A PILOT STUDY TO EVALUATE THE USE OF AN ONLINE VIRTUAL PATIENT SYSTEM TO TEACH INTERVIEWING SKILLS TO FIRST-YEAR MEDICAL STUDENTS

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BACKGROUND

Computer simulation is the future of teaching and assessment in the health professions. Currently, most students are taught and evaluated on how to conduct a medical interview through the use of standardized patients. Virtual patient (VP) systems are computer programs that simulate real-life clinical scenarios in which the learner can complete a patient interview and physical exam, while making diagnostic and therapeutic decisions. These systems can offer numerous advantages over traditional methods including:
- Standardized instruction
- Immediate and Objective Performance Feedback
- Unlimited Opportunity for Repetitive Practice

Unfortunately, little data exists in regards to the educational efficacy of VPs and VP systems.

VIRTUAL PEOPLE FACTORY

Virtual People Factory (VPF) is a web-based VP system that enlists users for rapid and robust script development while concomitantly teaching them history-taking skills through the use of an Embodied Conversational Agent and an instant messaging program. Feedback generated includes an Interview Transcript, a Topic Flow Outline, and a Topic Item Checklist (“discoveries”).

THE PATIENT

Mr. Hank Lowry is a 58-year old Caucasian male with a Chief Complaint of suspicious skin lesions on his back, chest, and shoulder. Noticing the moles 3-4 months ago, they are circular in shape. His family history of skin cancer and his occupation as a landscape architect predisposes him to melanoma.

METHODS

Following didactic training in obtaining a thorough patient history, 51 first-year medical students participated in the online medical interview of 58-year old male VP with a Chief Complaint of suspicious skin lesions. Following orientation to the system, students were directed to VPF via a user-defined link. Here, students conversed with the VP in a question-and-answer format. Through this process, any script errors were identified by the students and were quickly corrected by a script editor. After the interaction, students received performance feedback and completed a self-evaluation and quiz.

RESULTS: SELF-EVALUATION

Upon self-evaluation of their patient interaction:
- 90.2% of the students felt they thoroughly investigated the Chief Complaint, 82.3% investigated the History of Present Illness, and 70.6% investigated the Family History at least competently
- an equal number of students felt their were either competent or deficient in obtaining a thorough Past Medical History
- 54.9% felt deficient in getting the Social History, while 52.9% felt deficient in completing the Review of Systems

RESULTS: CONTENT ANALYSIS

Content analysis of the students’ interactions indicated:
- 52.9% knew the patient’s age and 78.4% knew the patient’s occupation
- while 54.9% correctly identified the shape of the moles, 33.3% did not ask
- 23.5% did not ask about family history of skin cancer and 35.3% did not ask about current medications
- only 13.7% correctly identified the location of the moles

RESULTS: INTERACTION EVALUATION

Conversing with the virtual patient:
- 64.7% of the students had a positive perception of and enjoyed their interaction
- 72.5% found educational value in VPF use of an Embodied Conversational Agent and an instant messaging program.
- 76.5% found the system to be user-friendly

CONCLUSIONS

VPs provide an alternative method for students to interact with patients in a resource-, time-, and cost-effective manner. In addition, VPs allow for clinical scenarios to be presented to students that otherwise would be difficult to simulate with standardized patients. VPF allows 1st-year medical students to learn correct history-taking techniques prior to interacting with patients in the clinic. In this online format, students can use this novel tool in their own time to complement lecture or small group learning. Furthermore, with immediate performance feedback, students are able to learn their strengths and weaknesses in conducting patient interviews and then subsequently improve. Additionally, proper communication skills has not only been shown to increase patient satisfaction, but also improve their quality of life with increased patient compliance. VPF allows students to refine their communication skills before interacting with standardized or clinical patients. For further progress on this project, our continual evaluation of VPF will ask for 1st-year medical students to use this tool at set points throughout their academic year and determine whether VPF improved their interviewing techniques and, as a result, enhanced their performance on the Objective Structured Clinical Examinations.