

THE USE OF MIXED REALITY HUMANS TO TEACH CLINICAL SKILLS

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Purpose of Study: Mixed reality humans (MRHs) are computer avatars integrated with mannequin-based simulators that provide a complete virtual history-taking and examination experience. The purpose of this study was to determine if exposure to an MRH with a breast complaint can prepare pre-clinical medical students for eliciting a breast history (HT) and performing clinical breast exam (CBE).

Methodology: Pre-clinical medical students at the Medical College of Georgia (N=11) were randomized to either a single interaction with an MRH (Figure 1) with a breast complaint or to no MRH interaction before an interaction with a standardized patient (SP). The SP rated the student's overall performance. Subjects also performed CBE on a mannequin breast simulator with a known abnormality and completed baseline and exit surveys to assess preparation and anxiety in breast HT and performing CBE. Data were analyzed using paired and Student's t-tests and Fisher's exact test where appropriate.

Summary of Results: None of the subjects had ever interviewed or examined a real or standardized patient with a breast complaint. There was a significant improvement in preparation for performing HT and BE in all participants, but no change in level of anxiety (Table 1). There was no difference in change in confidence or anxiety or in ability to detect a breast abnormality when compared by group.



Table 1: Comparison of Baseline and Exit Measures (N=11)

Measure	Baseline	Completion	Δ -value
HT preparation ¹	2.45 ± 1.13	3.36 ± 1.03	0.91 ± 1.22*
HT anxiety ²	3.28 ± 1.10	2.91 ± 0.94	-0.36 ± 0.92
CBE preparation ²	1.64 ± 0.87	2.45 ± 1.13	0.82 ± 0.75*
CBE anxiety ²	3.55 ± 1.04	3.27 ± 0.90	-0.27 ± 1.01

¹Five-point Likert-type scale (1=least prepared 5=most prepared)

²Five-point Likert-type scale (1=least anxious 5=most anxious)

*p<0.05, paired t-test

Conclusions: MRHs have potential to augment existing curricula to teach history-taking and examination skills, particularly for intimate exams such as those for the breast, pelvic and prostate, where pre-clinical opportunities may be rare or non-existent.