

## The Use of a Virtual Character-Enhanced Simulator to Teach Breast History and Examination Skills

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**Introduction:** Medical students need additional practice in assessing breast health and performing a breast examination. We have previously reported that life-sized, interactive virtual patients can prepare students for history-taking these anxiety-provoking clinical scenarios. The purpose of this pilot study was to develop and evaluate a virtual character-enhanced simulator to teach and assess breast history and examination skills.

**Methods:** The simulation contained 3 interactive pieces including: 1) the virtual instructor (VI), who teaches the student how to perform a breast history and exam, 2) the virtual patient (VP), a 55 year old female who presents with a breast mass and 3) a simulated breast mannequin made of foam rubber overlaying a silicone insert (Figure 1). Students (n=8) interacted with the virtual

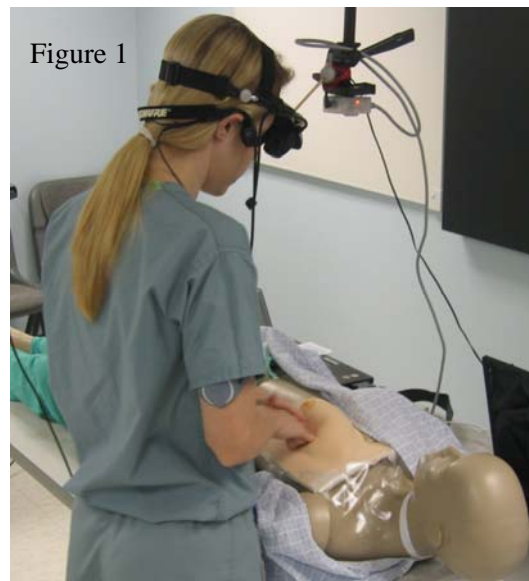


Figure 1

characters via a speech recognition and tracking system using a head-mounted display that projected images of the VI and VP. Subjects recruited from the second-year physician assistant class at the Medical College of Georgia (MCG) were provided baseline instruction and completed a background survey prior to the study. Half the students received instructions from the VI on and then completed the history and exam on the integrated VP/breast simulator. The remaining students were not instructed by the VI and interacted only with the VP/breast simulator. After the interaction, each completed an exit survey. Univariate analysis was performed for outcomes of interest.

**Results:** No student had previously interviewed or examined a “real” patient presenting with a breast mass. The majority of students (75%) who interacted with the VI found her to be useful. Students reported frustration interacting with the VP as a result of a suboptimal voice recognition and response system. Several students (37.5%) stated that they would use the integrated VI/VP and mannequin system as a practice tool.

**Conclusions:** This pilot study represents our first effort to combine a virtual patient and instructor with a mannequin-based simulator to provide a completely virtual history and physical exam experience. Ongoing efforts are being directed towards improving the VP responsiveness and richness of the virtual interaction.