

Revolutionizing OSCE Preparation Through AI-Driven Synthetic Patients

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Background:

Objective Structured Clinical Examination (OSCE) preparation is a key component of medical student training. Traditional methods like standardized patient (SP) encounters and peer-to-peer practice provide valuable experience but are limited by inconsistent feedback, access issues, and time constraints. To support OSCE preparation, we developed AI-driven synthetic patients that offer students a flexible, accessible, and consistent practice tool. Using ChatGPT-4o and core clinical competencies expected of first-year students at Indiana University School of Medicine (IUSM), we piloted virtual patients that simulate realistic encounters—enabling conversational interviews with immediate, structured feedback.

Methods:

Five interactive synthetic patient cases were created to reflect common OSCE scenarios. Each case included a computerized door note, dynamic dialogue, realistic patient responses, and downloadable feedback modeled after IUSM OSCE grading rubrics. We recruited 14 rising second-year medical students at IUSM–Bloomington to interview the synthetic patients. A pre-interview survey assessed students' prior OSCE preparation, while a post-interview survey evaluated the tool's realism, usefulness, and convenience, and gathered qualitative feedback.

Results:

The pre-interview survey revealed that a majority of students (9 of 14) desired additional tools to support history-taking practice for the OSCE. In the post-interview survey (n=6), students rated the tool an average of 7.5 for usefulness, 7.5 for realism, and 9.5 for convenience on a 10-point Likert scale. Participants appreciated the ability to engage with the tool independently and at their own pace, simulating the structure of a real OSCE. All participants recommended integrating the tool into first-year OSCE preparation and expressed strong interest in expanding its use for second-year OSCE preparation.

Conclusion and Future Directions:

This pilot demonstrates strong student support for AI-based OSCE preparation. Full implementation is planned for Fall 2025 at IUSM–Bloomington, where we will compare OSCE outcomes between users and non-users.