

# An Integrative Review of Subjective and Objective Measures of Sleep Disturbances in Breast Cancer Survivors

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**Background:** Sleep disturbances are recognized as a side effect of cancer treatment, affecting physiological and psychological functioning. Sleep disturbances can persist through treatment and survivorship, and are increasingly prevalent among breast cancer survivors (BCSs).

**Objectives:** The purpose of this review is to summarize current research on subjective and objective measures of sleep disturbances, the association between subjective and objective measures, and interventions used to manage sleep disturbances among BCSs after the completion of treatment.

**Methods:** Articles published from 2003–2013 were retrieved using PubMed, Web of Science, and ScienceDirect. Key search terms included *breast cancer*, *sleep actigraphy*, and *sleep disturbances*. Articles assessing sleep subjectively and objectively in the post-treatment period were included.

**Findings:** Twelve studies met the inclusion criteria: seven descriptive studies; one interventional study; three randomized, controlled trials; and one longitudinal study. Nighttime awakenings and wake after sleep onset were the most affected sleep variables. Association between subjective and objective sleep was significant among metastatic BCSs. Cognitive-behavioral interventions showed significant improvements in sleep quality.

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Advances in therapies have increased survival rates for patients with breast cancer; however, therapies are often associated with physical and psychological distress that have profound effects on quality of life (QOL) (Segrin & Badger, 2014). This distress is often presented as a cluster of symptoms that includes depression, pain, and sleep disturbances (Lengacher et al., 2012). Sleep disturbances are an increasingly recognized side effect of cancer treatment among breast cancer survivors (BCSs). The prevalence of sleep disturbances ranges from 20%–70% of BCSs, which is twice that found in the general population (Fiorentino, Rissling, Liu, & Ancoli-Israel, 2011). Contributing factors of sleep disturbances include vasomotor symptoms and comorbid-related conditions, such as

fatigue, depression, and anxiety (Pinto & de Azambuja, 2011). Savard, Simard, Blanchet, Ivers, and Morin (2009) reported that 58% of BCSs who were about four years postdiagnosis reported sleep disturbances. In addition, BCSs who completed radiation therapy experienced sleep disturbances persisting for six months (Dhruva et al., 2012). Sleep disturbances persist through survivorship and are associated with increased comorbidities and early mortality among BCSs (Palesh et al., 2014).

Sleep disturbances can be measured subjectively and objectively. Subjective measures include the Pittsburgh Sleep Quality Index (PSQI) (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989) and the General Sleep Disturbance Scale (GSDS) (Lee, 1992). Objective measures include polysomnography and