

# Synergistic Interactions Among Fatigue, Sleep Disturbance, and Depression in Women With Breast Cancer: A Cross-Sectional Study

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**OBJECTIVES:** To assess the symptom cluster of fatigue, sleep disturbance, and depression among female patients with breast cancer receiving chemotherapy, and to evaluate its impact on quality of life (QOL) and symptom severity.

**SAMPLE & SETTING:** 372 patients receiving adjuvant chemotherapy recruited from two tertiary hospitals in China.

**METHODS & VARIABLES:** Symptom severity and QOL were evaluated using the Brief Fatigue Inventory, Pittsburgh Sleep Quality Index, Patient Health Questionnaire-9, and Functional Assessment of Cancer Therapy–Breast on the eighth day after receiving chemotherapy.

**RESULTS:** All symptoms positively correlated with each other. Although the symptom cluster was significantly associated with decreased QOL, individualized symptom severity worsened as the number of symptoms increased.

**IMPLICATIONS FOR NURSING:** The prevalence of and interactions among fatigue, sleep disturbance, and depression negatively affect symptom severity and patients' QOL. Conducting early assessment followed by effective cluster-based interventions is needed to manage this symptom cluster.

**KEYWORDS** fatigue; sleep disturbance; depression; symptom cluster; quality of life; chemotherapy

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Breast cancer is the most prevalent cancer type in women worldwide and in China, with a report showing that there were 416,371 new female breast cancer cases in China in 2020 (Globocan, 2021). Cancer itself and its curative treatment modalities cause various side effects during the disease trajectory. As the most commonly used adjuvant systemic treatment, chemotherapy usually induces a series of unpleasant physical and psychological symptoms (e.g., gastrointestinal symptoms, fatigue, sleep disturbance, depressed mood) that seldom occur in isolation (Chui, 2019). One study suggested that chemotherapy-related symptoms were often more distressing than symptoms caused by other treatments (Sibeoni et al., 2018). Of note, an average of about 17 symptoms were reported by patients with breast cancer who received chemotherapy (Begum et al., 2016).

## Background

When two or more concurrent symptoms share some interrelationships, they are considered to have formed a symptom cluster (Kim et al., 2005). Previous studies have used various symptom inventories, such as the MD Anderson Symptom Inventory and Symptom Experience Scale, and analytical techniques (e.g., factor analysis, latent analysis) to identify symptom clusters in patients who received chemotherapy for breast cancer (Albusoul et al., 2017; Hsu et al., 2017). This *de novo* approach, which identifies symptom clusters from all possible symptoms (Miaskowski, 2016), is known for its ability to consider a comprehensive range of symptoms. Although inconsistent findings were drawn from these studies, the three following common symptoms were found to frequently