Recommendations for future studies: a systematic review of educational interventions in primary care settings

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Authors’ objectives
The aims of the review were as follows.

1. To determine whether interventions targeted specifically at primary care were effective.
2. To extract information about the resources used for educational interventions.
3. To categorise the ways in which the target groups for educational interventions were identified.
4. To suggest criteria for future high-quality studies of educational interventions in primary care settings.

Searching
MEDLINE, EMBASE (via BIDS), ISI (via BIDS), CINAHL, and the Cochrane Database of Systematic Reviews were searched from 1981 to June 1996 for original studies and reviews of educational interventions in primary care settings. Only English, French or German publications were considered. The keywords used were: ‘continuing education’ (medical or nursing), ‘guidelines and primary care’ (CINAHL, BIDS), ‘primary health care’ (MEDLINE), ‘general practice’ (BIDS, CINAHL) or ‘family practice’ (MEDLINE), and ‘trial’ (textword in MEDLINE, keyword in abstract and titles BIDS). The Cochrane Database for Systematic Reviews was searched for reviews of educational interventions. The two most comprehensive reviews shared their underlying collection of studies (see Other Publications of Related Interest no.1 and 2). Three further reviews added to the coverage within this time period (see Other Publications of Related Interest nos.3-5). The references of all identified articles were also examined.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), interrupted time series or controlled before-and-after studies were included.

Specific interventions included in the review
Any educational intervention aiming to produce measurable change in the process of care or patient outcomes. Studies using only an intervention consisting of computerised reminders only were excluded.

Participants included in the review
Physicians practising in a primary care setting. Studies were excluded if they involved primary care physicians of secondary care institutions or academic teaching centres, did not exclusively involve family physicians, and if they involved only one practice.

Outcomes assessed in the review
The studies had to report objective measures of professional performance, patient outcomes, or resource utilisation. Studies judging change by self-assessment with no external validation were excluded.

How were decisions on the relevance of primary studies made?
The inclusion criteria were applied by one reviewer.

Assessment of study quality
Validity was assessed using the quality criteria for intervention studies, as described by the Cochrane Collaboration on Effective Professional Practice (CCEPP; see Other Publications of Related Interest no.6).
The methods of the included studies also had to conform to the criteria used by the CCEPP in the selection of intervention studies for systematic reviews (see Other Publications of Related Interest no.6). The validity assessment was conducted by two reviewers, but it was unclear if this assessment was performed independently. Any discrepancies were discussed and a joint decision was made on the status of any disputed study.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction. The following data were extracted: author, year, study type, sample size, method of target selection, intervention type, and results.

Methods of synthesis
How were the studies combined?
The studies were combined by a qualitative narrative analysis. The interventions were rated as effective if the trial's null hypothesis (i.e. no differences between groups) was rejected at a probability of P<0.05, and these results were presented by type of intervention.

How were differences between studies investigated?
The studies were not formally assessed for heterogeneity, but the authors stated that the circumstances surrounding each study were highly varied.

Studies were grouped according to both the type of intervention and the method of targeting physicians or practices.

Results of the review
Twenty-six studies satisfied the methodological criteria of the CCEPP: 18 RCTs, 1 interrupted time series, and 7 controlled before- and-after studies.

In 24 studies there were a total of 2,333 participants, and in the remaining 2 studies the sample size was unknown.

For interventions, the number of studies showing a significant change out of the total number of studies were: 7 out of 8 for mailed guidelines, newsletter, audio-visual materials; 6 out 6 for educational visit; 6 out of 7 for small group teaching; 2 out of 2 for facilitator attached to individual practice; 2 out of 3 for facilitated group meetings of physicians; 1 out of 1 for identifying and training educationally-influential physicians; and 1 out of 1 for restricted laboratory test-ordering form.

For particular methods of targeting physicians or practices, the number of studies showing a significant change out of the total number of studies were: 12 out of 13 for volunteers; 6 out of 6 for geographical area; 2 out of 2 for catchment area practices of one service provider; 1 out of 1 for catchment practices of one service provider and defined by performance indicator; 3 out of 3 for performance indicator; 1 out of 1 for primary care physicians defined by probable contact with educationally-influential peer; and zero out of 1 for physicians of patients who participated in a trial.

Only 15 studies reported a change with a direct impact on patients, such as changes in prescribing or the use of a procedure, or frequency of disease detection.

Cost information
The authors reported that only two studies gave approximate financial costs for their intervention, but these costs were not presented in the review. Only one study compared estimated savings against the cost of the intervention, but these findings were also not reported. Another stated that resource use had been recorded but it did not publish this information. Two studies estimated the approximate economic impact of the intervention without specifying the cost of the intervention.

Authors' conclusions
The results showed that relatively few studies had occurred in primary care, compared with academic and hospital clinic settings. Many articles did not fit the criteria for rigour of method, and those that did were very heterogeneous in their method and target group. Only two studies assessed resource implications; one study also calculated economic benefits.

**CRD commentary**

The inclusion and exclusion criteria were adequately reported, but the inclusion criteria were only assessed by one reviewer.

The search strategy covered a broad range of databases, but only publications in English, German or French were included. There was no attempt to identify unpublished research, and a publication bias cannot, therefore, be ruled out.

The validity of the included studies was adequately assessed using the quality criteria published by the CCEPP. Only studies that satisfied the methodological criteria of the CCEPP were included, although it was unclear whether they had to meet each criterion or achieve a certain score. Sufficient details of the individual studies were presented.

The findings of the primary studies were presented in tables according to both intervention type and method of targeting physicians or practices. However, there was little discussion of the findings in the text, and good-quality evidence was not highlighted. Overall, the synthesis was poor and failed to summarise the findings clearly.

The authors' conclusions were appropriate, but they focused on future studies without clearly presenting the findings of the existing ones. In particular, they did not discuss the strength of the evidence with reference to the study designs used.

**Implications of the review for practice and research**

Practice: The authors state that targeting interventions is an issue for planners of policy, educationalists and organisations responsible for improving the quality of medical care.

Research: The authors state that more studies with clear patient outcomes and evaluations, based on an 'intention to educate', are urgently required. This would require larger sample sizes and many more health service-based implementation strategies with high-quality evaluations attached.

The authors recommend that further studies should be conducted in defined geographical areas or with groups of doctors (or other health service staff), with a clearly identified deficit relating to patient outcomes. These studies should either publish their costs or be accompanied by economic evaluations.

**Bibliographic details**


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**Other publications of related interest**

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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.