
Effectiveness and cost-effectiveness of computer and other electronic aids for smoking cessation: a systematic review and network meta-analysis

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CRD summary

This well-conducted review found that computer and other electronic aids increased the likelihood of smoking cessation compared with no intervention or generic self-help materials, but that the effect was small. The authors' conclusions reflect the evidence presented and are likely to be reliable.

Authors' objectives

To assess the effectiveness and cost-effectiveness of Internet, computer (PC) and other electronic aids to help people stop smoking. This abstract focuses on the review of effectiveness.

Searching

The Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, PsycINFO, Health Management Information Consortium and CINAHL were searched up to December 2009. Search strategies were reported. Searches were not limited by language. Reference lists of included studies and relevant systematic reviews, and registries of ongoing trials, were searched. Experts in the field were also contacted.

Study selection

Randomised controlled trials (RCTs) and quasi-RCTs were eligible for inclusion. Eligible interventions were smoking cessation programmes aimed at adult smokers that used computer, Internet, mobile telephone or other electronic aids. Trials had to report at least one outcome related to smoking cessation. Trials that used conventional mass media interventions (such as TV or radio adverts) were excluded.

Included trials compared a wide range of electronic aids versus no intervention, self-help materials or another electronic or non-electronic intervention. Trials recruited smokers interested in quitting (aid to cessation studies), smokers who were not ready to quit (cessation induction studies) or a mixed population.

Two reviewers independently selected studies for the review. Disagreements were resolved by discussion or by involving other members of the review team to reach consensus.

Assessment of study quality

The quality of included trials was assessed using a checklist that covered: method of randomisation; allocation concealment; baseline similarity between groups; similarity in co-interventions between groups; biochemical validation; extent of drop-out; differential drop-out between groups; and use of intention-to-treat analysis.

Quality was assessed by one reviewer and checked by a second; disagreements were resolved by discussion or reference to a third reviewer.

Data extraction

Data on numbers of participants and events (successful smoking cessations) were extracted to derive relative risks and associated 95% confidence intervals for smoking cessation outcomes.

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Methods of synthesis

Data were synthesised using both a pairwise meta-analysis and a Bayesian mixed-treatment comparison. Interventions were categorised according to the degree of tailoring of content and number of electronic components. Trials were grouped as either aid to cessation or cessation induction studies. Pooled relative risks and 95% confidence intervals were calculated using both fixed-effect and random-effects models (random-effects results reported). Statistical

heterogeneity was assessed using I^2 .

The mixed-treatment comparison synthesised evidence from all the comparisons to produce pooled hazard ratios and associated 95% credible intervals for relapse following successful smoking cessation (full details in the report).

Funnel plots and Egger's test were used to assess potential publication or small study biases.

Results of the review

Sixty RCTs and quasi-RCTs were included. Numbers of participants and quality assessment results were reported in full, but no overall summary was reported.

Compared with no intervention or generic self-help material, interventions using electronic aids significantly increased the likelihood of achieving prolonged abstinence or point prevalence abstinence from smoking, measured at the longest follow-up. Pooled relative risks were 1.32 (95% CI 1.21 to 1.45) for prolonged abstinence and 1.14 (95% CI 1.07 to 1.22) for point prevalence abstinence at follow-up. There was no substantial heterogeneity in these analyses.

There were no substantial differences in effect size between aid to cessation and cessation induction studies.

The mixed-treatment comparison showed a small but statistically significant positive intervention effect on time to relapse (mean HR 0.87, 95% CrI 0.83 to 0.92).

Extensive further results were reported.

Cost information

Decision-analytic modelling indicated that adding an electronic intervention to non-electronic behavioural support was likely to be cost-effective but there was substantial uncertainty as to the most cost-effective type of intervention.

Authors' conclusions

Computer and other electronic aids increased the likelihood of smoking cessation compared with no intervention or generic self-help materials, but the effect was small.

CRD commentary

The review question and inclusion criteria were clear. The search was thorough and included attempts to locate unpublished trials. Appropriate methods were used to minimise errors or bias during the review process.

The quality of included trials was assessed using appropriate criteria. Relevant details of included trials were reported. The pair wise meta-analysis used standard methods; clinical heterogeneity was addressed by grouping similar interventions and comparators for analysis. Statistical heterogeneity was assessed. Methods used for the mixed treatment comparison seemed appropriate.

This was a well-conducted review and the authors' conclusions are likely to 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 research was needed on the relative benefits of different forms of delivery for electronic aids and the content that would be delivered. They also recommended research on the impact on effectiveness of involving users in the design of interventions, and on how electronic aids could be applied in routine practice and in the community.

Funding

National Institute for Health Research, Health Technology Assessment Programme, UK.

Bibliographic details

Chen YF, Madan J, Welton N, Yahaya I, Aveyard P, Bauld L, Wang D, Fry-Smith A, Munafò MR. Effectiveness and cost-effectiveness of computer and other electronic aids for smoking cessation: a systematic review and network meta-

analysis. Health Technology Assessment 2012; 16(38): 1-205

PubMedID

23046909

DOI

10.3310/hta16380

Original Paper URL

<http://www.hta.ac.uk/execsumm/summ1638.htm>

Other URL

Link to record on HTA

database:<http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=32010000315> Link to record on

NHS EED:<http://www.crd.york.ac.uk/crdweb/ShowRecord.asp?AccessionNumber=22013006242& amp;UserID=0>

Indexing Status

Subject indexing assigned by NLM

MeSH

Adult; Aged; Cost-Benefit Analysis; Electronic Mail /economics; Humans; Internet /economics; Male; Middle Aged; Outcome and Process Assessment (Health Care); Randomized Controlled Trials as Topic; Smoking Cessation /economics /methods; Software /economics; State Medicine /economics; Telecommunications /economics; Text Messaging /economics; Young Adult

AccessionNumber

12012050573

Date bibliographic record published

21/12/2012

Date abstract record published

15/04/2013

Record Status

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