

ABSTRACT

Black breast cancer (BC) survivors have a lower survival rate at every stage of the disease, largely due to a higher BC mortality rate of 41 %, more aggressive forms of BC, cardiovascular comorbidities, and stress related to structural inequities. An underexplored factor is Black women's increased risk for cardiometabolic syndrome (CM), exacerbating cardio-oncology disparities. Many factors associated with increased risk for CM are modifiable through lifestyle behavior interventions and generally fail to improve outcomes among Black women. This lack of efficacy is likely due to the interventions' failure to address the cumulative effects of long-term exposure to psychosocial stressors unique to Black women using cultural frameworks. The protocol design of an 8-week pilot study was presented at the inaugural UF Health Cardio-Oncology Symposium, "Emerging Topics in Cardio-Oncology." Twenty-six self-reported Black BC survivors will be randomized using a two-group parallel random assignment experimental design, and study details are reported on [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT05473026) (#NCT05473026). Our primary aim is to assess the feasibility and acceptability of a culturally relevant gratitude journaling intervention to manage stress and promote goalsetting techniques. The second aim is to test the preliminary efficacy of the intervention on stress, inflammatory biomarkers (TNF- α , IL-6, GDF15, CRP), dispositional gratitude, spiritual well-being, and a culturally relevant framework (Superwoman Schema) to examine stressors unique to Black women. If found to be effective, this clinical trial will provide evidence of a viable non-pharmacological intervention for managing psychosocial stressors, improving CM risk, and reducing cardio-oncology disparities.

Black women carry the largest burden of cardio-oncology health disparities. Compared to non-Hispanic White women, Black women have a 41 % higher breast cancer (BC) mortality rate, more aggressive BC sub-types, and increased risk of cardiovascular diseases from cardiotoxic treatment effects and cardiometabolic diseases [1,2]. These disparities are also driven by social determinants of health and an increase in psychosocial distress unique to this population, including sociohistorical and cultural experiences related to race, gender, and class, contributing to cumulative stress and worse cardio-oncology outcomes and behaviors [3–6]. The cognitive, affective, and behavioral responses of Black women to these stressors have been characterized in the five dimensions of a conceptual framework called the Superwoman Schema: the obligations to manifest strength, suppress emotions, resist being

vulnerable or dependent, succeed despite limited resources, and help others before themselves leading to these poorer outcomes [6]. To date, behavioral interventions to address cardiometabolic disease risk factors (i.e., obesity, physical inactivity, inflammation, and stress) have generally failed to improve health outcomes among Black women, likely due to not fully considering culture and contextual factors in health. Black women have higher levels of spirituality than non-Hispanic White women. Yet, limited data is known on how mind-body interventions such as mindful gratitude journaling and meditation can improve physical and psychological health and reduce cardiometabolic risk factors [7,8]. It is clear that more research on the psychosocial processes involved in the stress response is needed to understand the biobehavioral pathways to health to close the gap in cardio-oncology health

[☆] Symposium information: Name of meeting: Emerging Topics in Cardio-Oncology. Organization presenting the meeting: the University of Florida Cancer Center Cardio-Oncology Working Group. Location: University of Florida Cancer Genomics Research Complex (CGRC), Room 133, 2033 Mowry Rd, Gainesville, FL 32610. Date of meeting: March 1, 2023.

^{*} PO Box 100197, Gainesville, FL 32610, USA.

E-mail address: lakeshiacousin@ufl.edu.

<https://doi.org/10.1016/j.ahjo.2024.100366>

Received 5 September 2023; Accepted 24 January 2024

Available online 30 January 2024

2666-6022/© 2024 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

disparities [9].

To help accomplish this goal, the author is the primary investigator of the clinical trial: *The Grateful Strides Toward Physical Activity and Well-Being for Black Breast Cancer Survivors (NCT05473026)*, internally funded by the University of Florida Claude D. Pepper Older Americans Independence Center. This eight-week randomized controlled study evaluates the feasibility of delivering a gratitude journaling intervention to promote physical activity, well-being and positively impact biomarkers of health among Black breast cancer survivors. This culturally relevant intervention also includes a goal-setting component to promote exercise readiness and examine the cultural phenomenon of the Superwoman Schema framework. This trial recently completed enrollment on July 25, 2023, with plans to analyze and disseminate results into clinicaltrials.gov and beyond. Black BC survivors ($n = 26$) were randomized into either a gratitude or attention control (general memory) group. Study-specific aims include (1) evaluating the feasibility of recruiting and retaining Black BC survivors in a clinical trial and (2) describing the differences and distributions of outcome variables and effect size for the gratitude journaling intervention compared to the attention control group on dispositional gratitude, spiritual well-being, psychological distress, exercise readiness, Superwoman schema subscales, and inflammatory biomarkers (tumor necrosis factor-alpha (TNF- α), growth and differentiation factor 15 (GDF15), and C-reactive protein (CRP)) from baseline to post-intervention. Findings will inform the design and conduct of a large-scale randomized control trial to provide evidence of a viable non-pharmacological intervention for managing cumulative stress and reducing cardiometabolic risk during BC survivorship.

Ethics statement

No animal or human studies are reported in this publication.

Declaration of competing interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

Dr. Lakeshia Cousin's research was supported by the University of Florida Claude D. Pepper Older Americans Independence Center [grant number P30AG028740].

References

- [1] A.N. Giaquinto, K.D. Miller, K.Y. Tossas, R.A. Winn, A. Jemal, R.L. Siegel, Cancer statistics for African American/Black People 2022, *CA Cancer J. Clin.* 72 (3) (2022) 202–229.
- [2] M.L. Kwan, R.K. Cheng, C. Iribarren, R. Neugebauer, J.S. Rana, M. Nguyen-Huynh, Z. Shi, C.A. Laurent, V.S. Lee, J.M. Roh, H. Shen, E. Rillamas-Sun, M. Santiago-Torres, D.L. Hershman, L.H. Kushi, H. Greenlee, Risk of cardiometabolic risk factors in women with and without a history of breast cancer: the Pathways Heart Study, *J. Clin. Oncol.* 40 (15) (2022) 1635–1646.
- [3] L. Cousin, N. Roper, T.S. Nolan, Cardio-oncology health disparities: social determinants of health and care for Black breast cancer survivors, *Clin. J. Oncol. Nurs.* 25 (5) (2021) 36–41.
- [4] L.E. Barber, G.R. Zirpoli, Y.C. Cozier, L. Rosenberg, J.L. Petrick, K.A. Bertrand, J. R. Palmer, Neighborhood disadvantage and individual-level life stressors in relation to breast cancer incidence in US Black women, *Breast Cancer Res.* 23 (1) (2021) 108.
- [5] C.H. Halbert, M.S. Jefferson, C. Danielson, B. Froeliger, A. Giordano, J.E. Thaxton, An observational study and randomized trial of stress reactivity in cancer disparities, *Health Psychol.* 39 (9) (2020) 745–757.
- [6] C.L. Woods-Giscombé, Superwoman schema: African American women's views on stress, strength, and health, *Qual. Health Res.* 20 (5) (2010) 668–683.
- [7] R.J. Meadows, T.S. Nolan, R.J. Paxton, Spiritual health locus of control and life satisfaction among African American breast cancer survivors, *J. Psychosoc. Oncol.* 38 (3) (2020) 343–357.
- [8] V.B. Sheppard, R. Walker, W. Phillips, V. Hudson, H. Xu, M.L. Cabling, J. He, A. L. Sutton, J. Hamilton, Spirituality in African-American breast cancer patients: implications for clinical and psychosocial care, *J. Relig. Health* 57 (5) (2018) 1918–1930.
- [9] A.M. Allen, Y. Wang, D.H. Chae, M.M. Price, W. Powell, T.C. Steed, A. Rose Black, F. S. Dhabhar, L. Marquez-Magaña, C.L. Woods-Giscombe, Racial discrimination, the superwoman schema, and allostatic load: exploring an integrative stress-coping model among African American women, *Ann. N. Y. Acad. Sci.* 1457 (1) (2019) 104–127.