Physical Activity in Women Receiving Chemotherapy for Breast Cancer: Adherence to a Walking Intervention

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Purpose/Objectives: To describe and predict adherence to a physical activity protocol for patients with breast cancer receiving chemotherapy.

Design: Longitudinal, observational study.

Setting: Cancer center in the upper Midwestern region of the United States.

Sample: 36 patients with breast cancer aged 40–55 years who were receiving adjuvant treatment.

Methods: A longitudinal study was conducted within a randomized clinical trial comparing the effects of physical activity versus bisphosphonates on bone mineral density. Participants randomized to physical activity were advised to walk 10,000 steps per day and received initial physical therapy consultation and ongoing motivational interviewing. Multilevel modeling was used to identify variables that predict adherence.

Main Research Variables: Adherence to the 10,000-step protocol was estimated with total steps and mean steps per day.

Findings: Thirty-six women were enrolled in the physical activity group; 29 provided step data. The mean total steps per participant for the first six weeks was 280,571 (SD = 111,992), which is 67% of the prescribed steps. Excluding days when no steps were recorded, the mean steps per day for the initial six-week period was 7,363 (SD = 2,421), a 74% adherence rate. A significant linear increase occurred in steps per day after chemotherapy in a treatment cycle ($p < 0.0001$). Baseline inactivity predicted adherence.

Conclusions: Adherence to the walking program was compromised during chemotherapy but improved after chemotherapy completion.

Implications for Nursing: Knowing that chemotherapy predicts adherence to a walking protocol is useful for selecting the type, timing, and intensity of physical activity interventions.

Breast cancer is the most common cancer diagnosed among women in the United States, with an incidence of more than 192,000 cases of invasive breast cancer in 2009 (Jemal et al., 2009). Although age-adjusted breast cancer incidence rates have leveled off, death rates from breast cancer have declined steadily since 1990, resulting in an increase in breast cancer survivors. Currently, more than 2.5 million breast cancer survivors live in the United States (Horner et al., 2009). Therefore, long-term health-related issues are very relevant for patients who may live for many years after breast cancer diagnosis.

Treatment for breast cancer generally includes initial surgery with either a mastectomy or lumpectomy and removal of axillary lymph nodes on the ipsilateral side. After surgical healing, chemotherapy is administered to most patients with invasive breast cancer ("Adjuvant Therapy for Breast Cancer," 2000). Chemotherapy for breast cancer often is associated with alopecia, fatigue, neuropathy, nausea, and muscle and joint pain (Yarbro, Frogge, & Goodman, 2005). Aromatase inhibitors or tamoxifen treatments are recommended for hormone receptor–positive breast cancer, which occurs in approximately 75% of cases ("Adjuvant Therapy for Breast Cancer," 2000). Hormone treatment may cause hot flashes, sleep disturbances, loss of bone mineral density (BMD), and muscle and joint pain (Yarbro et al., 2005). In addition to physical symptoms related to treatments, psychological symptoms such as depression and anxiety associated with the diagnosis of a serious illness may be present. Treatment-related side effects and the demands of undergoing multiple cancer treatments while maintaining normal activities of daily living (e.g., employment, child care) can lead to physical deconditioning during cancer treatments (Irwin et al., 2003).

Long-term sequelae resulting from breast cancer treatments also are troublesome for cancer survivors. Prolonged fatigue may persist long after cancer treatments are completed. Chemotherapy often leads to early onset of menopause in younger women (Bines, Oleske, & Cobleigh, 1996), which, in turn, may be associated with other long-term consequences such as BMD loss and weight gain.

Evidence is increasing that physical activity interventions have beneficial effects on the physical and psychological side effects of breast cancer (Courneya, 2003; Pinto & Maruyama, 1999). Psychological benefits include enhancements in mood and vigor and decreases