



Exploring the Use of AI-Enhanced Virtual Reality in Teaching and Evaluating Communication Skills in Urology: A Pilot Study

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INTRODUCTION

Effective communication is a core competency in healthcare, yet traditional training methods often face limitations in realism, scalability, and learner engagement. This study evaluated the perceptions of healthcare professionals regarding the use of artificial intelligence (AI)-enhanced virtual reality (VR) simulations for communication skills training in urology.



METHODS



Participants
45 healthcare professionals (N = 45)



Intervention
Haematuria role-play simulation using AI-enhanced VR via Bodyswaps® software



Study Design
Pre- and post-simulation questionnaires using a standard five-point Likert scale



Outcomes Measured

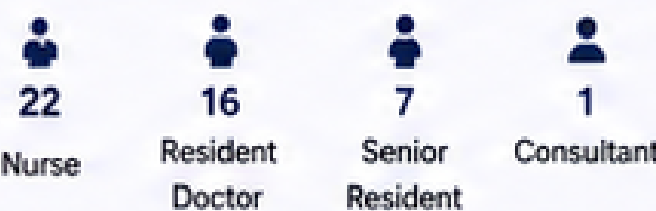
- Potential of AI-VR to improve communication skills
- Usefulness of the simulation
- Agreement with AI-generated feedback
- Realism compared to clinical practice
- Overall enjoyability



Statistical Analysis
Analysis of Likert scale responses are ordinal, they were treated as approximately interval data for statistical analysis. Descriptive statistics and one-sample t-tests against the neutral midpoint (3.0) were conducted. Significance set at $\alpha = 0.05$.

PARTICIPANT PROFILE (N = 45)

Professional Background



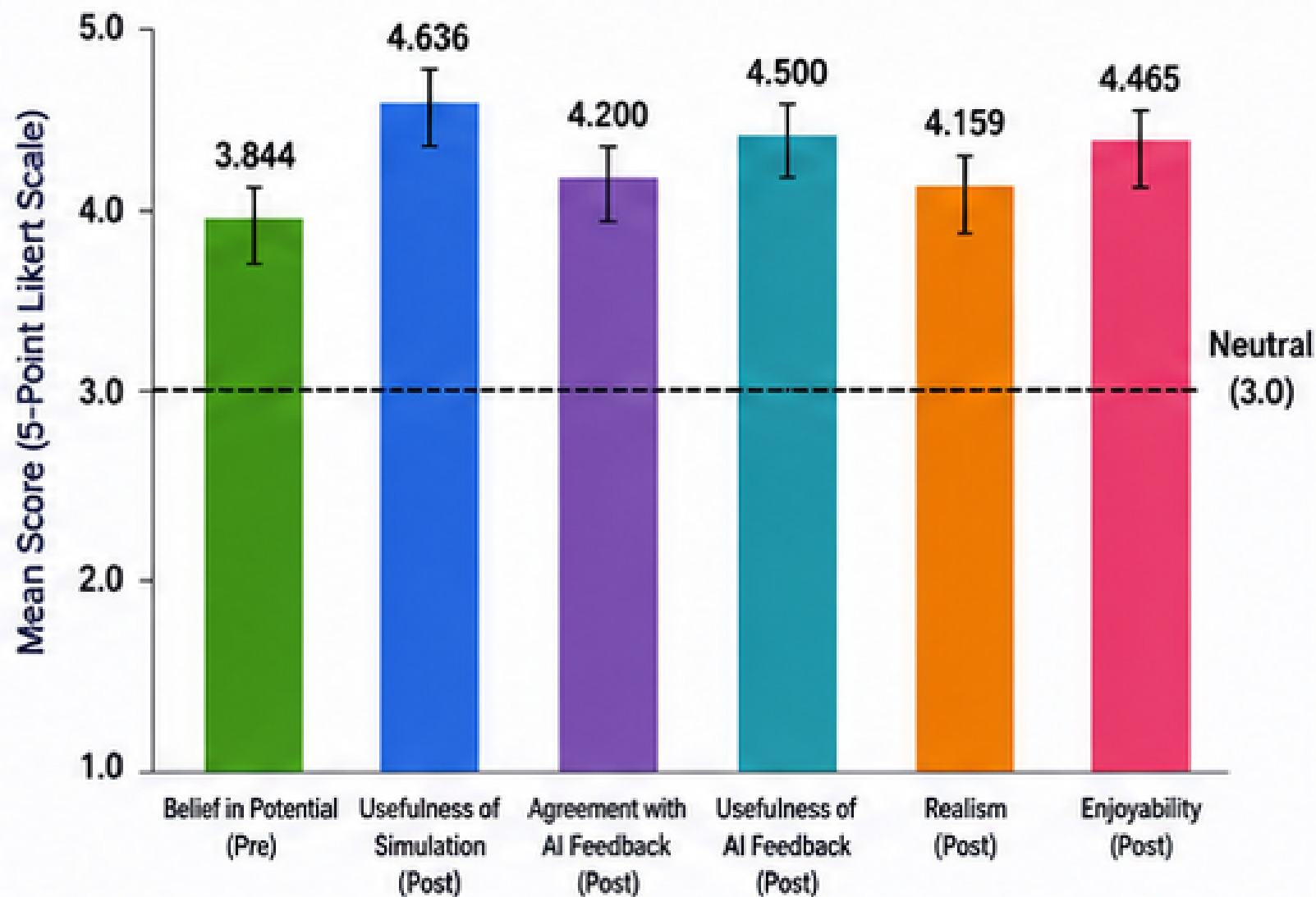
RESULTS



All outcomes showed significantly positive perceptions compared to the neutral midpoint (3.0) with $p < 0.0001$ for all domains.

Domain (5-Point Likert Scale)	Pre / Post	n (%) Above Neutral (3.0)	Mean $\pm$ SD	One-Sample t-test vs. 3.0 (p-value)
Belief in the Potential of AI-VR to Improve Communication Skills	Pre-Simulation	23 (51.1%)	3.844 $\pm$ 0.9034	$p < 0.0001$
Perceived Usefulness of the Simulation	Post-Simulation	40 (88.9%)	4.636 $\pm$ 0.6851	$p < 0.0001$
Agreement with AI-Generated Feedback	Post-Simulation	35 (77.8%)	4.200 $\pm$ 0.9195	$p < 0.0001$
Usefulness of AI Feedback	Post-Simulation	40 (88.9%)	4.500 $\pm$ 0.6949	$p < 0.0001$
Realism Compared to Clinical Practice	Post-Simulation	34 (73.3%)	4.159 $\pm$ 0.9135	$p < 0.0001$
Overall Enjoyability of the Experience	Post-Simulation	41 (91.1%)	4.465 $\pm$ 0.8549	$p < 0.0001$

MEAN SCORES ($\pm$ SD) FOR ALL OUTCOMES



High agreement across all domains



Strong perceived usefulness and realism



Highly enjoyable learning experience



CONCLUSION

The findings suggest that AI-enhanced VR simulations have potential as effective and engaging tools for communication skills training in urology. The positive responses across all measured domains support further integration of immersive AI technologies into clinical education.



- ✓ AI Feedback
- ✓ Empathy
- ✓ Clarity
- ✓ Structure
- ✓ Overall: **Excellent**