Personalizing Virtual Environments through Immersive Virtual Reality: The patient perspective on achieving the goal of patient-centeredness

Associate Professor Andreas Charalambous
Cyprus University of Technology and
University of Turku
EONS President-Elect
Conflict of Interest

• Nothing to Declare
The problem...

• …Undergoing treatment can be a stressful and burdensome period for the patient and one where mood disturbances have a high prevalence…

• The disturbances seem to peak during the actual treatment sessions…!
Could VR be a solution...?
The solution...?

- **VR imaging application** to be experienced within a Head-Mounted-Display...

- **Immersive virtual reality (immersive VR)** is the presentation of an artificial environment that replaces users' real-world surroundings convincingly enough that they are able to suspend disbelief and fully engage with the created environment.
The study...

• This was a randomised, double blind crossover trial with 40 patient assigned to the study.
• Cross-sectional, Multi-centre study
• ClinicalTrials.gov Identifier: NCT02392728
Inclusion Criteria

- Eligible patients were those in active treatment requiring to receive intravenous chemotherapy within the cancer care setting.
- Eligible participants also needed to be able to speak and understand Greek and they had given written informed consent.
- Participants should also have a score of >60 on the POMS total mood disturbance scale, a >50 on the Karnofsky Performance Scale Index and a mean of >50 on the Attentional Function Index (AFI).
Exclusion Criteria…

- Patients were excluded if:
  - they were diagnosed with brain tumours (due to seizures),
  - receiving palliative care,
  - they had an impaired cognitive ability or
  - they had an impaired visual ability.
Intervention

- VR imaging application to be experienced within a Head-Mounted-Display, simulating movement by manipulating a gesture controller and to experience fully-spherical 3D videos of virtual environments…
Control...

- Guided Imagery (floating on a cloud script)
  - Guided imagery is a traditional mind-body technique that focuses the imagination in proactive, positive ways.
Measures...

- Research data were collected with the
  - POMS (Profile of Mood States),
  - FACT-G (Functional Assessment of Cancer Therapy - General),
  - Patients’ vital signs (BP, HR).
Personalization starts from “scratch”…

• The Virtual Environments were designed in collaboration with and based on patients’ preferences…
• Review – Interviews – Focus Groups – Pilot Testing X 2
• These environments needed to:
  – Be realistic…
  – Allow connectedness with the users
    • “I want to be somewhere enjoyable and relaxing…”
    • “Having the opportunity to “travel” elsewhere…”
    • “Simply take my mind off this “attachment” to the drug…”
Preliminary findings...

- Themes identified
  - Relaxing Experience
  - Altered perception of time
  - Distraction from the hospital environment
    - Distraction from the actual treatment process
Preliminary findings...

- Participants referred that the intervention (i.e. VR) was one of the most amazing things they ever did and that they previously didn't have the opportunity to experience something similar...

- 18 patients stated that the intervention gave them a relaxing time during their chemotherapy session...
Preliminary findings...

- The intervention facilitated their forgetting and altered perception of the time of their treatment and distracted them from the hospital environment...

- The majority of participants mentioned that they prefer these kind of interventions rather than to speak with their psychologist or with a close relative or friend (i.e. referring to mood disturbances)
Take home message...

• Conventional wisdom is that it takes about 20 years from the time the first research is published to become common use...

• Virtual reality has emerged as a viable tool to help in a number of different disorders, with the most strength of evidence for use in exposure therapy for patients with anxiety disorders...
Take home message...

- Our study provides evidence on VR’s effectiveness during the actual chemotherapy sessions...
- Results show that VR is an efficacious tool, compares favorably to guided imagery, and has lasting effects that generalize to the real world...
Whilst VR is promising...

Life is beautiful.
thank you