A systematic review of computerised serious educational games about alcohol and other drugs for adolescents

Rodriguez DM, Teesson M, Newton NC

CRD summary
This review concluded that computerised serious educational games could be a potentially effective method for teaching and perhaps even for changing attitudes and behaviours towards alcohol and other drug use among young people. Although the authors’ conclusions are appropriately cautious, uncertainties surrounding methodological reporting in the review and the limitations of the evidence suggest they may not be reliable.

Authors’ objectives
To assess the impact of computerised serious educational games on the prevention of alcohol and drug use in adolescents.

Searching
Six databases (including MEDLINE, EMBASE, and The Cochrane Library), plus the DRUG database (not clearly specified), were searched for relevant articles up to February 2013. Search terms were reported. In addition, reference lists of relevant papers were manually screened and authors contacted where necessary.

Study selection
Eligible for inclusion in the review were studies published after the year 2000 that evaluated the impact on adolescent participants of serious computer-based educational games targeting alcohol and/or other drugs. Eligible studies had to measure gains in content knowledge from baseline to post-intervention. Outcome measures on drug-related attitudes and drug use were also eligible for inclusion.

Most of the included studies were conducted in the USA, with one conducted in the UK. Participants were students aged from 10 and 18 years (where reported). Most computer-based games adopted an educational approach, with two studies using a social influence approach. Games were delivered online or on CD-ROM and included two to five parts/episodes, or 10 to 15 lessons (where reported). Games were aimed at the use of alcohol, methamphetamine, inhalants, opioids, tobacco, cannabis, or cocaine; games were delivered to all participants regardless of their level of substance use risk (universal). One study included a control group that involved an alternative prevention programme (Life Skills Training Programme).

Two reviewers independently screened studies for inclusion.

Assessment of study quality
The authors did not state that they assessed included studies for quality.

Data extraction
Baseline and post-intervention outcome data were extracted to calculate pre- to post-differences. Baseline data were measured immediately before or up to five days before the first game was played (where reported). Post-intervention data were measured immediately after or up to seven days after the final game was played (where reported).

The authors did not state how many reviewers extracted data.

Methods of synthesis
Due to heterogeneity between studies, outcome data were presented as a narrative synthesis.

Results of the review
Two randomised controlled trials (RCTs) and six pre/post intervention studies (2,196 participants, range 98 to 489) were included in the review.
Educational approach (six studies): Five studies showed an increase of content knowledge from the game, with four of these studies reporting an increase at a follow-up of at least three days after playing the game (p<0.01). Two educational games were associated with more negative attitudes towards the targeted drugs, although the significance for one study was unclear (no p value was given).

Social influence approach (two studies): One study was associated with retention of content knowledge, in addition to reduced frequency of smoking, drinking and marijuana use (p<0.01). The second study appeared to produce an increased perception of the harm of alcohol along with increased assertiveness skills (p<0.01).

Authors' conclusions
Computerised serious educational games could be a potentially effective method for teaching and perhaps even for changing attitudes and behaviours towards alcohol and other drug use among young people.

CRD commentary
The review question and supporting inclusion criteria were broadly stated. A satisfactory number of sources were searched for relevant literature. The authors stated that study selection was performed in duplicate to reduce reviewer error and bias, but it was unclear whether this was true for data extraction.

The authors did not state that they assessed the quality of included studies, but most were pre/post intervention studies with no comparable control group (as acknowledged by the authors). The evidence base was generally small, as acknowledged by the authors. The synthesis was somewhat limited. The authors also acknowledged that there was inconsistency in the outcome measures assessed. Most studies were conducted in the USA, so it was unclear whether the findings would be generalisable to other countries/settings. Follow-up was generally short term; it was unclear whether the knowledge gained would be maintained in the long term, or could translate into behaviour change.

The authors' conclusions are appropriately cautious. However, given the uncertainties surrounding methodological reporting in the review and the limitations of the evidence base and synthesis, their conclusions should still be interpreted with care as they may not be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further long-term research was needed to compare the effectiveness of serious educational games with traditional methods of teaching on alcohol and drugs, and to cross-validate the existing evidence. They also stated that it would be useful to investigate whether the knowledge gained and changes in attitudes translated into changes in behaviours.

Funding
Department of Health, Australian; Medical Research Council Centres of Research Excellence in Mental Health and Substance Use, Australia; National Health and Medical Research Council research fellowship, Australia.

Bibliographic details

PubMedID
24329810

DOI
10.1111/dar.12102

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Female; Health Promotion; Humans; Male; Substance-Related Disorders /prevention & control; Video Games

AccessionNumber
12014000596

Date bibliographic record published
06/02/2014

Date abstract record published
10/09/2014

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.