Seasonal Changes in Virtual Natural Landscapes and Pain Reduction:Piloting Virtual Reality Assisted Guided Imagery (VR-AGI) for Patients with Advanced Cancer

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Learning Objectives : EDRA participants will be able to
1. Describe the nature and advantages of non-pharmacological pain relief.
2. Recognize the environmental factors taken into consideration in designing Virtual Reality Assisted Guided Imagery (VR-AGI) as a viable at-home solution for advanced cancer patients experiencing pain.
3. Identify psychosocial and psychosomatic avenues that VR-AGI can help with in advanced cancer patients.
4. Illustrate VR-AGI as a potential intervention in the struggle against opioid use dependency in cancer associated pain.

Now more than ever, it is crucial to explore at-home solutions to all-consuming health problems. For advanced cancer patients, it's imperative that these solutions are accessible, efficacious, and above all, safe. Patients with advanced cancer often experience debilitating pain and pain-related psychological distress. A recent meta-analysis showed that pain was reported in 64% of patients with advanced cancer and unrelieved pain greatly affected patients' comfort, activities, motivation, interactions with family and friends and quality of life (1). Although there is increasing evidence that non-pharmacological strategies are needed to treat pain in advanced cancer patients, pharmacologic modalities remain the preferred strategy. The National Comprehensive Cancer Network (NCCN) guidelines recommend that practitioners consider referring patients to a licensed mental health professional trained in cognitive behavioral therapy (CBT), hypnosis, biofeedback, mindfulness-based stress reduction (MBSR), or guided imagery. Accessibility to these powerful pain relief processes increases individual resilience and promotes sustainability as these processes engage natural body functions and increase wellbeing. Challenges to deliver these non-pharmacologic treatments for pain include training personnel to administer the treatment, the noisy healthcare environment which can be disruptive for patients trying to relax with the processes, and transportation issues for patients in accessing the treatments.

Guided imagery (GI) has already been shown to significantly improve cancer pain (2). Virtual reality (VR)-based interventions are also emerging as evidence-based treatment modalities for cancer pain and numerous recent studies have shown that VR use is safe and associated with improvements in cancer related symptoms including pain, fatigue, anxiety, depression, and cognitive dysfunction (3). However, VR studies in cancer pain have been limited to short-term clinical trials, have small sample sizes, and suboptimal research designs, limiting the interpretability and generalizability of the findings. Most studies are done in a hospital or acute care setting. To date, there have been no studies reporting the use of VR-based interventions in a home setting for cancer patients.

To bridge these gaps, we propose an innovative and novel non-pharmacologic approach, using three seasons (winter, spring, fall) of natural landscapes in VR to augment GI and help treat

cancer pain. This study seeks to: (1) assess the efficacy of VR-AGI in reducing pain, anxiety, and opioid use among patients with advanced cancer; and (2) measure the feasibility, acceptance, and safety of VR-AGI in a home setting. Participants with significant symptoms are invited to participate in three VRAGI processes based on the three seasons, in the comfort of their homes. The home environment offers easy access to the processes and familiar surroundings conducive to facilitating healing. We predict patients will report reduced pain, anxiety, depression, fatigue, and require lower doses of opioids compared to the control group. If proven effective, nature-based VR interventions coupled with GI could be widely broadcast at low-cost in-home settings for patients with advanced cancer and possibly other diagnoses. With its emphasis on promoting health, equity, sustainability, and resilience, EDRA provides the optimal environment for collaborative brainstorming and feedback from researchers as we explore this exciting approach to pain relief.

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