

Diabetes and Cancer: Impact on Health-Related Quality of Life

Denise Soltow Hershey, PhD, FNP-BC, Barbara Given, RN, PhD, FAAN, Charles Given, PhD, Alexander Von Eye, PhD, and Mei You, MS

Diabetes and cancer are two commonly occurring diseases in the worldwide population (Giovanucci et al., 2010). In the United States, about 11% of individuals aged 20 years and older have diabetes (Giovanucci et al., 2010). Among individuals with cancer, 8%–18% have preexisting diabetes (Barone et al., 2010). Patients with cancer and diabetes have higher mortality and complication rates and are more likely to be hospitalized than patients with cancer who do not have diabetes (Attili et al., 2007; Barone et al., 2008; Giovanucci et al., 2010; Peairs et al., 2011; Psarakis, 2006).

Barone et al. (2010) found that individuals with preexisting diabetes and cancer had a 50% increased risk of mortality after surgery for cancer compared to those who had cancer without diabetes. Patients with cancer and preexisting diabetes have an increased risk for all-cause mortality (hazard ratio = 1.41, 95% confidence interval [1.28, 1.55]) compared to individuals who had cancer without diabetes (Barone et al., 2008). The presence of hyperglycemia in patients with cancer and diabetes is associated with higher infection rates and shorter remission periods (Psarakis, 2006). Individuals with diabetes and cancer are more likely to be hospitalized for chemotherapy-related toxicity, infections, fever, neutropenia, or anemia (Peairs et al., 2011; Srokowski, Fang, Hortobagyi, & Giordano, 2009). Patients with cancer and diabetes also have poorer response rates to treatment, which may account for the higher mortality rates in this population (Attili et al., 2007).

The science is lacking in regard to how patients with cancer, with and without diabetes, differ in physical function, mental health, and social function while undergoing chemotherapy. Nurses may need to intervene sooner or differently in this population to maintain or improve overall health-related quality of life (HRQOL) during treatment. Patients with diabetes and cancer should be informed of the impact their cancer treatment may have on their overall HRQOL. The purpose of this study is to explore whether the HRQOL factors of physical function,

Purpose/Objectives: To explore whether three factors (physical function, mental health, and social function) of health-related quality of life (HRQOL) are impacted differently in patients with cancer and diabetes when compared to those with cancer who do not have diabetes at the beginning of chemotherapy.

Design: Secondary analysis using baseline data from two randomized, controlled trials.

Setting: Two comprehensive cancer centers, one community cancer oncology program, and six hospital-affiliated community oncology centers.

Sample: 661 patients aged 21 years or older with a solid tumor cancer or lymphoma undergoing cancer treatment.

Methods: Baseline data from both randomized, controlled trials were used. The SF-36® was used to measure physical function, mental health, and social function. Analysis included descriptive statistics and a general linear model.

Main Research Variables: Presence or absence of diabetes and physical function, social function, and mental health.

Findings: Patients with cancer and diabetes had significantly lower levels of physical function ($p < 0.001$) when compared to those who had cancer without diabetes. The interaction of diabetes and age was found to be significantly predictive of mental health ($p < 0.05$).

Conclusions: The presence of diabetes negatively impacts physical function and mental health in patients undergoing chemotherapy.

Implications for Nursing: Nurses should be aware of diabetes' effect on HRQOL in patients with cancer. In addition, nurses may need to intervene earlier for patients with diabetes and cancer to maintain or improve their quality of life.

mental health, and social function differ in patients with cancer and diabetes compared to those with cancer who do not have diabetes at the start of chemotherapy.

Study Framework

Wilson and Cleary's (1995) HRQOL model was adapted for the current study. The model hypothesizes causal relationships among the following dimensions: biologic