

# Predictors of Fatigue 30 Days After Completing Anthracycline Plus Taxane Adjuvant Chemotherapy for Breast Cancer

Kimberly K. Wielgus, PhD, APRN, BC, Ann M. Berger, PhD, RN, AOCN®, FAAN, and Melody Hertzog, PhD

**B**reast cancer is the most common type of cancer in women in the United States (Jemal et al., 2008). Women treated with adjuvant chemotherapy for breast cancer of all stages have an 89% five-year survival rate (Jemal et al.). Taxane chemotherapy increasingly is used to improve survival (Ferguson, Wilcken, Vagg, Ghersi, & Nowak, 2007); however, chemotherapy can result in distressful, debilitating fatigue in approximately a third of survivors that persists for years after completing treatment (Bower et al., 2006; National Comprehensive Cancer Network [NCCN], 2008). As the number of breast cancer survivors who have received adjuvant chemotherapy increases, improving fatigue and other symptoms becomes increasingly important to optimize quality of life (Andrykowski, Schmidt, Salsman, Beacham, & Jacobsen, 2005; Janz et al., 2007; Lee, Cho, Miaskowski, & Dodd, 2004).

Fatigue is defined by NCCN (2008) as “a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness, or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning” (p. FT1). Cancer-related fatigue has been associated with disrupted circadian rhythms, disturbed sleep-wake, and activity rest (Ancoli-Israel et al., 2006; Berger & Farr, 1999). Gaps exist in knowledge regarding the predictability of these rhythms and patterns prior to and during the initial chemotherapy treatment as they affect fatigue after treatment.

The current study attempted to answer a clinically significant question: At the initiation of chemotherapy, can clinicians predict who will experience greater fatigue 30 days after completing chemotherapy? This knowledge is important for clinicians to identify women with breast cancer who are most in need of interventions to prevent persistent, debilitating fatigue. Currently, the strongest evidence-based intervention that has been recommended for practice by the Oncology Nursing Society’s (ONS’s) Putting Evidence into Practice® (PEP) card (Mitchell, Beck, Hood, Moore & Tanner, 2006) and NCCN (2008) to treat fatigue is exercise and activity en-

**Purposes/Objectives:** To identify the predictors of fatigue 30 days after completing adjuvant chemotherapy for breast cancer and whether differences are observed between a behavioral sleep intervention and a healthy-eating attention control group in predicting fatigue.

**Design:** Descriptive, exploratory, secondary analysis of a randomized clinical trial.

**Setting:** Outpatient oncology patients in a midwestern U.S. city.

**Sample:** 96 women, ages 29–83 years, 72% married, 95% white, diagnosed with stage I–IIIA breast cancer, receiving adjuvant anthracycline and taxane chemotherapy.

**Methods:** Participants were randomized to a behavioral sleep intervention group or an attention control group. Participants completed data collection prior to and during the peak and rebound days of the initial chemotherapy treatment cycle and after the last treatment.

**Main Research Variables:** Fatigue, circadian rhythms of activity, objective and subjective sleep-wake, and objective and subjective activity-rest.

**Findings:** Predictors of fatigue were less total sleep time prior to treatment, higher fatigue prior to treatment and at the peak, and less energy upon awakening on rebound days. In the control group, predictors of higher fatigue were higher fatigue prior to treatment, higher body mass index, higher number of positive lymph nodes, and less daytime dysfunction. For the intervention group, lower peak activity at the peak of initial treatment differentially predicted fatigue.

**Conclusions:** Results suggest the sleep intervention group participants who maintained activity balanced with sleep at the peak of the initial treatment benefited most from the intervention.

**Implications for Nursing:** Nurses should screen for fatigue prior to initial chemotherapy treatment and at regular intervals, further assess for poor sleep in patients who report fatigue of 4 or higher (on a 0–10 scale), and use evidence-based guidelines to select appropriate interventions.

hancement. Interventions to promote healthy circadian rhythms of activity, sleep-wake, activity-rest patterns potentially may reduce fatigue’s dramatic effect on