# Symptom Clusters in Patients With Pancreatic Cancer Undergoing Surgical Resection: Part I

Sherry A. Burrell, PhD, RN, CNE, Theresa P. Yeo, PhD, MPH, AOCNP-BC®,
Suzanne C. Smeltzer, EdD, RN, ANEF, FAAN, Benjamin E. Leiby, PhD, BA, Harish Lavu, MD,
Eugene P. Kennedy, MD, and Charles J. Yeo, MD

**OBJECTIVES:** To describe patient-reported symptoms and symptom clusters in patients with pancreatic cancer (PC) undergoing surgical resection.

**SAMPLE & SETTING:** 143 patients with stage II PC undergoing surgical resection alone or with subsequent adjuvant chemoradiation or chemotherapy were recruited to participate in a nested, longitudinal, exploratory study through convenience sampling techniques from Thomas Jefferson University Hospital, a National Cancer Institute–designated cancer center.

**METHODS & VARIABLES:** The Functional Assessment in Cancer Therapy–Hepatobiliary questionnaire was used to assess 17 PC symptoms preoperatively and at three, six, and nine months postoperatively. Exploratory and confirmatory factor analyses were used to identify symptom clusters.

**RESULTS:** Fatigue, trouble sleeping, poor appetite, trouble digesting food, and weight loss were consistently reported as the most prevalent and severe symptoms. Sixteen distinct symptom clusters were identified within nine months of surgery. Four core symptom clusters persisted over time: affective, gastrointestinal, gustatory, and discomfort.

**IMPLICATIONS FOR NURSING:** Findings may be used to provide anticipatory patient and family guidance and to inform clinical assessments of symptoms and symptom clusters in this population.

About 55,440 new cases of pancreatic cancer (PC) will be diagnosed in the United States in 2018 (Siegel, Miller, & Jemal, 2018). The five-year survival rate for all stages of PC in the United States has improved from 6% in 2013 to 8% in 2018 (Siegel et al., 2018; Siegel, Naishadham, & Jemal, 2013), and improved survival rates have made concerns about managing symptoms increasingly important. Some common concerns among patients with PC undergoing surgical resection include fatigue, pain, weakness, anxiety, depression, weight loss, insomnia, gastrointestinal disturbances, and symptoms of diabetes (Huang et al., 2000; Scheingraber, Scheingraber, Brauckhoff, & Dralle, 2005; Yeo et al., 2012). Evidence suggests that patients with cancer do not experience symptoms in isolation, but rather as multiple, concurrent symptoms or symptom clusters (SCs). Although the presence of SCs has been documented in many cancer types, little is known about SCs in patients with or without surgically resected PC.

SCs are defined as the simultaneous presence of two or more symptoms, which may or may not share etiology and are more strongly related to one another than other symptoms (Dodd, Miaskowski, & Lee, 2004; Kim, McGuire, Tulman, & Barsevick, 2005). SCs have been identified in individuals with lung (Franceschini, Jardim, Fernandes, Jamnik, & Santoro, 2013), ovarian (Huang et al., 2016), prostate (Dirksen, Belyea, Wong, & Epstein, 2016), and breast cancers (Starkweather et al., 2013) and are associated with decreased functional status (Kim, Barsevick, Beck, & Dudley, 2012), poor quality of life (QOL) (Franceschini et al., 2013), and reduced survival (Wikman, Johar, & Lagergren, 2014). Given the negative impact that SCs have on clinical outcomes, identifying and creating a classification of SCs and developing interventions to manage SCs have