

Continuing Education Meetings and Workshops: Effects on Professional Practice and Health Care Outcomes

EBEM Commentator Contact

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SYSTEMATIC REVIEW SOURCE

This is a systematic review abstract, a regular feature of the *Annals'* Evidence-Based Emergency Medicine (EBEM) series. Each features an abstract of a systematic review from the Cochrane Database of Systematic Reviews and a commentary by an emergency physician knowledgeable in the subject area.

The source for this systematic review abstract is: O'Brien MA, Freemantle N, Oxman AD, et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev.* 2001;(2): CD003030.

The *Annals'* EBEM editors helped prepare the abstract of this Cochrane systematic review, as well as the Evidence-Based Medicine Teaching Points.

OBJECTIVE

To determine the effects of continuing educational meetings on professional practice and health care outcomes.

DATA SOURCES

The Cochrane Effective Practice and Organization of Care Group specialized register, MEDLINE, and the Research and Development Resource Base in Continuing Medical Education were searched. The reference list of related systematic reviews and all articles obtained were reviewed. This review was amended in 2006 from the previous one published in 2001; a formal update is currently underway.

STUDY SELECTION

Studies were included if they were randomized controlled trials or nonequivalent group designs with nonrandom allocation. The participants of the studies were qualified health professionals or health professionals in postgraduate training (eg, resident physicians). Studies involving only undergraduate students were excluded. All types of educational activities were included (eg, meeting, conferences, lectures, workshop,

seminar), and interventions were didactic, interactive, or a mixed didactic and interactive nature. Didactic intervention offered minimal participant interaction such as lectures or presentations; interactive interventions included role play, case discussion, or hands-on training in small (<10 people), moderate (10 to 19 people), or large (>19 people) participant groups. Only the studies that objectively measured health professional practice behavior or patient outcomes in the setting in which health care was provided were included.

DATA EXTRACTION

Two authors independently applied inclusion criteria, assessed the quality of each study, and extracted the data. Each study was then assigned a quality rating of protection against bias according to 3 criteria: study design, blinded outcome assessment, and completeness of follow-up. Studies were analyzed according to the type of intervention, subjective assessment of complexity of targeted behaviors, and the level of baseline compliance and protection against bias.

MAIN RESULTS

Educational Meeting Versus No Intervention

Of the 32 studies with 35 comparisons between educational meeting and noninterventional control groups, 24 studies reported marked improvement in professional practice. There were statistically significant changes in 3 of 8 studies in the patient's outcome. Heterogeneity of effect scores ranging from negative effect to moderately large effects was observed.

Interactive Educational Meetings Versus Lectures

There was one direct comparison of educational meetings that included an interactive workshop with a didactic presentation compared to a group case-based discussion or a traditional lecture, and no differences were found between groups.

Didactic Presentations

In 6 of 7 randomized control trials with one of the arms being a presentation or a lecture targeted at specific behaviors, no significant differences were observed.

Mixed Didactic Presentations and Workshops

Eleven of 19 studies reported moderate or moderately large effects, and 5 reported small effects. In 2 studies, there was no effect of the intervention. Improvement in patient outcomes was observed in 2 of 6 studies in which these were assessed.

Interactive Workshops

In 7 of 8 studies, there were statistically significant improvements in practice; of these, 6 studies showed moderately large effects and 1 study, a small effect.

The effect scores tend to decrease as the complexity of behavior decreases. There are no sufficient data to comment on the baseline compliance to explain the variation of the results.

CONCLUSIONS

Interactive workshops alone or with other interventions are likely to improve the professional practice and health care outcomes compared with didactic lectures alone. The benefits of these results, however, are masked by the fact that most authors did not report sufficient details about the study design (such as insufficient follow-up, blinding of the outcome measures, and concealment of allocation), smaller number, and size of the included study trials. Interactive workshops result in moderately large changes in professional practice. Didactic sessions alone are unlikely to change professional practice.

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COMMENTARY: CLINICAL IMPLICATION

Continuing medical education (CME) or professional development activities are a method to keep health professionals up to date. Some associations and most state boards require a standard number of hours of approved CME every year to maintain membership.¹ A wide variety of CME events are available to clinicians, including self-directed reading,² online^{3,4} or in-person CME, small-group learning,⁵ workshops, conferences, or didactic lectures.⁶ Despite this variety, there is wide debate about the merits of traditional CME and the effectiveness of any CME in influencing clinical outcomes.

This systematic review used comprehensive search strategies to reduce publication bias and a systematic methodology to reduce selection bias to identify controlled trials examining the effects of CME in professional practice and health care outcomes. Overall, there is a paucity of evidence on the effect of CME on clinical practice because there are relatively few studies that have adequate methodological rigor to evaluate the utility of the CME. Most examine pre- and posttest knowledge and rarely

examine clinical outcomes or practice change. There are some points, however, that we can extract from this systematic review:

- a) The studies that evaluated didactic presentations (lectures alone) did not show an effect on professional practice. This finding does not indicate whether didactic presentations improved knowledge, but it does indicate that they failed to influence clinical practice.
- b) Small group discussion and practice sessions were more likely to be effective in changing practice. This was not consistent in all the studies, and some of them reported small effects or nonsignificant differences between groups, especially if the behavior to be changed was complex. However, the effect scores appear to increase in relationship to increasing interactivity.
- c) The size of the group and the length or number of sessions did not influence practice; however, there were no studies looking specifically at this comparison.
- d) Because long-term follow-up did not occur in most studies, it is uncertain whether any effects of the interventions were persistent.

One limitation of the review was that the conclusions about the qualitative and quantitative analyses supporting that there is a difference in the effects of didactic presentations and interactive workshops were based on indirect evidence between, rather than within, study comparisons. This review may have publication bias, whereby studies with positive results are more likely to be submitted by authors or accepted by editors than those with negative or inconclusive results.

TAKE-HOME MESSAGE

No perfect CME activity was identified. Interactive workshops can improve professional practice, whereas lectures alone are unlikely to change professional practice. For those planning and attending CME, the evidence supports interactive workshops rather than lectures, to the extent that the aim is to improve professional practice. There may be other reasons for offering and attending lectures, including entertainment, social, and motivational functions; however, interactive workshops are more likely to result in improvements in health care, either alone or in combination with other interventions.

Physicians should reconsider the perspective of CME consisting solely of lectures, grand rounds, or medical staff meetings. They should participate in educational activities that offer personal involvement in thinking about professional practice and in identifying learning needs. To achieve its greatest potential, CME must be truly continuing, not casual, sporadic, or opportunistic.⁷

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EBEM TEACHING POINT

Effect size is a generic term for the estimate of effect of treatment for a study. It also refers to a dimensionless measure of effect that is typically used for continuous data when different scales (eg, for measuring pain) are used to measure an outcome and is usually defined as the difference in means between the intervention and control groups divided by the standard deviation of the control or both groups. Effect sizes typically, though not always, are referred to in Cochrane reviews as standardized mean differences.

In a meta-analysis, because studies are undertaken in different populations, often with different variations of interventions, different definitions of outcomes, and different designs, it is appropriate for experimental and control groups to be compared within studies and not across studies. The within-study comparisons (treatment effects or effect sizes) are combined across studies in the meta-analysis.^{8,9}

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