TAiPPi: An AI-Powered Interactive Patient for Scalable and Equitable History-Taking Training

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Aim

TAiPPi (Talking AI Patient Partner Interface) aims to:

- Deliver realistic, interactive history-taking practice
- Provide equitable access to diverse clinical scenarios
- Reduce reliance on limited in-person simulation sessions
- Support future integration of AI in medical education

Background

History taking is a fundamental part of medical and dental education, however, opportunities for practice are often limited by scheduling constraints and reliance on volunteer patient partners. To address these concerns, AI-powered tools are emerging as scalable and realistic learning aids. Research into AI-powered patient simulators, whilst still in its infancy, has shown:

- ChatGPT-4 can simulate realistic patient interactions with over **99% plausibility** [1]
- GPT-4's feedback achieves **near-perfect agreement** with human raters in assessing student performance ($\kappa = 0.832$) [1]
- Large language models may offer more engaging and repeatable experiences than traditional scripted virtual patients [2]

TAiPPi was developed to provide students with accessible, self directed practice in history-taking through AI-powered simulation.

Methods

TAiPPi mirrors traditional patient partner sessions, where volunteers follow scripted clinical scenarios for medical, dental, and PA students. To replicate this, we uploaded these scripts as PDFs into a Custom GPT, creating a scenario bank the model can draw from.

On start-up, users select their student type and choose a clinical case. While advanced voice features aren't available in Custom GPT, standard voice input is supported, enabling both text- and voice-based interaction.

Initial testing with prompt-based inputs exceeded the context limit and led to hallucinations. Switching to structured PDF scripts improved reliability and reduced errors.

With ethics approval now in place, pilot simulations will begin shortly. These will inform improvements to feedback, scenario design, and the range and complexity of available cases.

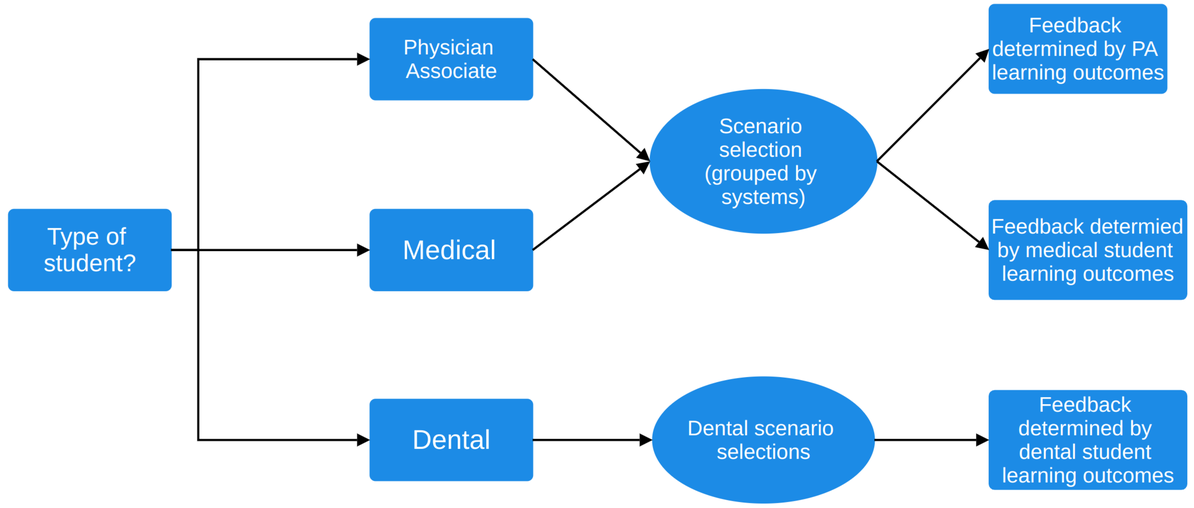

Figure 1:Workflow of TAiPPi's History-Taking Simulation Based on Student Type and Learning Outcomes

Expected Benefit

- Increase students' access to a diverse range of history-taking scenarios outside of scheduled teaching
- Reduce dependence on volunteer availability
- Support equitable learning by allowing students to engage in self-paced, repeatable practice
- Encourage development of clinical reasoning and communication skills through realistic dialogue and feedback

Results

Pending pilot testing and student feedback, TAiPPi has the potential to become a valuable addition to traditional training methods, especially in supporting clinicians during OSCE preparation, remote study or during periods of limited clinical access.

Conclusion

TAiPPi shows how AI can support medical education by simulating realistic, accessible patient encounters. Using the strengths of the patient partner model, it offers students flexible, independent history-taking practice. With ethics approved and pilots imminent, future evaluation will focus on usability, cost, and educational impact. As AI evolves, TAiPPi aims to provide more equitable, student-centred clinical training.

References

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Acknowledgements

Thank you to Rachel Falconer for helping create and fund this program. Many thanks to Rowena Belding and Clare Donachie for their help with the project.

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