Systematic review with meta-analysis

E-learning may be no better than traditional teaching for continuing education of health professionals

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Implications for research and practice

- ▶ There is limited evidence to support of e-learning as an alternative to traditional teaching.
- ▶ Studies have high levels of attrition and outcome measures that do not support translation of results to clinical outcomes.
- ▶ Future research and reviews must examine more closely the educational strategies as well as outcomes.

Context

E-learning is defined as an educational intervention delivered via the internet. The advantages of e-learning include lower cost, wide distribution, ease of access, updateable materials and personalised pace of learning, but these vary depending on the technology, the user, the design and the content.¹ The aim of the review was to assess whether e-learning, when compared with traditional teaching methods, improved patient outcomes or healthcare professionals' (HCP) knowledge, skills or behaviours.²

Methods

This is a systematic review of randomised trials and cluster randomised trials. The studies included had to provide e-learning on a clinical topic via internet, extranet or intranet in the form of web-based tutorials, virtual clinical vignettes, online discussion, online conferencing or seminars, emails, podcasts and social networks. The carefully constructed search aimed to identify all published primary research papers by interrogating bibliographic databases such as Medline as well as trial registries and reference lists. Data were extracted using the Effective Practice and Organisation of Care³ (EPOC) review method data collection checklist and the quality of studies independently assessed by two authors using the EPOC risk of bias criteria.³ Studies were grouped together according to methodological and clinical characteristics. A meta-analysis was conducted using RevMan V.5 software.⁴

Findings

A total of 3465 records were identified and screened to yield 16 studies that were included in the review. These studies contained data relating to 5679 learners; the mean sample size was 400, but only three trials had more than 150 participants. The trials took place in primary care, hospital

and rehabilitation settings. The follow-up period from conclusion of the intervention to last outcome assessment had a median of 1.5 weeks and a range of 0 to 52 weeks. Two of the included studies used prescribing and screening as indicators of HCP behaviour which was not improved when compared with traditional teaching. The review concludes that there is little evidence for greater improvement in patient outcomes, HCP behaviours, skills and knowledge when e-learning is compared with traditional methods.²

Commentary

Continuing education of HCPs is essential to produce the best possible outcomes for patients. There are hundreds of research and review papers trying to identify what teaching and learning (T&L) strategies produce the best improvements in HCP knowledge, skills and behaviours. Long-term follow-up of the effects of an educational intervention is hampered by high levels of attrition,² which makes the interpretation of gains in trials difficult. One of the missing pieces of information in this review is a critical appraisal of the teaching strategy. It is possible, and perhaps probable, that poor educational design has an impact on the quality and quantity of learning and the translation of learning into improved practice. A systematic review published via conference poster detailed the T&L strategies of 56 studies in practice-based pain education and found that very few had a sound pedagogical basis.⁵ There is a tendency for designers to simply transfer face-to-face content to a digital environment without appreciating how people use technology, how they learn and how to determine that learning has taken place. Transmission of expert knowledge (content) through e-learning does not help the learner to develop expertise—he or she needs to interact with the material in meaningful way, make use of his or her experience and knowledge, be able to apply new theory and skills to practice, and receive feedback that reinforces learning.⁶ We will not be able to judge whether e-learning has the potential to be worse, the same or better than other methods unless we know that it was well designed with a sound theoretical basis.

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