Systematic review of the effectiveness of stage based interventions to promote smoking cessation

Riemsma R P, Pattenden J, Bridle C, Sowden A, Mather L, Watt I S, Walker A

CRD summary
This well-conducted review evaluated the effectiveness of interventions using a stage-based approach in bringing about positive changes in smoking behaviour. The authors concluded that limited evidence exists for the effectiveness of stage-based interventions in changing smoking behaviour; these conclusions should be reliable.

Authors' objectives
To evaluate the effectiveness of interventions using a stage-based approach in bringing about positive changes in smoking behaviour.

Searching
Thirty-five (unnamed) electronic databases were searched from inception to July 2002; no language restrictions were applied. The bibliographies of retrieved papers were screened and the authors of abstracts in conference proceedings were contacted for information.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion. Where reported, the duration of follow-up ranged from 6 months to 2 years.

Specific interventions included in the review
Studies of stage-based interventions (interventions that take the current stage of the individual into account, e.g. pre-contemplation, contemplation, preparation, action and maintenance) were eligible for inclusion. The interventions included in the review were: preventive health programmes, motivational approaches, educational programmes, transtheoretical model of change-based interventions, self-help interventions, computer-based programmes, school- and office-based interventions, minimal contact behavioural programmes, Smoke Free Families programme, interactive expert systems, nurse practitioner interventions, kick-it guide and video, pharmaceutical interventions, health care practitioner training, counselling and advice.

Participants included in the review
Studies of smokers were eligible for inclusion. Where reported, the mean age of the participants ranged from 16.5 to 60.1 years and the proportion of women from 4.3 to 100%.

Outcomes assessed in the review
Studies reporting changes in smoking behaviour were eligible for inclusion. For the majority of studies, the review reported whether differences between the groups were statistically significant or not, rather than individual results.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected studies for inclusion in the review.

Assessment of study quality
Study quality was assessed in relation to the following: randomisation, allocation concealment, blinding, comparability at baseline, adjustment for baseline differences, completeness of follow-up, reporting of inclusion criteria, reporting of point estimates and variability, use of an intention-to-treat analysis, use of sample size calculations, description of statistical methods, comparability of treatments, validation of stage of change instrument, its use at baseline and quality
of implementation, tailoring of the intervention, and reporting of training details. The maximum possible score was 13.

One reviewer assessed the quality of the studies and a second reviewer checked the assessment. Any disagreements were resolved by consensus.

**Data extraction**
One reviewer extracted the data and a second reviewer checked them. Data on smoking behaviour, movement through stages, adverse effects and cost-effectiveness were extracted. The overall responses to the interventions were classified as significant, mixed or not significant for each study.

**Methods of synthesis**
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
Summary results, and the rating for each quality criterion for each study, were tabulated. Differences between the studies were discussed in the text.

**Results of the review**
Twenty-three RCTs (n=20,793) were included in the review.

The quality score ranged from 3 to 12. Eleven studies reported appropriate randomisation and six allocation concealment. Only one study reported blinding the patients, outcome assessors and care providers; another study reported blinding outcome assessors and three studies blinded patients. Seven RCTs reported the use of a sample size calculation.

Stage-based versus non stage-based interventions (11 RCTs).

One RCT reported mainly significant results in favour of the stage-based intervention, two reported mixed results, and eight reported no significant difference between groups.

Stage-based versus no intervention (15 RCTs).

Seven RCTs reported mainly significant results in favour of the stage-based intervention, two reported mixed results, and six reported no significant difference between groups.

**Cost information**
One RCT estimated the marginal cost per person who quitted as £450.65, which could fall to an extreme of £265 with increased use. A second study reported an incremental cost-effectiveness ratio for the intervention as £300 per person who quitted.

**Authors’ conclusions**
There is limited evidence for the effectiveness of stage-based interventions aimed at changing smoking behaviour.

**CRD commentary**
The review question was clear with inclusion criteria clearly defined. The authors undertook a comprehensive search without language restrictions, thereby reducing the potential for language and publication bias. Methods were employed to reduce the risk of error and bias. The use of a narrative synthesis was appropriate given the clinical heterogeneity between the studies. Details of the studies were available online. A thorough assessment of methodological rigour was undertaken, and the results for each criterion were reported along with the overall quality score. This was a well-conducted review and the conclusion should 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 there is a need for well-designed and appropriately implemented RCTs based on appropriately staged and theoretically consistent interventions. They also stated that further systematic reviews are required to evaluate the effectiveness of interventions based on other theoretical approaches.

Funding
NHS R&D Health Technology Assessment programme.

Bibliographic details

PubMedID
12775617

DOI
10.1136/bmj.326.7400.1175

Original Paper URL
http://www.bmj.com/content/326/7400/1175

Indexing Status
Subject indexing assigned by NLM

MeSH
Cost-Benefit Analysis; Humans; Randomized Controlled Trials as Topic; Smoking /economics /prevention & control; Smoking Cessation /economics /methods; Treatment Outcome

AccessionNumber
12003008382

Date bibliographic record published
31/12/2006

Date abstract record published
31/12/2006

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.