

## A Pilot Study Assessing the Effectiveness of a Virtual Reality Intervention for Alleviating Pain and Anxiety in the Pediatric Emergency Room

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**Abstract :** Distraction techniques have been used as a means to reduce pain, anxiety, and stress in various healthcare settings to facilitate care and make visits less unpleasant. Using virtual reality (VR) in the pediatric emergency setting can be a valuable, effective, and safe non-pharmacological alternative to the current standard of care for pain and anxiety management in pediatric patients. Our pilot study aimed to evaluate the effectiveness of a VR-based intervention as an alternative distraction modality to alleviate pain and anxiety associated with pediatric emergency department (ED) visits and acute pain conditions. The pilot study period was from November 16 to December 9, 2022, for pediatric ED visits for pain, anxiety, or both. Patients were selected based on a novel VR protocol to receive the VR intervention with the administration of pre and post-intervention surveys concerning pain/anxiety ratings and pain scores (Wong-Baker FACES/NRS). Descriptive statistics, paired t-test, and a Fisher Exact Test were used for data analysis, assuming a p-value of 0.05 for significance. A total of 33 patients (21 females, 12 males), ages 5-20 (M = 10.5, SD = 3.43) participated in this study - 12 patients had pain, 2 patients had anxiety, and 19 patients had both pain and anxiety. There was a statistically significant decrease in post-intervention pain scores of less than one point on the rating scale (6.48 vs. 5.62,  $p < .001$ ). There was a statistically significant reduction in the percentage of patients suffering from "considerable" or "great" pain after the VR intervention (51.6% to 42.3%,  $p < .001$ ). Similarly, we noticed an increase in the number of patients with "slight" or "moderate" pain post-VR intervention (48.4% to 57.7%,  $p < .001$ ). Lastly, we demonstrated a decrease in anxiety among patients after utilizing VR (63.6% vs. 36.4%,  $p < .001$ ). To conclude, VR can alleviate pain and anxiety in pediatric patients and be a useful non-pharmacological tool in the emergency setting.

**Keywords :** anxiety, emergency room, pain management, pediatric emergency medicine, virtual reality

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