



**Lorestan University of Medical Sciences
Faculty of Khorramabad Nursing & Midwifery**

Title:

**The effect of being in nature based on virtual
reality on pain and anxiety of patients with
orthopedic trauma**

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Abstract

Background:

Virtual reality, as a noninvasive method based on visual and auditory distraction, has received increasing attention in recent years for reducing pain and anxiety in therapeutic and diagnostic settings. By creating an immersive experience, this technology can divert patients' attention from unpleasant stimuli and thereby influence their perception of pain and anxiety. Despite reports supporting the effectiveness of virtual reality in some clinical situations, previous findings have been inconsistent. Therefore, the present study was conducted to determine the effect of nature-based virtual reality on pain and anxiety in patients with orthopedic trauma.

Materials and Methods:

This study was a clinical trial conducted in 2024 on patients with orthopedic trauma presenting to the emergency department of Shohadaye Ashayer Hospital in Khorramabad. Participants were selected using convenience sampling and then allocated to three groups through stratified block randomization. In the intervention group, patients utilized virtual reality incorporating nature images and sounds, starting three minutes before the procedure and continuing until its completion. In the sham group, the headset was applied in an inactive mode, with no images or sounds presented. All three groups received routine standard care. Patients' anxiety levels were measured before and after the procedure using the Spielberger State-Trait Anxiety Inventory, and pain intensity was assessed using the Visual Analog Scale across all groups. Data were analyzed using descriptive and inferential statistics via SPSS software (version 25).

Results:

The mean baseline pain intensity was 5.00, 5.06, and 5.03 in the intervention, control, and sham groups, respectively, which reduced to 2.63, 3.09, and 2.94 following the intervention, with no significant between-group difference ($P = 0.182$). Conversely, the mean baseline anxiety scores were 80.7, 84.4, and 80.8 in the three groups, respectively, and changed to 68.5, 86.8, and 80.7 post-intervention. The intervention group demonstrated a statistically significant decrease in anxiety compared to both the control and sham groups ($P < 0.001$).

Conclusion:

Nature-based virtual reality significantly reduced anxiety in patients with orthopedic trauma; however, its effect on pain reduction was not statistically significant compared with the sham and routine care groups.

Keywords: Virtual reality; Anxiety; Pain; Orthopedic trauma; Emergency department; Clinical trial.