*Original Article*

# Prevalence, Severity, and Correlates of Sleep-Wake Disturbances in Long-Term Breast Cancer Survivors

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## Abstract

**Context.** Current evidence shows that sleep-wake disturbances are a persistent problem linked to poor quality of life in women surviving breast cancer. Information regarding correlates of sleep-wake disturbances in long-term survivors is sparse.

**Objectives.** The objective of this study was to refine knowledge regarding prevalence, severity, and correlates of sleep-wake disturbances in long-term breast cancer survivors (BCS) compared with age-matched women without breast cancer (WWC).

**Methods.** The cross-sectional convenience sample included 246 BCS and 246 WWC who completed a quality-of-life study and were matched within ±5 years of age.

**Results.** BCS were a mean of 5.6 years beyond completion of cancer treatment (range = 5.6–10.0 years). Based on Pittsburgh Sleep Quality Index (PSQI) scores, BCS had significantly more prevalent sleep-wake disturbances (65%) compared with WWC (55%) ($P < 0.05$). BCS also had significantly higher PSQI global scores indicating poorer sleep quality compared with WWC ($P < 0.05$). Significant correlates of prevalence of poor sleep for BCS included hot flashes, poor physical functioning, depressive symptoms, and distress, and for WWC, these included hot flashes, poor physical functioning, and depressive symptoms. Significant correlates ($P < 0.05$) of severity of poor sleep for BCS included presence of noncancer comorbidities, hot flashes, depressive symptoms, and residual effects of cancer treatment. For WWC, these included hot flashes, poor physical functioning, depressive symptoms, and impact of a life event.

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**Conclusion.** Knowledge of prevalence, severity, and correlates of sleep-wake disturbances provides useful information to health care providers during clinical evaluations for treatment of sleep-wake disturbances in BCS. J Pain Symptom Manage 2010;39:535–547. 

***Key Words***
*Sleep-wake disturbance, sleep quality, breast cancer survivor, menopause, depression, symptom management*

## *Introduction*

Breast cancer survivors (BCS) represent a significant and growing population and the largest cancer survivor group in the United States.[1,2] Evaluating health problems unique to these survivors will help improve their quality of life. A common problem reported by BCS is chronic sleep-wake disturbances, defined as perceived or actual disruptions in nighttime sleep or daytime wakefulness (e.g., insomnia).[3] In various study samples, 12%–95% of breast cancer patients were found to have problems with sleep or wakefulness using self-report measures,[4–10] polysomnography,[11] or wrist actigraphy.[12] These problems also negatively impact all domains of quality of life (e.g., physical and psychological).[7,13]

Literature indicates that the prevalence of sleep-wake disturbances in BCS is higher than in the general population (20% higher in persons without cancer) and other cancer groups (32% higher than that in those with gastrointestinal cancer), with a portion of BCS stating these disturbances started after their diagnosis of cancer.[10,14] The importance of understanding sleep-wake disturbances in cancer populations has been highlighted by national agencies and professional societies in the United States, such as the National Institute of Aging, National Heart, Lung and Blood Institute, National Institute of Neurological Disorders and Stroke, and the Oncology Nursing Society.

Although sleep-wake disturbances are a known problem in breast cancer, differences in the prevalence, severity, and correlates of disturbances between long-term BCS and age–matched women without breast cancer (WWC) are unclear. Because sleep-wake disturbances may increase with age alone, it is necessary to compare BCS with age-matched WWC. The salient difference between BCS and age-matched WWC is the experience and treatment of cancer.

Researchers have shown that as many as 23%–51% of healthy women report sleep-wake disturbances;[7,15] however, few studies have compared the two populations. One comparative study included breast cancer patients who were in precancer treatment, receiving treatment, or in post-treatment ($n = 72$) and WWC ($n = 50$). The study showed no group differences in Pittsburgh Sleep Quality Index (PSQI) global sleep quality scores ($M = 6.8$ and 6.7, respectively) or component scores (except medication use, which was slightly greater in the cancer group).[7] In contrast, a second comparative study of BCS ($n = 15$) and age-matched WWC ($n = 15$) showed that BCS had worse sleep quality and higher disturbances (73% of BCS compared with 67% of WWC).[15]

The mechanisms for increased sleep-wake disturbances in breast cancer have been linked to minority status,[16] intense menopausal symptoms related to hormonal therapy,[11,17] residual side effects from cancer treatment,[18] circadian rhythm disruptions because of cancer-related treatment,[19] more intrusive thoughts,[20] greater psychological distress related to diagnosis and treatment,[10] poorer sleep hygiene behaviors,[9] and/or more intrusive sleep environments.[14] However, these and other possible correlates have not been evaluated in long-term BCS with chronic sleep disturbances. Therefore, the purpose of this study was to evaluate prevalence, severity, and correlates of sleep-wake disturbances in long-term BCS (more than two years from completion of cancer treatment) compared with age-matched WWC.