

Creation of a Novel Distance-Based Learning Curriculum Comparing Immersive Virtual Reality Curriculum to Standardized Simulation for Residents Across Multiple Disciplines

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Background

Traditional high-fidelity manikins (TMs) have been the standard for use in simulations for resident physician education

Virtual Reality (VR) is a newer modality that may address many of the issues associated with TM simulations

The effectiveness of VR for teaching technical and non-technical skills to multi-disciplinary front-line clinicians has not yet been studied



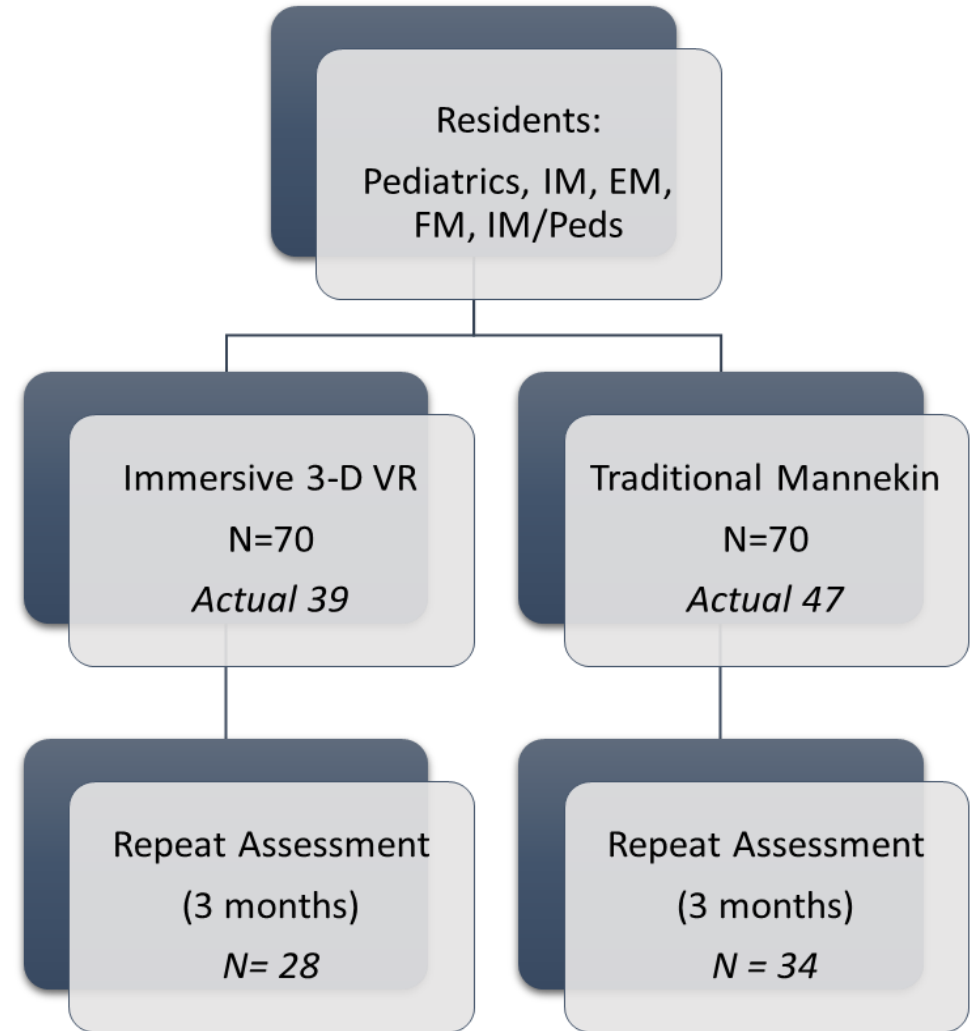
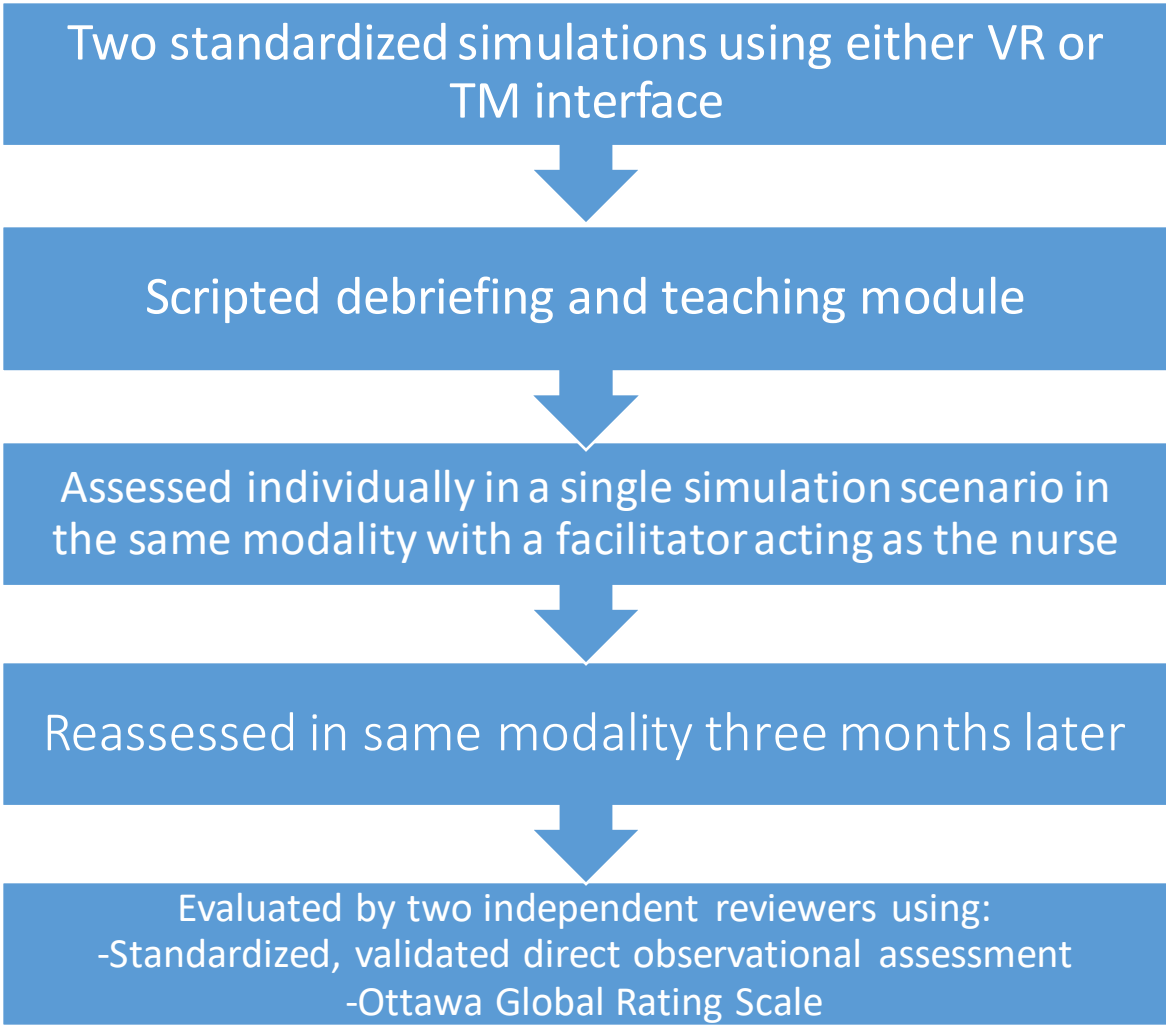
Objectives

To determine if residents exposed to a VR training program compared to TM simulation is as effective in teaching technical and non-technical skills

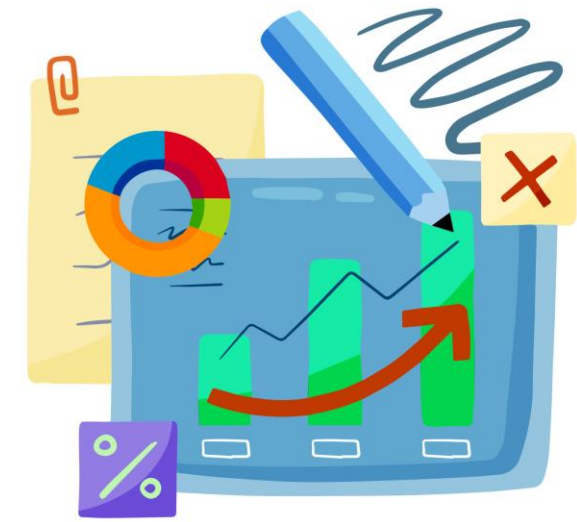
To measure long-term knowledge degradation patterns for residents exposed to VR training program as opposed to a traditional high-fidelity manikin-based program



Methods



Results



Demographics

- No significant difference in participant demographics

Comparison of Technical Skills TM vs VR

- No overall statistically significant differences between the two modalities
 - More residents stopped anaphylactic medication and administered fluid bolus in the VR simulation
 - More residents gave oxygen during the TM simulation
- Paired Multi-Variate Regression Analysis
 - No significant differences between TM and VR

Comparison of Nontechnical Skills TM vs VR (Ottawa Rating Scale)

- No overall statistically significant differences between the two modalities

Knowledge Retention

- No difference in knowledge retention



Discussion and Next Steps



Major Findings

- Initial pilot study representing a novel application of immersive VR for multidisciplinary residents
- No overall differences seen in immediate recall or knowledge retention at the three-month mark in either modality



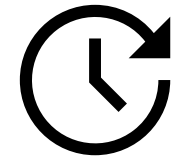
Observational differences in modalities:

- TM had less standardized prompting
- More familiarity with TM
- Less tactile feedback with VR
- Quicker turn over with VR
- Instant score card generated with VR



Limitations

- Underpowered
- Prompting bias in VR

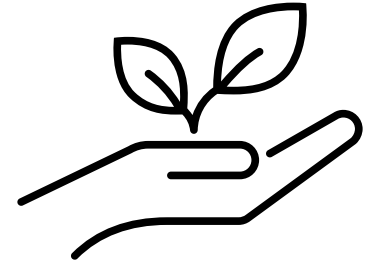


Next Steps

- Further higher-powered multi-institutional studies are needed
- Understanding the role of VR to enhance simulation education
- Application to clinical outcomes



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Virtual Reality Cases**



Questions?



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Example Video of VR



Example of TM video

