A systematic review of the literature reporting on studies that examined the impact of interactive, computer-based patient education programs

Fox MP

CRD summary
This review evaluated the impact of interactive computer-based education (ICBE) programs on patient education and economic and health status. It concluded that ICBE programs can add value to the patient education process, although inconsistencies were noted. Given flaws and uncertainties surrounding the review methodology used and the potential conflict of interest, the author's conclusion should be treated with caution.

Authors' objectives
To determine the impact of interactive computer-based education (ICBE) program on patient education and economic and health status outcomes.

Searching
MEDLINE and CINAHL were searched for English-language articles from January 2000 to January 2008. Search terms were reported.

Study selection
Randomised controlled trials (RCTs) that compared effectiveness of an ICBE program with another form of patient education were eligible for inclusion in the review. Eligible studies had to use knowledge retention or gains as one of the outcome measures.

Primary outcomes were: positive impact on education; clinical and economic benefits; and factors that contributed to inconsistent outcomes.

An ICBE program was defined as a computer-based program that employed video, still pictures and audio presentations that interacts with the user through program manipulation, question, levels of control over program sequence or level of detail. Programs could be resident on a personal computer or accessed through the Internet. The learning environment was predominantly within doctors' offices or clinics. The program was viewed on single or multiple occasions. Features of the programs were varied. Most ICBE interventions incorporated multimedia features that included video and animation, included voice-over to reinforce script messages and included a self-check or quiz at the end of key sections or program end with detailed answers. Control educations included printed material, consultation, lecture and no intervention.

The author did not state how many reviewers selected studies for inclusion in the review.

Assessment of study quality
The author did not state that he assessed validity.

Data extraction
Data were extracted into standardised tables.

The author did not state how many reviewers performed data extraction.

Methods of synthesis
Studies were combined in a narrative synthesis supported by data tables.

Results of the review
Twenty five RCTs (n=unknown) were included in the meta-analysis.

Positive education outcomes: Most studies (22 RCTs) indicated a positive impact on of ICBE programs on knowledge gains.
Clinical and economic benefits: Seven of eight studies found that ICBE programs were as effective or more effective at education than healthcare staff. Eight studies reported reduced staff costs. Three studies noted an increase in patient satisfaction after using the ICBE program. Nine studies reported that the ICBE program improved clinical outcomes; five studies reported no benefit.

Factors that contributed to inconsistent outcomes: Variable program features were highlighted as a cause of inconsistency between studies. Features rated highly by patients were: multimedia features (22 studies); and hardware and software adaptations for patients with physical, auditory or visual difficulties (seven studies). Limited programme access was listed as a problem in four studies. Increased time spent viewing the program (one study) and web-based programs had positive outcomes (three studies). There was minimal or no evidence for the best integration process. Variation in treatment and comparison controls was noted as a further source of inconsistency.

Authors’ conclusions
There was collective evidence to indicate that ICBE programs can add great value to the patient education process, although significant inconsistencies were noted.

CRD commentary
This review addressed a clear research question with appropriate inclusion criteria. The search strategy was limited. There was no apparent search for unpublished material, so relevant trials may have been missed and publication bias could not be ruled out. Only English-language publications were included, which introduced a risk of language bias. There was no assessment of study quality. There were no steps to minimise errors and bias by referral to a second or third reviewer. There were insufficient study details, in particular about size of individual studies. A narrative synthesis was appropriate given the level of heterogeneity between included studies. The author is co-chairman of the Board of Directors for Emmi Solutions LLC (a company that produces interactive computer-based patient education programs). Given all the flaws of the review methodology and the potential conflict of interest, the author’s conclusion should be treated with caution.

Implications of the review for practice and research
Practice: The author stated that ICBE programs had potential to offer a cost-effective patient education intervention that may reduce demands on professional staff. Consideration of best practices from this review will assist healthcare providers in designing, selecting and implementing effective ICBE programs.

Research: The author stated that future research should consider the variables of the intervention process, program features and integration of programs to promote better understanding of ICBE program impact.

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