

Your Quest Begins Now! EBMQuest, a Digital Interactive Fiction Module for Medical Student Engagement in Evidence-Based Practice

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Abstract

Although evidence-based medicine (EBM) has gained increasing focus in medical education, there remains considerable need for innovative approaches to engage learners. We developed a novel online interactive fiction module "EBMQuest", where students navigate three clinical scenarios requiring use of EBM resources for successful progression. Student feedback was strongly positive, with an overall program rating of 4.64 (Good-Very Good). Online interactive fiction should be further explored as a means of delivering innovative medical education.

Keywords:

Education, Evidence-Based Medicine; Simulation Training

Introduction

Evidence-based medicine (EBM) has gained increasing attention in medical education, such as in promoting critical evaluation of evidence and in the use of systematic reviews in clinical practice [1]. However, EBM can be a challenging topic to incorporate into medical student curricula, especially when presented without explicit clinical context [2]. In the wake of the COVID-19 pandemic medical student education has also had a greater focus on online teaching, reducing time spent within clinical environments [3].

In 2021, a new initiative was launched for final-year students at the University of Melbourne Medical School focused on EBM education. In support of this initiative, with explicit recognition of educational needs amidst the COVID-19 pandemic, we developed an online interactive fiction module exploring key EBM principles through the lens of common clinical scenarios faced by junior doctors, followed by a synchronous online webinar reflecting on module themes.

Methods

We developed EBMQuest (<https://ebmquest.github.io>), an online interactive fiction module, using Twine 2.3.13 (<https://twinery.org>). Gameplay was designed around three clinical scenarios: (1) post-operative tachypnoea in an elderly patient; (2) delirium in an elderly inpatient; and (3) minor trauma in a young ambulatory patient. Basic variables such as learner name were incorporated into gameplay text to enhance engagement. Clinical scenarios were designed to be non-linear; players could take divergent routes, could bypass steps in a traditional clinical evaluation (e.g., physical examination), and could trigger game failure based on decisions taken.

Within EBMQuest, we incorporated a 'research portal' linking to popular online EBM resources used by Australian doctors (e.g., Therapeutic Guidelines® and UpToDate®), and required consultation of evidence-based resources to enable game progression at pivotal steps (e.g., selecting drug dosages).

A brief feedback survey was also embedded within EBMQuest as part of routine quality assurance of new educational programs. Survey questions including self-identification as final year medical student or other, a 5-point scale for an overall rating on EBMQuest (ranging from '1–Very Poor' to '5–Very Good'), and free-text comments. Binomial proportions and associated 95% exact confidence intervals (Clopper-Pearson method) were calculated. Free-text comments were categorised post hoc.

Results

Among 337 students invited to complete EBMQuest, 196 (58%; 95% CI: 53-63%) responded to the survey with an average overall rating of 4.64/5 (standard deviation: 0.65). Ninety-two (47%; 95% CI: 40-54%) students provided free-text comments, among whom common themes included user experience (83%; 95% CI: 73-90%), educational value (49%; 95% CI: 38-60%), and requests for module expansion (21%; 95% CI: 13-30%). Following release, 310 (92%; 95% CI: 89-95%) students attended a live webinar discussing EBMQuest.

Conclusions

Among final-year medical students invited to explore a novel online simulation incorporating evidence-based medicine education, the average overall rating was 4.64 (Good-Very Good). Numerous requests for module expansion and high webinar participation suggest that EBMQuest was an engaging educational modality. Online interactive fiction could be explored in other domains of medical education.

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References

- [1] B. Djulbegovic and G.H. Guyatt, Progress in evidence-based medicine: a quarter century on, *Lancet* **390** (2017), 415-423.

- [2] L.A. Maggio, O. ten Cate, H.C. Chen, D.M. Irby, and B.C. O'Brien, Challenges to Learning Evidence-Based Medicine and Educational Approaches to Meet These Challenges: A Qualitative Study of Selected EBM Curricula in U.S. and Canadian Medical Schools, *Acad Med* **91** (2016), 101-106.
- [3] S. Rose, Medical Student Education in the Time of COVID-19, *JAMA* **323** (2020), 2131-2132.

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