

Use of Virtual Reality to Distract From Pain and Anxiety

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OBJECTIVES: To determine the effects of a virtual reality intervention on pain and anxiety in patients undergoing a bone marrow aspiration and biopsy procedure.

SAMPLE & SETTING: 97 adults in an outpatient cancer center in the midwestern United States.

METHODS & VARIABLES: In this quasiexperimental study, participants were assigned to either the experimental group (use of virtual reality goggles) or the control group (standard treatment). Vital signs, pain, and anxiety were measured before and after the procedure. T tests and chi-square tests were used to compare the two groups based on demographic data, pain, anxiety, and total amount of medication used during the procedure.

RESULTS: Participants who wore virtual reality goggles during a bone marrow aspiration and biopsy procedure did not experience a statistically significant decrease in pain and anxiety. However, the experimental and control groups showed a decrease in pain and anxiety levels from pre- to postprocedure.

IMPLICATIONS FOR NURSING: Virtual reality goggles may be a feasible, noninvasive alternative to traditional pharmacologic treatment. The cost of any intervention would need to be considered. Virtual reality should be researched and adapted to benefit patients in appropriate settings.

KEYWORDS virtual reality; bone marrow aspiration; bone marrow biopsy; distraction; hematologic disease
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Examination of bone marrow is an important aspect of the diagnosis and management of hematologic diseases, including various cancers. Patients undergoing the bone marrow aspiration and biopsy procedure commonly experience pain, anxiety, and stress (Degen, Christen, Rovo, & Gratwohl, 2010). However, distraction has been shown to be a useful nonpharmacologic intervention to decrease pain and anxiety (Hjortholm, Jaddini, Halaburda, & Snarski, 2013). The purpose of the current study was to determine if the use of virtual reality goggles involving visual and auditory stimuli would decrease the amount of pain and anxiety experienced by patients during the bone marrow aspiration and biopsy procedure, as compared to the practice of viewing a television with sound.

Bone Marrow Aspiration and Biopsy

Hematologic malignancies, such as leukemia, non-Hodgkin lymphoma, Hodgkin lymphoma, and multiple myeloma, may begin in blood-forming tissue (e.g., bone marrow) or in the cells of the immune system (National Cancer Institute, n.d.). The bone marrow aspiration and biopsy procedure is performed during various phases of the patient's illness, including at diagnosis, during treatment, and during long-term follow-up. The patient is awake and aware of the procedure, which can cause anxiety for the patient because it can be painful and the results may indicate disease presence. In the outpatient setting, limitations exist concerning the amount and type of medication that can be used during the bone marrow aspiration and biopsy procedure. The most common complication is pain, with more than 63% of patients (N = 406) reporting having experienced it in a study by Degan et al. (2010). In another study, 78% of patients reported pain during the bone marrow aspiration and biopsy procedure and 71% of patients reported anxiety (N = 152) (Brunetti et al., 2011). In addition, nurses and physicians were found to underestimate the pain and anxiety levels experienced by patients (Lidén, Olofsson, Landgren, & Johansson, 2012).