Identification of Latent Classes in Patients Who Are Receiving Biotherapy Based on Symptom Experience and Its Effect on Functional Status and Quality of Life

Marylin J. Dodd, RN, PhD, FAAN, Maria H. Cho, RN, PhD, AOCNS®, Bruce A. Cooper, PhD, Judy Petersen, RN, MS, Kayee Alice Bank, RN, MS, OCN®, Kathryn A. Lee, RN, PhD, FAAN, and Christine Miaskowski, RN, PhD, FAAN

The majority of research on symptoms in patients with cancer is focused on the characteristics of a single symptom (e.g., pain, fatigue) or an association between symptoms (e.g., depression, anxiety). Although this approach advances the understanding of some symptoms, the findings are not very helpful when clinicians need to manage a patient with multiple, concurrent symptoms. In response to this lack of knowledge, a growing body of oncology research has examined the occurrence of symptom clusters and their effect on patient outcomes. A symptom cluster is defined as three or more concurrent symptoms that are related to each other (Dodd, Miaskowski, & Paul, 2001). In addition, Dodd, Dibble, et al. (2001) proposed that symptom clusters have adverse effects on patient outcomes. Since the concept of a symptom cluster in patients with cancer was proposed in 2001, researchers have endeavored to understand this complex issue. A literature search on PubMed using the keywords *symptom cluster* and *cancer* yielded more than 100 citations. Numerous studies have used the conceptual approach of grouping of symptoms to create symptom clusters (Chen & Tseng, 2006; Chow et al., 2008; Cleeland et al., 2000; Gift, Jablonski, Stommel, & Given, 2004; Gift, Stommel, Jablonski, & Given, 2003; Gleason et al., 2007; Kim et al., 2009; Kim, Barsevick, Tulman, & McDermott, 2008; Tseng, Cleeland, Wang, & Lin, 2008; Wang et al., 2003, 2006; Wang, Tsai, Chen, Lin, & Lin, 2008); however, only three studies have used the conceptual approach of grouping individuals by similar symptom experiences. These three studies have identified four distinct subgroups of patients with cancer based on their experiences with four preselected symptoms: pain, fatigue, sleep disturbance, and depression (Dodd, Cho, Cooper, & Miaskowski, 2009; Miaskowski et al., 2006; Pud et al., 2008). These preselected symptoms are not only highly prevalent and distressing, but they also are known to be related to each other (Barsevick, 2007; Dodd et al., 2009). The reason findings from the current study will

Purpose/Objectives: To identify subgroups of patients receiving biotherapy with pain, fatigue, sleep disturbance, and depression and to determine functional status and quality of life differences between subgroups.

Design: A descriptive, prospective, cohort study design.

Setting: Internet-based survey.

Sample: 187 patients with cancer receiving biotherapy.

Methods: Pain intensity, Piper Fatigue Scale, General Sleep Disturbance Scale, Center for Epidemiological Studies–Depression, Karnofsky Performance Scale, and the Multidimensional Quality of Life Scale–Cancer were used at two time points one month apart (T1 and T2). Latent profile analysis identified subgroups.

Main Research Variables: Biotherapy, symptoms, functional status, and quality of life.

Findings: At T1 (N = 187), five patient subgroups were identified, ranging from subgroup 1 (mild fatigue and sleep disturbance) to subgroup 5 (severe on all four symptoms). At T2 (N = 114), three patient subgroups were identified, ranging from subgroup 1 (mild pain, fatigue, and sleep disturbance without depression) to subgroup 3 (mild pain, moderate fatigue, and sleep disturbance with severe depression). At each time point, the patient subgroup with the most severe symptoms showed significantly lower functional status and quality of life.

Conclusions: As with other cancer treatments, biotherapy can be divided into similar patient subgroups with four prevalent symptoms. Subgroups of patients differ in functional status and quality of life as a result of symptom severity.

Implications for Nursing: Clinicians should assess and identify patients with severe levels of the four prevalent symptoms and offer appropriate interventions. Future study is needed to investigate the factors that contribute to symptom severity and to examine the occurrence of symptom clusters that may place patients at increased risk for poorer outcomes.

be compared to these three studies is threefold: (a) the same conceptual approach is used (grouping of individuals), (b) the same preselected symptoms are used, and (c) with fulfillment of the previous two conditions, comparison of symptom clusters between biotherapy and other cancer treatments is possible.