

# Virtual Reality for Symptom Management in Patients Undergoing Hematopoietic Stem Cell Transplantation: A Quality Improvement Initiative

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**OBJECTIVES:** To evaluate the effects of virtual reality (VR) on symptom distress, such as depression, anxiety, and pain, experienced by individuals receiving allogeneic hematopoietic stem cell transplantation.

**SAMPLE & SETTING:** 20 participants aged 19–70 years (median age of 56.5 years) who were hospitalized in an academic setting received as many as two sessions of VR per week for two weeks.

**METHODS & VARIABLES:** Before and after each session, participants completed the revised Edmonton Symptom Assessment Scale (ESAS-r) to evaluate their symptoms. Paired *t* tests were later conducted.

**RESULTS:** VR sessions showed significant improvement in 8 of the 10 symptoms addressed in ESAS-r.

**IMPLICATIONS FOR NURSING:** VR can improve symptoms in patients following hematopoietic stem cell transplantation in a hospital setting, provide a low-cost intervention to treat symptoms, and support future investigations exploring how VR affects prolonged hospitalizations related to distressing symptoms.

**KEYWORDS** virtual reality; symptoms; stem cell transplantation; comfort theory

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Hematopoietic stem cell transplantations (HSCTs) in the United States have increased greatly during the past century and are an accepted standard of practice for hematologic disorders (Driscoll et al., 2017; Léger & Nevill, 2004). From 2014 to 2018, there were a total of 108,237 stem cell transplantations in the United States (Human Resources and Services Administration, n.d.). During the first two to three weeks following HSCT, patients can experience significant side effects, such as mouth sores, pain, nausea and vomiting, diarrhea, appetite changes, fatigue, altered mental status, hair loss, and infection (Bevans et al., 2008; Frödin et al., 2015). All patients undergoing HSCT are at risk for these symptoms during their treatment process and recovery; however, patients who receive myeloablative conditioning have a higher risk for severe symptoms (Frödin et al., 2015).

## Hematopoietic Stem Cell Transplantation

HSCT aims to prolong life, improve quality of life, and cure disease in patients with hematologic deficiencies (Driscoll et al., 2017). There are three main categories of stem cells transplanted into patients: allogeneic with myeloablative conditioning, allogeneic with nonmyeloablative conditioning, and autologous transplantation (Pei & Huang, 2019). Patients receiving an allogeneic HSCT receive stem cells from a donor who may or may not be related to the patient, whereas autologous HSCTs use stem cells previously collected from the patient prior to transplantation (Marques et al., 2018). Patients who receive HSCT with myeloablative conditioning are subjected to high doses of chemotherapy to depress their bone marrow