

METHODS BRIEFING 22

Narrative Synthesis in Systematic Reviews

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Background and introduction to the problem

Do domestic smoke alarms save lives? Can young offenders be 'scared straight' through tough penal measures? What factors should be considered when designing and implementing an injury prevention programme in a local area? Making sense of large bodies of evidence from research using a range of methods is a challenge. Ensuring that the product of a synthesis process can be trusted is important for policy makers, for practitioners and for the people research is intended to benefit. There are a number of ways in which research evidence can be brought together to give an overall picture of current knowledge to inform policy and practice decisions. However, the transparency and reliability of some of these methods remains problematic. There is widespread agreement that

systematic reviews provide the best method we have to date for understanding whether an intervention or programme 'works'. However, it is also generally accepted that these reviews typically do not provide a clear recipe for turning a body of research into recommendations for policy or practice. Even in reviews focusing on effectiveness, meta-analysis is often an inappropriate approach to synthesis. Moreover, there has been increasing recognition of the need to answer questions other than those focusing on effectiveness, particularly those relating to the local implementation of interventions shown to be effective in experimental contexts. Methods for the synthesis of evidence on effectiveness when meta-analysis is not appropriate or for the synthesis of more diverse evidence are, however, not well developed.

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What we did and what we produced

As part of the ESRC methods programme, we developed, tested, and received expert feedback on guidance for undertaking a particular approach to summarising research evidence using narrative synthesis. Our guidance provides a framework for the conduct of narrative synthesis and describes tools and techniques that can be used in the synthesis process. At a minimum a narrative synthesis will provide a summary of the current state of knowledge in relation to a particular review question. This question might relate to effectiveness or cost effectiveness, to issues of efficacy, appropriateness (to need), feasibility of implementation, or to some or all of these. In the hands of skilled reviewers and with appropriate evidence narrative synthesis may also move beyond description to provide explanations for outcomes reported.

The guidance identifies four main elements to a narrative synthesis process:

- Developing a theory of how the intervention works, why and for whom;
- Developing a preliminary synthesis of findings of included studies;
- Exploring relationships in the data;
- Assessing the robustness of the synthesis.

Figure 1 describes the purpose of each of these four elements of a narrative synthesis.

Our guidance was developed on the basis of an extensive review of methodological literature and it has been applied to two complementary bodies of evidence – one focusing on the effects of interventions to promote the use of domestic smoke alarms and the other focusing on evidence to inform the implementation of such interventions. In undertaking these demonstration syntheses detailed notes were kept of all major decisions taken about which tools and techniques to use at different points in

the synthesis process and the reasoning behind them. Prospectively documenting the synthesis process helped us to refine the guidance but it was also a helpful aid to transparency and recall. We would recommend this to all reviewers adopting a narrative approach.

In relation to the narrative synthesis of the effectiveness of domestic smoke alarms, a blinded comparison was made between guidance-led narrative synthesis and a previously published meta-analysis of the same study data using the synthesis framework and specific tools and techniques described in the guidance. The narrative synthesis process was described and the findings of the two types of synthesis compared. We found that the conclusions of the narrative synthesis and the meta-analysis were broadly similar, though differences between the two approaches meant that conclusions about the impact of moderators of effect appeared stronger when derived from the meta-analysis, whereas implications for future research appeared to be more extensive and detailed when derived from the narrative synthesis. The framework provided a useful vehicle for structuring a narrative synthesis process and, while there may be risks with over-interpretation of study data, the framework, tools and techniques described in the guidance appear to increase the transparency and reproducibility of narrative synthesis. In relation to the demonstration of narrative synthesis of implementation evidence, use of our guidance enabled a systematic approach to the included studies and identification of potential explanations. As a justification for narrative synthesis is based, in part, on its claim to address the potential for bias, our work indicated that the narrative synthesis framework can ensure that the synthesis process is more systematic, and the use of specific tools and techniques can provide transparency of process. A more robust product is likely to be achieved if at least two reviewers work independently and then compare their findings to produce a mutually agreed (or a transparently divergent) final version.

Figure 1. The main elements in a narrative synthesis

Main elements of synthesis	Effectiveness reviews	Implementation reviews
<p>1. Developing a theoretical model of how interventions work, why and for whom</p>	<p>Purpose:</p> <ul style="list-style-type: none"> • To inform decisions about the review question and what types of studies to review • To contribute to the interpretation of the review’s findings • To assess how widely applicable those findings may be 	<p>Purpose:</p> <ul style="list-style-type: none"> • To inform decisions about the review question and what types of studies to review • To contribute to the interpretation of the review’s findings • To assess how widely applicable those findings may be
<p>2. Developing a preliminary synthesis</p>	<p>Purpose:</p> <ul style="list-style-type: none"> • To organise findings from included studies to describe patterns across the studies in terms of: <ul style="list-style-type: none"> • The direction of effects • The size of effects 	<p>Purpose:</p> <ul style="list-style-type: none"> • To organise findings from included studies in order to: <ul style="list-style-type: none"> • Identify and list the facilitators and barriers to implementation reported • Explore the relationship between reported facilitators and barriers
<p>3. Exploring relationships in the data</p>	<p>Purpose:</p> <ul style="list-style-type: none"> • To consider the factors that might explain any differences in direction and size of effect across the included studies 	<p>Purpose:</p> <ul style="list-style-type: none"> • To consider the factors that might explain any differences in the facilitators and/or barriers to successful implementation across included studies • To understand how and why interventions have an effect
<p>4. Assessing the robustness of the synthesis product</p>	<p>Purpose:</p> <ul style="list-style-type: none"> • To provide an assessment of the strength of the evidence for: <ul style="list-style-type: none"> • Drawing conclusions about the likely size and direction of effect • Generalising conclusions on effect size to different population groups and/or contexts 	<p>Purpose:</p> <ul style="list-style-type: none"> • To provide an assessment of the strength of the evidence for drawing conclusions about the facilitators and/or barriers to implementation identified in the synthesis. • Generalising the product of the synthesis to different population groups and/or contexts

We do not claim to have produced the definitive guide to narrative synthesis – there is work still to be done to develop and refine this approach to evidence synthesis. However, we believe that the guidance offers both a general framework and specific tools and techniques that can help to increase the transparency and reliability of systematic reviews involving narrative synthesis. We would also stress that, while the guidance describes a range of tools and techniques that - if used appropriately - will improve the process of narrative synthesis, these will not remove the need for reviewers to combine sound methodology with sound interpretative work.

Key Publications:

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M. and Britten, N. with Roen, K. & Duffy, S. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews. Final report*, Institute of Health Research, Lancaster: ESRC Methods Programme.

Arai, L., Britten, N., Popay, J., Roberts, H., Petticrew, M., Rodgers, M. and Sowden, A. (in press). Testing methodological developments in the conduct of narrative synthesis: a demonstration review of research on the implementation of smoke alarm interventions, *Evidence and Policy*

Rodgers, M., Petticrew, M., Sowden, A., Arai, L., Britten, N., Popay, J. and Roberts, H. (under submission). Testing the guidance on the conduct of narrative synthesis in systematic reviews: effectiveness of interventions to promote smoke alarm ownership and function.

We have also contributed to the Cochrane Reviewers' Handbook and the update of the CRD Guidelines for Undertaking Systematic Reviews.

If you would like to use the guidance, contact the PI, Professor Jennie Popay, j.popay@lancaster.ac.uk. We hope that people will find it useful and let us have feedback so that we can revise the guidance in light of this.

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