

Evidence synthesis: making it useful for health policy makers and managers

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Outline

- Definitions
- Types of questions policy makers & managers want answers to
- Why systematic reviews are best to answer these questions
- What policy makers & managers want from reviews
- Approaches to systematic reviews beyond meta-analysis of effectiveness
- Lessons for commissioning & doing such reviews

Definitions

Review - the process of bringing together a body of evidence from different sources

Synthesis - stage of a review in which evidence extracted from different sources is *juxtaposed* to identify patterns & direction in the findings, or *integrated* to produce an overarching, new explanation/theory which attempts to account for the range of findings

Definitions

Systematic review : a review which tries to adhere to a set of 'scientific' methods to limit error (bias) mainly by attempting to locate, appraise and synthesize (attempt to reconcile) all relevant evidence (from research or more widely) to answer a particular question(s)

- methods largely set out in advance
- essentially a form of survey dating back to 1940s

Definitions

Meta-analysis – uses statistical techniques to synthesize results of trials or similar studies into a single quantitative estimate of effect

Narrative synthesis – a process of synthesising primary studies to explore heterogeneity descriptively rather than statistically

What do policy makers and managers need answers to?

- Policy makers face a wide range of decisions which need informing other than 'does it work?'
- Questions can relate to feasibility, acceptability, distributional consequences, organisation, etc.
- Focus can be on developing a potential intervention which has plausibility

How should we organise the response?

What is the problem?

Why and how did it occur?

Is it getting worse?

Is it more important than these other problems?

What might work for these people here?

Is it acceptable to do this?

Does doing this cost more than that?

If I do this here what happens over there?

Will the public hate this?

Will the politicians love it?

Diverse evidence needed for actual decisions

- Quantitative research
- Qualitative research
- Routine statistics
- Expert opinion
- Value judgements
- Anecdote

General policy questions requiring systematic reviews of complex evidence (Greenhalgh, 2004)

- How can we prevent childhood accidents?
- How can we improve the proportion of working class kids who get a university degree?
- What should we do about teenage pregnancy?
- How can we reduce the growing epidemic of obesity?
- What is the best way to care for people with schizophrenia in the community?
- How can we disseminate the findings of research so that people actually take notice of them?

Typical more focused policy/management questions

- Should we continue, start, stop, modify, expand or contract this programme:
 - on childhood accidents
 - schizophrenia
 - reducing obesity among school students
 - assisting working class students go to university?

Types of effectiveness questions to which policy makers may need answers

- Does it work?
- How does it work?
- Why does it work?
- Will it work here?
- How much better will it work than the existing programmes?
- How best can I implement it?
- What will it cost to implement it here?

Why do we need syntheses of research evidence to answer these questions? I

- Single studies are rarely so sound, generalisable and unequivocal that they can be seen as approximating to 'truth'
- Single studies can and do conflict
 - Reviews can help establish why this is
- Traditional, 'expert' review can be biased and incomplete

Why synthesise research evidence ?

“Reviews of research are a better basis for informing policy than a single study or expert opinion.”

Sheldon, 2005

Why do we need syntheses of research evidence to answer these questions? II

- To weigh the strength and direction of the evidence in relation to a question
- To identify areas of uncertainty

Donald Rumsfeld on uncertainty (2002)

‘As we know, there are known knowns.
There are things we know we know.
We also know there are known
unknowns. That is to say we know
there are some things we do not know.
But there are also unknown unknowns,
the ones we don’t know we don’t know.’

Why do we need syntheses of research evidence to answer these questions? III

- To identify gaps in knowledge (in general and in a particular context)
- To identify what is effective/cost-effective and to reduce uncertainty in estimates of effectiveness in general
- To identify what is likely to be effective in particular populations and institutional contexts
- To help develop new interventions which may work

Why do we need syntheses of research evidence to answer these questions? IV

- To help decision makers and researchers deal with information overload
- To provide a valuable back-drop of evidence on which specific decisions can be based
- To update an existing review
- To help develop better research methods

Range of policy, practice and research questions for systematic reviews (from Harden & Thomas, 2005)

Intervention development

'Ideas' for action to effect outcome 'X'

research questions

e.g. What factors make it more/less likely that 'X' occurs?
e.g. How do people experience 'X'?

Testing intervention 'feasibility'

'Feasibility' of intervention 'y'

research questions

e.g. Do people like it?
e.g. Is it easy to implement?
e.g. What are the economic costs and benefits?

Testing intervention effectiveness

'Effect' of intervention 'y' on outcome X

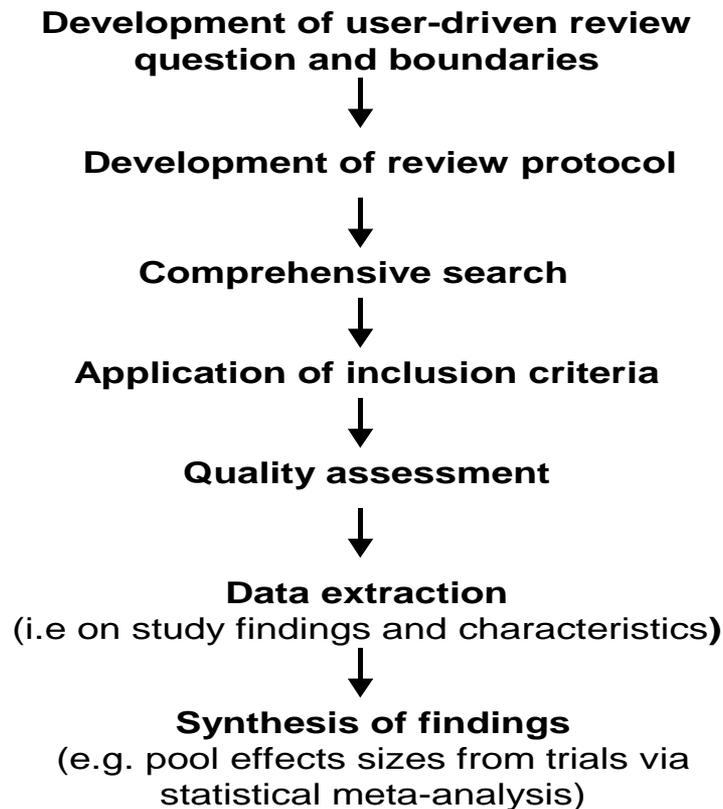
research questions

e.g. What is the balance of benefit and harm from intervention y?
e.g. What factors explain increasing/decreasing benefit?

Features of methods for systematic reviews other than meta-analysis

- Less consensus on how to synthesise non-experimental evidence, especially including qualitative research
- Can still be systematic, rigorous, explicit
- But have to deal with different designs, research traditions, theoretical orientations, disciplines
- Approaches are largely question- and available evidence-driven
- Interventions/policies tend to be more context-dependent

The standard stages in a quantitative systematic review of effectiveness



Steps in systematic review for policy & management I

(Mays et al, 2004)

- ‘Stages’ likely to be iterative, flexible, sometimes simultaneous; a protocol is still useful
- Multi-disciplinary approach/team, ideally
- *Aim* – e.g. distinguish ‘Knowledge’ support from ‘Decision’ support

A critical distinction in reviews for policy and management

Review for '*knowledge support*' tends:

- to focus on research evidence
- not to make recommendations
- to attend less to local context –at the extreme has a global focus

Review for '*decision support*':

- includes more than research, especially values & priorities
- includes tasks which are part of the decision-making process
- includes recs for action
- context-specific, for a specific set of decision makers (may involve them directly)

Steps in systematic review for policy & management II

- *Define question(s)* – can be exploratory or hypothesis-testing, often need to take account of context, may need refinement during the process

Dimensions of the review question

- The population of interest
- The intervention(s)
- The comparison(s) – in effectiveness reviews
- The outcomes/effects
- The context and method of delivery

Steps in systematic review for policy & management III

- *Scoping & early searching* often intertwined – decisions needed on including rival perspectives
- *Searching* – literature often multi-layered, subject experts & hand searching important
- *Selecting studies for inclusion* – for quality (contentious), relevance, theoretical perspective?

Is there a single measure of 'quality' of research?

- No single standard – separate approaches for qual and quant research
- Familiar 'hierarchy of evidence' in quantitative field but only relevant to effectiveness reviews, & only focuses on internal validity
- More than basic design information needed to judge quality of trials

Steps in systematic review for policy & management IV

- *Selecting studies for inclusion*
 - tendency for ultimate test of ‘quality’ to be ‘in use’ rather than a priori especially in qual-quant syntheses
- *Summarising studies* – what is extracted should be question-driven
- *Synthesis* – narrative approach likely to be preferred in most ‘mixed’ reviews &/or more than one approach, most other approaches designed for qual or quant and for primary research

Three examples of qual-quant narrative reviews

- *Narrative synthesis* – Popay, Roberts et al, forthcoming
- *'Meta-narrative mapping'* – Greenhalgh et al, 2004
- *'Mixed methods' approach* – Thomas et al, 2004; Harden et al, 2004; Harden and Thomas, 2005

A non-linear framework for narrative synthesis of qualitative and quantitative research (Popay et al)

1. Preliminary synthesis to organize findings, get a sense of patterns in findings & develop a theory of change/effect
2. Exploration of relationships within findings
 - e.g. differences in size & direction of effects (heterogeneity)
 - e.g. identification of contradictions in findings due to methods, data analysis, theory, empirics
3. Assess robustness of explanations as they emerge in terms of relevance & 'trustworthiness'

ESRC narrative synthesis project

- www.ccsr.ac.uk/methods/projects/posters/popay.shtml
- www.city.ac.uk/chrpu/projects/narrativesynthesis.html
- Guidance in preparation for Sept 2006

Meta-narrative mapping (Greenhalgh et al, 2005)

- Useful for complex review questions where no one theoretical perspective is dominant
- Developed through a wide ranging review of the dissemination, diffusion and sustainability of innovations in health care delivery and organization
- Involved mapping different research traditions (methods, theories, findings) and then assessing the contribution of each to the review questions

Meta-narrative mapping: the innovations literature

(Greenhalgh et al *Milbank Q* 2004; 82: 581-629)

- Exploratory searching & 'mapping' of literature in 13 largely independent areas (495 sources)
- Discussion of 'landmark' studies - chronology
- Revision of review question & development of inclusion criteria
- Further searching
- Presentation of initial findings in relation to 'research traditions'
- Findings from each tradition related to one another through identification of common themes/factors/explanations
- Develop conceptual model & identify empirical gaps

Meta-narrative mapping: inclusion criteria for theoretical papers and reviews

1. Is the paper part of a recognised research tradition – does it draw on and attempt to further a body of knowledge/theory?
2. Does the paper make an original and scholarly contribution to the topic?
3. Has the paper been cited subsequently as a seminal contribution (conceptual, theoretical, methodological, or instrumental) by competent researchers in that tradition?

Process for systematic review of different study types

(based on Thomas et al, 2004 & Harden et al, 2004)

Consultation, scoping and mapping



Focused review question

What is known about the barriers to, and facilitators of, fruit and vegetable intake amongst children aged 4 to 10 years?

Synthesis 1: 33 Trials

1. Application of inclusion criteria
2. Quality assessment
3. Data extraction
4. **Quantitative synthesis**

Synthesis 2: 8 'Views' studies

1. Application of inclusion criteria
2. Quality assessment
3. Data extraction
4. **Qualitative synthesis**

Synthesis 3: Trials and 'views'
Quantitative and qualitative synthesis

What do policy makers and managers want from reviews?

(Lavis et al, 2005)

- Rigorous reviews which are potentially reproducible, though generally researchers are assumed to know their business
- Trustworthy, transparent methods
- Relevant, up-to-date answers to *their* questions *in their context/population*

What do policy makers and managers want from reviews?

- Accessible presentation of findings with clear messages
- Timeliness
- Information about risks (harms) as well as costs & benefits, preferably by population sub-groups
- Some indication of uncertainty associated with estimates

'Good practice' in commissioning and doing reviews for policy and management I

- Set up a process of interaction between researchers and 'customers'
- Negotiate the precise form of the question(s)
- Scope review according to time & other constraints of policy process
- Consider using range of methods including initial rapid assessment

'Good practice' in commissioning and doing reviews for policy and management II

- Provide a clear summary even if the messages are about uncertainty &/or what the review cannot establish
- Consider a deliberative process to help combine/make sense of a very wide range of 'evidence' beyond research
- Get the review into the hands of the key players and follow up with face-to-face discussions

Conclusions on doing synthesis for management/policy

- Explicitness and transparency are crucial
 - more important than codification of approaches
- Like primary research, reviews require subject area knowledge & judgement
 - requires trust between researchers and policy makers
- Evolving field with comparisons of findings of different approaches to the same review likely to be available plus general guidance

Conclusions on doing synthesis for management/policy

- Crucial to establish the purpose of the review
 - e.g. ideas generation, decision support, explanation, effectiveness, etc.
- Involvement of users in review process likely to increase the odds of use
 - particularly at beginning and towards the end
- Reviewers need to understand policy processes if they want to have an influence

Conclusions on doing synthesis for management/policy

- Managers and policy makers especially value reviews which relate to their context and give some sense of risks & uncertainty
- Narrative approaches are likely to be the most useful and widely used
 - efforts are underway to make NR methods more explicit and transparent

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