



August 2009 – SUPPORT Summary of a systematic review

Do printed educational materials have any effect on professional practice and health care outcomes?

Printed educational materials are widely used passive-dissemination strategies to improve knowledge, awareness, attitudes, skills, professional practice, and patient outcomes. Traditionally they are presented in paper format such as monographs, publication in peer-reviewed journals, and clinical guidelines and appear to be the most frequently adopted method for disseminating information.

Key messages

- Printed educational materials may lead to little or no difference in professional practice.
- The effect of printed educational materials on patient outcomes is uncertain.
- Printed educational materials may be optimised if implemented alongside other quality improvement strategies with proven effectiveness.
- All the studies included in the review were conducted in high-income settings. Rigorous studies from low- and middle-income countries are needed to fully assess the impact of printed educational materials on professional practice and health outcomes.



Who is this summary for?

People making decisions concerning interventions for improving professional practice and health care outcomes.

! This summary includes:

- Key findings from research based on a systematic review
- Considerations about the relevance of this research for low- and middle-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Farmer AP, Légaré F, Turcot L, Grimshaw J, Harvey E, McGowan JL, Wolf F. Printed educational materials: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2008, Issue 3. Art. No.: CD004398. DOI:10.1002/14651858.CD004398.pub2.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies.

SUPPORT – an international collaboration funded by the EU 6th Framework Programme to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries. www.support-collaboration.org

Glossary of terms used in this report: www.support-collaboration.org/summaries/explanations.htm

Background references on this topic: See back page.

Background

Effectiveness of printed educational materials (PEMs) aimed at changing provider behaviour may be influenced by at least four factors: (1) characteristics of the intervention, (2) characteristics of the provider, (3) characteristics of the behaviour that the intervention is trying to change, and (4) characteristics of the organisation and context. Important characteristics of PEMs include: the source of the information, the content and the channel by which it is delivered. There is limited research on which characteristics of PEMs influence clinical practice. Post-dissemination compliance with clinical guidelines may be higher when recommendations are compatible with existing norms and values, are easy to follow, or are supported with evidence and do not require skills and knowledge

This summary is based on a systematic review published in 2008 by Farmer and colleagues on the effects of printed educational materials on professional practice and health care outcomes.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low- and middle-income countries. The methods used to assess the quality of the review and to make judgements about its relevance are described here: www.support-collaboration.org/summaries/methods.htm

Knowing what's not known is important

A good quality review might not find any studies from low- and middle-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

About the systematic review underlying this summary

Review objective: To determine the effectiveness of printed educational materials in improving process outcomes (including the behaviour of healthcare professionals) and patient outcomes.

	What the review authors searched for	What the review authors found
Interventions	Randomised controlled trials (RCTs), controlled clinical trials (CCTs), controlled before and after studies (CBAs), and interrupted time series analyses (ITS) assessing the effects of printed educational materials such as clinical practice guidelines, journals, and monographs.	23 studies: 12 randomised controlled trials, one controlled before and after study, and 10 interrupted time series analyses.
Participants	Any health care professionals	Mostly physicians.
Settings	Studies originating from any setting	United States (7studies), United Kingdom (7), Canada (7), Netherland (1) and Denmark (1). General family or community-based practice (14), managed behavioural healthcare organisation (1), obstetrics (2), and hospitals (4).
Outcomes	Any objective measure of performance (such as number of tests ordered) or patient health outcomes.	Prescribing behaviour (12 studies), prevention and general management conditions (6 studies), test ordering (3 studies), surgical rates (2 studies)

Date of most recent search: March 2007

Limitations: This is a good quality systematic review with only minor limitations.

Farmer AP, Légaré F, Turcot L, Grimshaw J, Harvey E, McGowan JL, Wolf F. Printed educational materials: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2008, Issue 3. Art. No.: CD004398. DOI: 10.1002/14651858.CD004398.pub2.

Summary of findings

The review included 23 studies conducted in high-income countries: 12 randomised controlled trials, 1 controlled before and after study, and 10 interrupted time series, were included in the review. Only randomised controlled trials are summarised in the table below.

The randomised controlled trials show that:

- **Printed educational materials may lead to little or no difference in professional performance.**
- **The effect of printed educational materials on patient outcomes is uncertain.**

About the quality of evidence (GRADE)

⊕⊕⊕⊕

High: Further research is very unlikely to change our confidence in the estimate of effect.

⊕⊕⊕○

Moderate: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

⊕⊕○○

Low: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

⊕○○○

Very low: We are very uncertain about the estimate.

For more information, see last page

Printed educational materials			
Patients or population: Health care professionals Settings: Mostly general practice settings in high-income countries Intervention: Printed educational materials Comparison: No intervention			
Outcomes	Adjusted absolute risk difference Median (Interquartile range)*	Number of participants (studies)	Quality of the evidence (GRADE)
Categorical process outcomes	Median increase of +4.3% (Range -8.0% to +9.6%)	6 studies	⊕⊕⊕○ Moderate
Continuous process outcomes	Median increase of +13.6% (Range -5.0% to +26.6%)	4 studies	⊕⊕○○ Low
Categorical patient outcomes	Median - 4.3% (Range - 4.6% to -0.4%)	3 studies	⊕⊕○○ Low
Continuous patient outcomes	Two studies reported deteriorations in continuous patient outcome data (e.g. depression score, smoking cessation attempts) of -20.5% and -10.0%	2 studies	⊕○○○ Very low
p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page) * Across the board for both professional and patient outcomes, the studies are small and there is heterogeneity of both interventions and outcome measures.			

Relevance of the review for low- and middle-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
→ The studies included covered a variety of settings in high-income countries. There were no included studies from low-income settings.	▷ <i>The applicability of the findings to low-income countries is limited because of the marked differences in health systems between the two settings.</i>
EQUITY	
→ No information was provided regarding differential effects of the interventions for disadvantaged populations.	▷ <i>Resources needed for printed educational materials may be less available in disadvantaged populations, and use of these materials may exacerbate health inequities.</i>
ECONOMIC CONSIDERATIONS	
→ The studies did not provide information on the costs of printed educational materials used.	▷ <i>The cost of printed educational materials is likely to be highly variable and must be estimated based on specific local conditions outside research settings.</i> ▷ <i>Where such data are not available, further primary studies may be needed to inform decision-making.</i> ▷ <i>The studies should aim to collect data on costs of resources used as well as implementation costs.</i>
MONITORING & EVALUATION	
→ No information was provided on monitoring and evaluation of use of printed educational materials.	▷ <i>Although printed educational materials are widely used for dissemination purposes in several low- and middle-income countries, rigorous impact evaluations using objective measures of professional practice and patient outcomes should be planned and undertaken prior to continue using this strategy in new initiatives.</i> ▷ <i>The cost-effectiveness of printed educational materials in such settings should be evaluated after demonstrating their effectiveness on relevant outcomes.</i>

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low- and middle-income countries. For additional details about how these judgements were made see: <http://www.support-collaboration.org/summaries/methods.htm>

Additional information

Related literature

Freemantle N, Harvey EL, Wolf F, Grimshaw JM, Grilli R, Bero LA. Printed educational materials: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 1997, Issue 2. [DOI: 10.1002/14651858. CD000172].

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This summary was prepared by

Charles I. Okwundu & Charles Shey Wiysonge, South African Medical Research Council, Cape Town, South Africa

Conflict of interest

None declared. For details, see: www.support-collaboration.org/summaries/coi.htm

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Keywords

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The **South African Cochrane Centre**, the only centre of the international Cochrane Collaboration in Africa, aims to ensure that health care decision making in Africa is informed by high quality, timely and relevant research evidence. www.mrc.ac.za/cochrane/cochrane.htm

About quality of evidence (GRADE)

The quality of the evidence is a judgement about the extent to which we can be confident that the estimates of effect are correct. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the type of study design (randomised trials versus observational studies), the risk of bias, the consistency of the results across studies, and the precision of the overall estimate across studies. For each outcome, the quality of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE:

www.support-collaboration.org/summaries/grade.htm

SUPPORT collaborators:

The **Alliance for Health Policy and Systems Research (HPSR)** is an international collaboration aiming to promote the generation and use of health policy and systems research as a means to improve the health systems of developing countries. www.who.int/alliance-hpsr

The **Cochrane Effective Practice and Organisation of Care Group (EPOC)** is a Collaborative Review Group of the Cochrane Collaboration: an international organisation that aims to help people make well informed decisions about health care by preparing, maintaining and ensuring the accessibility of systematic reviews of the effects of health care interventions.

www.epocoslo.cochrane.org

The **Evidence-Informed Policy Network (EVIPNet)** is an initiative to promote the use of health research in policymaking. Focusing on low- and middle-income countries, EVIP-Net promotes partnerships at the country level between policy-makers, researchers and civil society in order to facilitate both policy development and policy implementation through the use of the best scientific evidence available. www.evipnet.org

For more information:

www.support-collaboration.org

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