

# Palpitations in Women with and without Breast Cancer: A Women's Health Initiative Analysis

<sup>1</sup>Ying Sheng, PhD, RN; <sup>2</sup>Janet S. Carpenter, PhD, RN; <sup>3</sup>Nazmus Saquib, PhD, MBBS, MPH; <sup>4</sup>Lihong Qi, PhD; <sup>5</sup>Christine Miaskowski, PhD, RN; <sup>6</sup>Andrea Z. LaCroix, PhD  
<sup>1</sup>Vanderbilt University, <sup>2</sup>Indiana University, <sup>3</sup>Sulaiman AlRajhi University, <sup>4</sup>University of California Davis, <sup>5</sup>University of California San Francisco, <sup>6</sup>University of California San Diego

## Background

- Palpitations – sensations of a racing heart or skipped beats,<sup>1-3</sup> may indicate a range of underlying health conditions, from cardiovascular to stress and anxiety, particularly in women
- Limited information is available on the occurrence and risk factors for palpitations in breast cancer survivors (BCS)
- BCS may be at increased risk for palpitations and deleterious consequences due to receipt of estrogen-ablating treatments

## Purpose

- Evaluate differences between BCS and non BCS in the occurrence rates for palpitations, associated demographic, clinical and symptom characteristics and quality of life (QOL) outcomes

## Methods

- Cross-sectional baseline data from postmenopausal **BCS (n=3,788) and non BCS (n=69,003)** who participated in the Women's Health Initiative (WHI) Observational Study
- "Heart racing or skipping beats" in the prior 4 weeks - **Palpitations**
- Questionnaires - Demographic, clinical, and symptom characteristics and QOL
- Chi-square / t-tests for BCS versus non BCS
- Logistic regression models** for associations between palpitations and baseline characteristics by a history of breast cancer
- Interactions within subgroups** – the main effects of the history of breast cancer and the covariate of interest and their interaction term

## Results

**Table 1. Baseline characteristics among participants by history of breast cancer**

Baseline Characteristics	History of Breast Cancer	
	Yes (N=3,788)	No (N=69,003)
Older age at screening	•	
Not being Hispanic/Latino	•	
Well educated	•	
Single (marital status)	•	
Lived in the South or Midwest	•	
Lived in the Northeast or West		•
Past smoker (vs. Never, current)	•	
Longer since menopause	•	
Greater number of menopause symptoms	•	
Higher Menopausal symptom severity	•	
Higher comorbidity burden	•	
Higher numbers of fell last 12 months	•	
Had other cancer	•	
Current Hormone replacement therapy use (vs. Never, past)		•
Tamoxifen use	•	
Greater sleep disturbance	•	
Lower quality of life	•	

Note: • indicates significant baseline demographics, clinical characteristics, symptoms, and QOL to either BCS or women without a history of breast cancer. P<0.01.

- BCS were older and more likely to be single; had a higher comorbidity burden, greater symptom burden, and poorer QOL, compared to non BCS
- Both groups of women reported a **20% occurrence rate for palpitations**

**Table 2. Correlates of palpitations by individual baseline characteristics and history of breast cancer**

Baseline Characteristics	Model 1 for BCS	Model 2 for Non BCS
Age at screening, y	–	–
Race (ref: White)		+
Ethnicity (ref: Not Hispanic/Latino)		+
Education (ref: College degree or higher)	+	+
Family income (ref; \$75,000+)	+	+
Occupation (ref: Homemaker only)	–	–
U.S. region (ref: West)		+
Body mass index, kg/m <sup>2</sup>		+
Smoking status (ref: Never)	+	+
Alcohol intake (ref: Non drinker)		–
Physical activity quartiles, MET hrs/week (ref: >20)	+	+
Age at menopause	–	–
Number of menopause symptoms	+	+
Menopausal symptom severity	+	+
Systolic blood pressure, mm Hg (ref: <120)		+
Diastolic blood pressure, mm Hg (ref: <80)		+
Cormorbidities (e.g., heart failure, diabetes)	+	+
Hormone replacement therapy use (ref: Never used)		+
Symptoms consistent with clinical depression	+	+
Life Event Construct (LEC), number of experiences	+	+
LEC, severity of experiences	+	+
WHI Insomnia Rating Scale	+	+
General Health Construct (quality of life)	–	–

Note: Statistical significance: p<0.01. – indicates negative correlations, + indicate positive association, blank cell indicates no statistically significant association.

- No statistically significant interactions** between individual covariates and the history of breast cancer
- Factors associated with palpitations did not vary between BCS and non BCS**
- In both groups, lower education level, lower family income, current smoking, lower physical activity, more comorbidities, and greater number of stressful life events were associated with higher rates of palpitations

## Discussion

- BCS had a slightly worse demographic and clinical profile
- Occurrence rates (20%) are consistent with two studies,<sup>1,2</sup> with 15% - 21% reporting palpitations, but deviate from another<sup>3</sup> with 44% - 48%
- Characteristics/QOL related to palpitations align with previous findings<sup>1,3</sup>

## Conclusions and Implications

- Similar occurrence rates/risk factors are observed in BCS and non BCS
- Oncology clinicians can use these findings to identify and counsel women at increased risk for palpitations and provide supportive interventions for BCS

## References

- Sheng Y, et al. Palpitations and co-occurring menopausal symptoms in women prior to breast cancer surgery. *Oncol Nurs Forum*. 2023;50(2):215-228.
- Choo SB et al. Adjuvant endocrine therapy side-effects among postmenopausal breast cancer patients in Malaysia. *Climacteric*. 2019;22(2):175-181.
- Kyvernitakis I, et al. Prevalence of menopausal symptoms and their influence on adherence in women with breast cancer. *Climacteric*. 2014;17(3):252-259.