

# Stress Reactivity, Health Behaviors, and Compliance to Medical Care in Breast Cancer Survivors

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**A**lthough many factors influence cancer-related outcomes, the potential relevance of psychosocial variables such as quality of life (QOL) and stress is becoming increasingly recognized (Gotay, Kawamoto, Bottomley, & Efficace, 2008; Montazeril, 2009). Reviews have suggested a positive relationship between QOL (Montazeril, 2009) and cancer survival, as well as a negative relationship between stress and cancer-related outcomes (Chida, Hamer, Wardle, & Steptoe, 2008). In addition, poor QOL and high stress can contribute to long-term life disruption and emotional distress that can last well into survivorship (Andersen, 2002). Mediators of the relationships between QOL, stress, and cancer-related outcomes include health behaviors and compliance with medical care (Andersen, Kiecolt-Glaser, & Glaser, 1994). Andersen et al. (1994) conceptualized many of these pathways in the Biobehavioral Model of Cancer Stress and Disease Course. The model posits that high levels of stress and poor QOL have negative effects on health behaviors and compliance to medical care. In turn, poor health behaviors and compliance to medical care can negatively affect cancer-related outcomes. Reviews of observational and experimental studies in patients with cancer and other populations provide preliminary support for the pathways in the Biobehavioral Model of Cancer Stress and Disease Course (Andersen, 2002; Andersen et al., 1994).

Many studies show support for the Biobehavioral Model of Cancer Stress and Disease Course (Andersen, 2002; Andersen et al., 1994), but have only tapped into state-type measures of stress (i.e., stress level at a particular moment in time) through instruments such as the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970) and the Profile of Mood States (McNair, Lorr, & Droppleman, 1971). However, given the transient nature of stress, examining stress reactivity—a measure of an individual's response to stressful situations and indicative of the more stable trait anxiety—also is logical. Past research indicated that high levels of trait anxiety were associated with

**Purpose/Objectives:** To explore relationships among quality of life (QOL), stress reactivity, health behaviors, and compliance to medical care in breast cancer survivors.

**Design:** One-time descriptive laboratory study.

**Setting:** A visual motor laboratory at a rural university in the southeastern United States.

**Sample:** 25 breast cancer survivors.

**Methods:** Participants were subjected to the Trier Social Stress Test (TSST) in a laboratory setting and completed questionnaires at home prior to and after the laboratory session.

**Main Research Variables:** Changes in heart rate variability (HRV), salivary cortisol, and state anxiety from the State-Trait Anxiety Inventory (STAI) estimated stress reactivity. Health behaviors, QOL, and trait anxiety were determined by questionnaires. Compliance to medical care was determined from medical records.

**Findings:** Analyses of variance (ANOVAs) indicated that QOL scores were higher for participants with lower compared to higher stress reactivity ( $p < 0.05$ ). In addition, ANOVAs revealed that participants high in compliance to medical care indicated a lower stress response as determined by HRV ( $p < 0.01$ ) and the STAI ( $p < 0.05$ ) compared to those low in compliance. No significant differences were noted in any of the health behaviors based on stress reactivity.

**Conclusions:** The data suggest that breast cancer survivors who indicate the greatest stress reactivity tend to have the poorest compliance to medical care and lowest QOL.

**Implications for Nursing:** Nurses may wish to provide additional support to breast cancer survivors who indicate high stress reactivity in the hopes of improving compliance to medical care and QOL.

**Knowledge Translation:** The data suggest that supportive care strategies that reduce stress could potentially improve compliance to medical care in breast cancer survivors. In addition, strategies for managing stress may result in improvements in QOL. Health behaviors, according to the data, do not seem to be influenced by stress reactivity.

greater psychological distress in cancer survivors at all points of the cancer trajectory, from diagnosis to survivorship (Bleiker, Pouwer, van der Ploeg, Leer, &