

# Symptom Clusters in Patients With Colorectal Cancer and Diabetes Over Time

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**OBJECTIVES:** To examine symptoms and symptom clusters in patients with colorectal cancer (CRC) with or without diabetes at three key periods (0–6 months, 12–18 months, and 24–30 months) post-initial chemotherapy.

**SAMPLE & SETTING:** Patients with CRC from a cancer center in the midwestern United States between January 2007 and December 2017.

**METHODS & VARIABLES:** Eight of the most common symptoms (fatigue, gastrointestinal issues, depression, anxiety, peripheral neuropathy, physical function, cognition, and sleep disturbance) reported by patients with CRC and patients with diabetes were extracted from electronic health records. Exploratory factor analysis was used to identify symptom clusters, which were assessed for patterns and clinical relevance.

**RESULTS:** Gastrointestinal issues and fatigue were the most prevalent symptoms in patients with CRC at each period. Across the three periods, patients with CRC and diabetes had more symptom clusters ( $n = 7$ ) compared to patients with CRC without diabetes ( $n = 4$ ). No stable symptom clusters were identified for either group.

**IMPLICATIONS FOR NURSING:** Oncology clinicians must recognize that patients with CRC and diabetes may present with exacerbated symptoms or symptom clusters. Ongoing assessment and monitoring of patients with CRC and diabetes for symptoms and symptom clusters is important because they may be at an increased risk for higher symptom burden.

**KEYWORDS** colorectal cancer; diabetes; symptoms; symptom clusters; survivors; comorbidity

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Estimates suggest that there are 1.5 million patients with colorectal cancer (CRC) in the United States (American Cancer Society, 2023). Advances in prevention, screening, and treatment for CRC have improved overall survivor rates (Benitez Majano et al., 2019; Van Cutsem et al., 2014). With increased cancer survival rates, the risk of living with other comorbidities is also increased (Pule et al., 2019; Rowley et al., 2017). About 33% of patients with CRC have at least one comorbid condition (Michalopoulou et al., 2021). Type 2 diabetes is a common comorbidity in patients with CRC and is prevalent in as much as 20% of the CRC population (Storey et al., 2021) compared to 11% in the noncancer population (Centers for Disease Control and Prevention, 2022). Given the increasing cancer survival rates, diabetes as a comorbidity among patients with cancer is an issue of growing importance for patients and healthcare providers.

Researchers describe similar symptoms, such as fatigue, gastrointestinal (GI) issues, depression, anxiety, peripheral neuropathy, decrements in physical function and cognition, and sleep disturbance, in patients with CRC and diabetes (Brady et al., 2022; Hershey et al., 2012; Hershey & Pierce, 2015; Vissers et al., 2016). CRC and diabetes initiate inflammatory processes (Giovannucci et al., 2010; Hammer et al., 2019), which trigger physiologic interactions that may contribute to or intensify symptoms. In addition, symptoms may co-occur, forming symptom clusters which are defined as two or more co-occurring symptoms (Kim et al., 2005; Miaskowski et al., 2004, 2007). Symptom clusters have not been well studied across multiple chronic conditions like diabetes and CRC.

In the authors' previous work with patients with breast cancer, patients with diabetes as a comorbidity reported greater symptoms (e.g., poorer physical and attention function, more sleep disturbance, greater fatigue) than patients without this comorbidity (Storey et al., 2019). However, little is