The Effects of Virtual Reality on Anxiety and Self-Efficacy Among Patients With Cancer: A Pilot Study

Susan D. Birkhoff, PhD, RN, Cynthia Waddington, MSN, RN, AOCN®, NE-BC, Jordan Williams, BSN, RN, OCN®, Leslie Verucci, MSN, CNS, APN-BC, Maureen Dominelli, RN, BSN, and Richard Caplan, PhD

OBJECTIVES: To examine the impact of a nurse-led intervention on anxiety levels and perceived self-efficacy to cope in patients receiving first-time chemotherapy using a customized prechemotherapy educational virtual reality (VR) video.

SAMPLE & SETTING: 35 patients with cancer receiving first-time chemotherapy participated in this study at a large suburban cancer center in Newark, Delaware.

METHODS & VARIABLES: A single-group, quasi-experimental pilot study was conducted to examine the feasibility of a customized prechemotherapy educational VR video in patients receiving first-time chemotherapy. The State-Trait Anxiety Inventory, heart rate, and blood pressure were used to measure anxiety, and the Cancer Behavior Inventory–Brief Version measured perceived self-efficacy to cope with cancer. Measures were taken pre- and postintervention, and patient satisfaction was examined postintervention.

RESULTS: Anxiety level, heart rate, and blood pressure significantly decreased from baseline to postintervention, and perceived self-efficacy to cope significantly increased from baseline to postintervention.

IMPLICATIONS FOR NURSING: Personalized prechemotherapy educational VR videos could be further examined as an innovative nursing intervention to meet the health, emotional, and educational needs of diverse patient populations.

An estimated 1.9 million people in the United States will be diagnosed with cancer in 2021, and for those diagnosed, chemotherapy will be a common oncologic treatment administered to cure or control cancer and to provide palliative therapy (American Cancer Society [ACS], 2021). Chemotherapy treatment consists of highly customized medications requiring an interprofessional team to deliver individualized treatment plans for each patient (ACS, 2020). Educating patients about their treatment plans is critically important because each patient will experience chemotherapy differently (Lambourne et al., 2019).

Anxiety is common among individuals who receive a cancer diagnosis and is a natural response to stressful situations (OncoLink, 2020a). Preparing for chemotherapy can be a particularly anxiety-provoking experience because of not knowing what to expect (Lambourne et al., 2019). Anxiety, in turn, may affect patients' learning capacity (Dunn et al., 2012) and their perceived self-efficacy or confidence to cope with their cancer treatment (OncoLink, 2020b). To help alleviate anxiety and support patients coping with cancer, the National Cancer Institute (NCI, 2019) recommends cancer education sessions, relaxation training, and counseling. Although patient education is considered a cornerstone of cancer treatment preparation, patients learn in vastly different ways, and traditional written and verbal information may not be sufficient to meet their learning needs during an anxious time (Lambourne et al., 2019).

Virtual reality (VR) modalities could be a promising educational tool to deliver and reinforce pretreatment information through a visually appealing mechanism. Although VR has mostly been used as a consumer gaming device (Lessick & Kraft, 2017), researchers in health care are increasingly studying its effects and