

# Older Breast Cancer Survivors: Can Interaction Analyses Identify Vulnerable Subgroups? A Report From the American Cancer Society Studies of Cancer Survivors

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The expected exponential increase in older adult survivors has added to the concerns regarding the care needs of this population (Grunfeld et al., 2006; Mao et al., 2009). In addition, the predicted decline in the number of oncology providers has caused many to question whether cancer survivors may be best served by primary care or specialist providers (Erikson, Salsberg, Gorte, Bruinooge, & Goldstein, 2007; Nevidjon et al., 2010). Cancer survivorship clinics have been suggested as a model for care but have not yet been shown to be sustainable (Jacobs et al., 2009; McCabe & Jacobs, 2008). Survivorship is a priority research area at the National Cancer Institute and the National Institute on Aging (Institute of Medicine, 2007). Integration of gerontology and oncology research and care models for older adult cancer survivors is imperative in response to the growing demographic shift. The purpose of this study was to identify subgroups of older survivors who would benefit most from more intensive survivorship care by exploring interactions among personal, cancer, aging, and symptom variables in older adult breast cancer survivors. The specific aim guiding this research was exploratory in nature, namely, to explore interactions among these variables as they relate to health status. The research question examined was: To what extent are interaction effects among the variables related to physical function (PF) and symptom experience?

## Background

Fifty-nine percent of the 13.7 million cancer survivors in the United States are at least 65 years of age (Siegel, et al., 2012). Of the estimated 2.4 million breast cancer survivors in 2007, about 60% were aged 65 years or older (Ries et al., 2008). A growing body of evidence describes the post-treatment physical and psychological health of older cancer survivors, but basic descriptive data pertinent to the intersection of aging and cancer survivorship has been lacking (Bellizzi, Mustian,

**Purpose/Objectives:** To explore interactions among personal, cancer, aging, and symptom variables relative to physical function (PF) in older adult breast cancer survivors to better identify vulnerable subgroups.

**Design:** Secondary analysis of the American Cancer Society Studies of Cancer Survivors II.

**Setting:** U.S. population-based mail and telephone survey.

**Sample:** 2,885 breast cancer survivors from 14 different state cancer registries stratified by cancer type and time since diagnosis. A total of 184 female breast cancer survivors, aged 70 years or older, had complete data on variables of interest and were, therefore, included in this analysis.

**Methods:** Chi-Square Automatic Interaction Detector (CHAID) analysis was used to examine variable interactions.

**Main Research Variables:** PF, symptom bother, comorbidity, social support, length of survivorship, treatment, stage, body mass index, physical activity, emotional health, and personal characteristics.

**Findings:** An interaction effect between symptom bother and comorbidity was found in 39% of older adult breast cancer survivors, and an interaction effect between symptom bother and marital status was found in 40%. The most vulnerable group (8%) had high symptom bother and more than four comorbid conditions.

**Conclusions:** Symptom bother, comorbidity, and marital status were found to have significant interactions such that high comorbidity and high symptom bother were significantly related to lower PF. Married participants with lower symptom bother had significantly higher PF scores. Comorbidity may be the best predictor of PF for the extreme ends of the symptom bother continuum. Advancing age alone was not a sufficient predictor of PF in this analysis.

**Implications for Nursing:** Specific attention to symptom reports, comorbidity, and marital status can guide identification of older adult cancer survivors in need of ongoing survivorship care. The findings support use of a comprehensive assessment and tailored approach to care based on factors other than age.

**Knowledge Translation:** CHAID interaction analysis may be useful in exploring complex nursing problems, such as the needs of older adult cancer survivors, and help oncology nurses develop appropriate interventions and referrals.