

# Feasibility of a Sleep Intervention During Adjuvant Breast Cancer Chemotherapy

Ann M. Berger, PhD, RN, AOCN®, Susanna VonEssen, MD, MPH, Brett R. Kuhn, PhD, Barbara F. Piper, DNSc, RN, AOCN®, FAAN, Lynne Farr, PhD, Sangeeta Agrawal, MSc, James C. Lynch, PhD, and Patti Higginbotham, MS, RN, OCN®

**Purpose/Objectives:** To evaluate the feasibility of an intervention designed to promote sleep and modify fatigue during four cycles of adjuvant breast cancer chemotherapy.

**Design:** Prospective, repeated measures, quasi-experimental feasibility study.

**Setting:** Midwestern urban oncology clinics.

**Sample:** 25 women between the ages of 40–65 ( $\bar{X}$  = 54.3) with stage I–II breast cancer receiving doxorubicin-based chemotherapy.

**Methods:** Each woman developed, reinforced, and revised an individualized sleep promotion plan (ISPP) with four components: sleep hygiene, relaxation therapy, stimulus control, and sleep restriction techniques. A daily diary, the Pittsburgh Sleep Quality Index, a wrist actigraph, and the Piper Fatigue Scale were used to collect data two days before and seven days after each treatment.

**Main Research Variables:** Adherence, sleep and wake outcomes, and fatigue.

**Findings:** Adherence rates with the components of the ISPP varied during treatments one through four: sleep hygiene (68%–78%), relaxation therapy (57%–67%), stimulus control (46%–67%), and sleep restriction (76%–80%). Mean sleep and wake outcomes at baseline, peak, and rebound times were that (a) sleep latency remained brief (less than 30 minutes per night), (b) time awake after sleep onset exceeded the desired less than 30 minutes per night, (c) sleep efficiency scores remained stable at 85%–90%, (d) total rest time remained stable at 8–10 hours per night, (e) subjective ratings of feelings on arising were stable, and (f) nighttime awakenings were 8–10 per night. Fatigue outcomes were that fatigue was stable two days after each treatment and mean daily fatigue intensity was lower at treatment three than at treatment one but rebounded at treatment four.

**Conclusions:** The intervention was feasible, adherence rates improved over time, and most sleep and wake patterns were consistent with normal values. Revisions will focus on decreasing nighttime awakenings.

**Implications for Nursing:** Adopting behaviors to promote sleep may assist in maintaining sleep and managing fatigue during chemotherapy.

## Key Points . . .

- Recruiting and retaining subjects for a sleep intervention study is feasible.
- Adherence to the intervention is promoted by reinforcement one week after each revision.
- The number and length of nighttime awakenings are above normal during four cycles of chemotherapy.
- Diaries and actigraphs yield different data.

unsatisfactory sleep (Berger & Walker, 2001; Longman, Braden, & Mishel, 1996; Winningham et al., 1994).

In the general population, persistent insomnia is associated with a higher risk of clinical anxiety or depression (Ford & Kamerow, 1989). Studies have shown that unsatisfactory sleep adversely affects daytime performance (Morin, 1993) and contributes to decreasing functional status (Winningham, 1992). Researchers have proposed that sleep disturbances affect fatigue, pain, wound healing, immune function, and mental health in patients with cancer (Lee, 2001).

Despite associations reported between fatigue and insomnia, little is known about their relationship in patients with cancer. Early work by Derogatis et al. (1979) established that during a six-month study period, 44% of 1,500 patients with cancer used prescription drugs to help them sleep. Beszterczey and Lipowski (1977) and Kaye, Kaye, and Madow (1983) substantiated that patients with cancer have more difficulty falling asleep and staying asleep when compared to the general population. Neither one of these studies examined fatigue.

*Ann M. Berger, PhD, RN, AOCN®, is an associate professor, Susanna VonEssen, MD, MPH, is an associate professor, Brett R. Kuhn, PhD, is an associate professor, Barbara F. Piper, DNSc, RN, AOCN®, FAAN, is an associate professor, Lynne Farr, PhD, is a professor, Sangeeta Agrawal, MSc, is a research analyst, James C. Lynch, PhD, is an assistant professor, and Patti Higginbotham, MS, RN, OCN®, is a research assistant, all at the University of Nebraska Medical Center in Omaha. Funding for this research was awarded by an ONS Foundation research grant, supported by Ortho Biotech, Inc. (Submitted October 2001. Accepted for publication February 18, 2002.) (Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Oncology Nursing Forum or the Oncology Nursing Society.)*

Digital Object Identifier: 10.1188/02.ONF.1431-1441

**F**atigue is the most frequent and distressing side effect reported by patients receiving chemotherapy (Portenoy & Itri, 1999; Richardson, 1995). It presents not only as a primary side effect, but also as a secondary side effect accompanying other effects such as insomnia or the perception of