Virtual Reality Guided Meditation for Patients with Chronic Pain and Stress: A Pilot Study

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BACKGROUND

- Meditation has therapeutic benefits for depression, anxiety, pain, and stress (Marchand, 2012)
- Difficulty learning how to meditate is commonly cited as a barrier to meditation practice (Lomas, Edginton, Cartwright, & Ridge, 2014)
- Mindfulness experts largely agree on VR being a feasible technique to practice mindfulness (Navarro-Haro et al., 2017)

OBJECTIVE

1) Demonstrate that VR in the veteran outpatient population is an effective tool to facilitate meditation and relaxation practice to reduce stress and chronic pain
2) Examine the feasibility of meditation using VR in the veteran population, specifically in the Polytrauma and PM&R cohort

METHODS

Participants:
- 31 veterans (mean age = 55.2; 93.5% male) from an outpatient virtual environment (e.g. mountain, forest, beach, desert, lake, or cave)

VR-Guided Meditation:
- Oculus Go stand-alone VR headset with Guided Meditation VR application (Cubicle Ninjas)
- 10-minute session with same ambient music, same Zen-meditation script, and participant-chosen 360° virtual environment (e.g. mountain, forest, beach, desert, lake, or cave)

Pain and Stress Self-Report Measures:
- Two 11-point Numerical Rating Scales (NRS; Ferreira-Valente, Pais-Ribeiro, & Jensen, 2011; Karvounides et al., 2016)

Physiological Measures:
- Systolic/diastolic blood pressure and heart rate
- Physiological markers of stress (Johnston & Anastasiades, 1990) collected both before and after meditation session

Feasibility Survey:
- Pre-session survey
  - Collected information about demographics, health conditions, prior familiarity with VR technology, and attitudes towards VR technology before meditation session
- Post-session survey
  - Collected information about attitudes towards VR-guided meditation, concerns about VR, and opinions about the VR experience

RESULTS

- Overall:
  - Enjoyed using VR: 77.4%
  - Enjoyed the specific guided meditation module: 67.7%
  - I was satisfied with the length of the module: 80.6%
  - I was comfortable using the headset: 87.1%
  - I could use this on my own: 83.5%

- Pain and Stress Self-Report Measures:
  - Decrease feelings of fear/anxiety/depression: 64.5%
  - Decrease feelings of loneliness/anxiety/depression: 64.5%
  - Improve my mood/emotional well-being: 74.3%
  - Improve my pain: 64.5%
  - Improve my compliance with health behaviors: 58.1%

- Physiological Measures:
  - Heart rate: 70.6 (13.5) pre-session, 69.1 (15.3) post-session
  - Systolic BP: 115.7 (17.4) pre-session, 106.9 (17.9) post-session

- Survey results indicated participants:
  - Preferred to use VR at home (87.1%) versus in a clinic setting (48.4%)
  - Felt comfortable using VR on their own (83.9%)
  - Did not express concerns regarding using VR (83.9%)

CONCLUSION

- Past literature suggests practicing meditation promotes improvements in stress and chronic pain, however access to these benefits is limited by difficulty associated with meditation practice
- Results of the current study demonstrate that VR technology may be feasible as a facilitator of meditation practice for patients with stress and chronic pain, allowing them to access the therapeutic benefits of meditation
- Participants indicated a preference for VR-guided meditation sessions in their own home rather than in a clinic setting and most felt they could use VR on their own, suggesting that VR-guided meditation could be implemented in the patient’s home and done independently of a provider
- Therapeutic benefits of VR-guided meditation are consistent regardless of user’s age, pain type, or prior familiarity with VR
- Despite the preliminary evidence for the feasibility of VR-guided meditation, future studies are needed to examine the long-term effects of repeated sessions with a larger sample size with comparisons to a control group

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REFERENCES