TWO PARADIGMS AND CLINICAL TRIALS OF DESIGNING VIRTUAL REALITY AS AN ADJUNCTIVE NON-PHARMACOLOGICAL INTERVENTION FOR CHRONIC PAIN PATIENTS: PAIN SELF-MANAGEMENT AND PAIN DISTRACTION

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INTRODUCTION / AIM

Virtual Reality (VR) has been shown to have “VR analgesia” effect for acute pain in a number of clinical studies. However, using VR for Chronic Pain (CP) management is still at its infancy. We designed two types of VR applications for CP patients with distinctive design paradigms. One VR applications called “Mobius Floe” (MF) manages patients’ attention to focus outward, by distracting patient’s attention from pain spikes to an immersive 3D virtual environment. The other applications “Virtual Meditative Walk” (VMW) facilitates patients to focus inward by combining biofeedback, Mindfulness-Based Stress Reduction (MBSR) and VR technology.

METHODS

Two trials are conducted to evaluation the two VR applications on CP patients. For MF, we designed a randomized, controlled crossover study, where subjects were randomly assigned to VR intervention or control group, and crossover after a washout period. Pain intensity data were measured using Visual Analog Scale (VAS), and data were collected at baseline and after each session.

For VMW, subjects were randomly assigned to either VR intervention (VR paired with biofeedback for MBSR training) or MBSR alone group, and pain Numerical Rating Scale (NRS) were used to collect pain intensity data.

RESULTS

For MF, of the 20 subjects enrolled, during the intervention, there was a significant difference between the VR intervention and control groups on pain intensity using repeated measures ANOVA (F(2, 38) = 21.473, p < 0.001, r = 0.505). Compared to control group, the VR intervention group had a significant reduction in pain intensity (p < 0.001).

For VMW, of the 13 subjects enrolled, there was a significant Time x Condition interaction using two-way mixed ANOVA (F(1, 11) = 8.16, p < .05, r = .54). Specifically, there was a significant drop in NRS ratings in the VR group (t(6) = 2.86, p < .05, r = .57), but a very weak drop in the control group (t(5) = 1.24, p > .05, r = .26). This indicates that the VMW was significantly more effective than MBSR alone at pain reduction for CP patients.

DISCUSSION / CONCLUSIONS

Preliminary research results validated that both pain management strategies, deployed for different reasons and in different contexts, could function effectively on reducing the pain and...
stress levels of CP patients. In the next phase, we will be conducting longitudinal studies with CP patients, gathering their feedback for refining our VR design.

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