

***Paper presented at the Methodologies Sub Group of the HDA
Public Health Evidence Steering Group 3 February 2003***

An emerging framework for integrating different types of evidence in systematic reviews for public policy

Sandy Oliver, Angela Harden, Rebecca Rees,
Jonathan Shepherd, Ginny Brunton, Jo
Garcia and Ann Oakley

***The Evidence for Policy and Practice Information
and Co-ordinating Centre (EPPI-Centre), Social
Science Research Unit, Institute of Education,
University of London***

AIMS

To describe

- How we applied the methodology of systematic reviewing to questions other than effectiveness
- How we juxtaposed findings from different types of studies to synthesise them
- How replicating these methods in subsequent reviews allowed us reflect on the generic methods
- How the application of a new framework for synthesis compares with conventional systematic reviewing and qualitative research

OUTLINE

- Background
- Review methods: an illustrative example
- Reflections on the methodology
- Conclusions and future steps

Background

EVIDENCE FOR PUBLIC POLICY

Primary research methodologies provide evidence for:

- Identifying a need for intervention
- Designing feasible and acceptable interventions
- Evaluating the effects of interventions
- Developing strategies to support appropriate implementation

Synthesis research methodologies provide evidence drawing on more than a single study

RESEARCH SYNTHESIS (1/2)

Strengths of systematic review methods:

- Findings are combined from multiple studies
- Risk of misleading conclusions is minimised through:
 - exhaustive searching to identify all relevant studies
 - quality assessment of included primary studies
- Methods are clearly reported to allow the strength of the conclusions to be debated

RESEARCH SYNTHESIS (2/2)

Weaknesses of current systematic review methods:

- Eligible study designs are limited (usually trials or other quantitative data)
- Rigorous studies with eligible designs may be limited, especially in the area of complex social interventions
- Estimates of benefit or harm from interventions are isolated from their context (eg appropriateness, feasibility and implementation issues)
- Potential for learning from less rigorous studies is lost when they are excluded from reviews

PREVIOUS WORK

- Since 1993, SSRU engaged in programme of methodological work on systematic reviews of social interventions.
- Early reviews adapted existing systematic review methods for answering questions of effectiveness.
- Later reviews began to address other policy and practice questions, often alongside questions of effectiveness^{1,2}.
 - Users' concerns, appropriateness, implementation

¹ Oliver S, Oakley L, Lumley J, Waters E (2001) *Smoking cessation programmes in pregnancy: systematically addressing development, implementation, women's concerns and effectiveness.* *Health Education Journal* 60: 362-370.

² Harden A, Oakley A, Oliver S (2001) *Peer-delivered health promotion for young people: A systematic review of different study designs.* *Health Education Journal.* 60:1-15.

UNDERLYING PRINCIPLES

- The review question should drive the review methods.
- Well conducted trials and statistical meta-analysis are most appropriate for answering questions about the effectiveness of interventions.
- Studies should be brought together following the principles of:
 - Avoiding bias (question and methods of review)
 - Maximising transparency and accountability

CHALLENGES FOR REVIEWS

- Policy and practice concerns often precede, or go beyond, questions of effectiveness.
- Different types of review questions require different combinations of study types to be included.
- Different combinations of studies demand different types of synthesis methods.

Background

SUBSTANTIVE REVIEWS

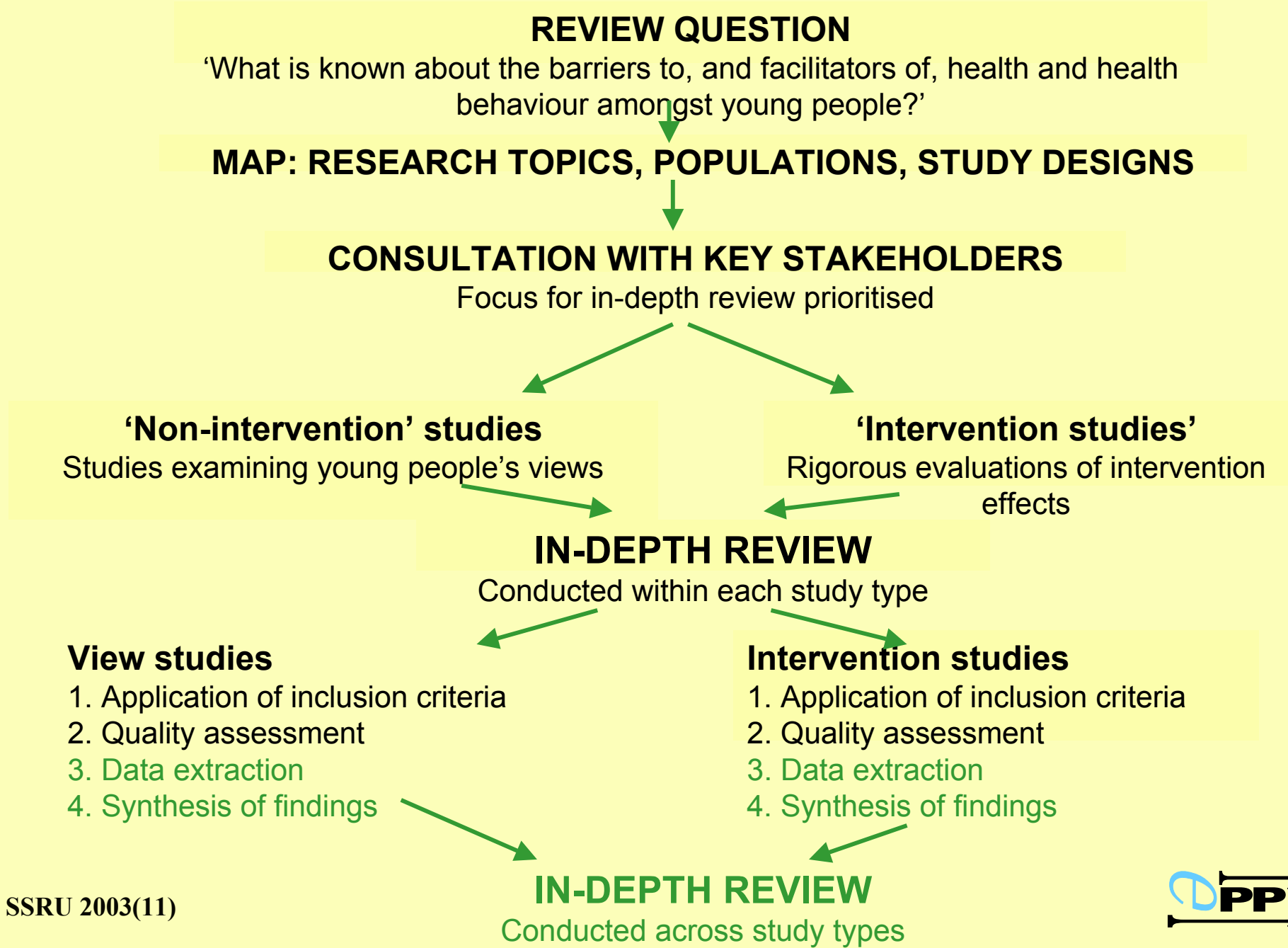
- Three systematic reviews on the barriers to, and facilitators of, health and behaviour among young people
 - Mental health³
 - Healthy eating⁴
 - physical activity⁵

³ Harden et al. (2001) *Young people and mental health: a systematic review of barriers and facilitators*. London: EPPI-Centre, SSRU.

⁴ Rees et al. (2001) *Young people and physical activity: a systematic review of barriers and facilitators*. London: EPPI-Centre, SSRU.

⁵ Shepherd et al. (2001) *Young people and healthy eating: a systematic review of barriers and facilitators*. London: EPPI-Centre, SSRU.

Figure 1: Overall approach taken in reviews



REFLECTIVE QUESTIONS

- *How did the review questions, relevant theory and values inter-relate and influence the review process?*
- *To what extent could we describe the review methods in generic terms similar to traditional accounts of systematic reviews of effectiveness?*
- *How could we articulate those methods that did not feature in traditional accounts of systematic reviews of effectiveness?*
- *How did the evidence, conclusions and recommendations compare with those of traditional systematic reviews of effectiveness?*

REFLECTIVE QUESTION 1

- *How did the review questions, relevant theory and values inter-relate and influence the review process?*

Findings

RESEARCH QUESTIONS...

- ...influenced review process because different review questions required different study types
- Reviews' sub-questions could be addressed by different study designs
 - What factors are associated with mental health, healthy eating, or physical activity?
 - Surveys, cohort/ case controlled studies, qualitative studies
 - What interventions are effective?
 - Controlled trials

An illustrative example: healthy eating

NUMBERS AND TYPES OF STUDIES

Overall number = 30

Young people's views

- 4 'quantitative' surveys
- 4 'qualitative' exploration of young people's views through
 - Interviews (2)
 - Focus groups (2)

Intervention studies

- 7 sound outcome evaluations
 - 3 with integral process evaluation
- 15 other outcome evaluations

An illustrative example: healthy eating

RESULTS OF TWO SYNTHESSES

Findings... views

- Food 'healthy' or 'fast'
- Healthy food - home cooking, adult preferences and lack of choice
- Fast food - autonomy, independence, part of their social world
- Convenience, cost, taste and leisure activities are barriers to healthy eating
- Facilitators included better labelling of food and increasing availability of healthy food

Findings... outcomes

Effective interventions include:

- Healthy food in school meals
- Educational interventions
- Classroom activities, parental involvement and risk factor screening
- Whole school approach to promoting health.

Other interventions were unclear in their effects or ineffective

Findings

HEALTH PROMOTION THEORY...

- ...influenced review process because we began by basing our synthesis framework on the understanding that interventions are more likely to be effective if
 - they are multifaceted and target barriers and facilitators operating in three spheres
 - The individual (knowledge, attitudes, self esteem)
 - The community (family and social support networks)
 - Wider society (social class, access to resources and services)

Findings

VALUES...

...influenced the review process because

- we centred our analysis on young people's views
- we reframed our synthesis from
 - Individual, community, society.... to
 - Individual, school, family and friends, practical and material resources

to match young people's views of their sphere's of influence

Barriers	Facilitators
<i>Self</i>	<i>Self</i>
▪ taste/texture preferences	
<i>Friends and family</i>	<i>Friends and family</i>
▪ leisure activities	▪ home cooking
<i>School</i>	<i>School</i>
▪ lack of choice	▪ increasing availability of healthy food
<i>Practical and material resources</i>	<i>Practical and material resources</i>
▪ convenience ▪ cost	▪ better labelling of food ▪ healthy food in vending machines

REFLECTIVE QUESTION 2

- *To what extent could we describe the review methods in generic terms similar to traditional accounts of systematic reviews of effectiveness?*

Findings

CONVENTIONAL METHODS

- Review question had driven the review methods
- Sub-questions had driven methods for analysing sub-sections of literature
- Independent data extraction by two reviewers to maximise accuracy
- Presentation of extracted data to maximise transparency
- Reviews relied on subjective judgements transparently reported at key stages
 - Setting the question and sub-questions, inclusion criteria, identifying key concepts for data extraction

REFLECTIVE QUESTION 3

- *How could we articulate those methods that did not feature in traditional accounts of systematic reviews of effectiveness?*

Findings

NOVEL METHODS FOR...

...synthesis within study types

- Summarising data extracted from outcome evaluations without a framework for describing complex interventions
 - Described studies, highlighted similarities and differences, and tried to identify patterns of factors relating to success (or otherwise) of interventions
- Novel quality assessment tool for non-intervention studies
- Synthesising findings from non-intervention studies within a framework of sub-questions

An illustrative example: healthy eating

Questions addressed in views studies in the healthy eating review

- What are young people's perceptions of/attitudes to healthy eating? What does healthy eating mean to young people?
- What do young people think stops them eating healthily?
- What do young people think helps them to eat healthily?
- What ideas do young people have for what could or should be done to promote their healthy eating?

Findings

NOVEL METHODS FOR...

- ...drawing conclusions and making recommendations by constructing a matrix based on
 - a theoretical framework for spheres of potential influence in health promotion
 - types of studies:
 - views of young people
 - sound outcome evaluations
 - other outcome evaluations)
 - detailed comparison of the findings from the syntheses of different types of studies

An illustrative example: healthy eating

SYNTHESIS ACROSS STUDY TYPE

- Young people's views used to assess the interventions evaluated by research.
 - To what extent have interventions addressed the barriers identified by young people?
 - To what extent have interventions built on the facilitators identified by young people?
- Using 'constant comparison' across the results of each synthesis the team:
 - looked for interventions that diminished identified barriers
 - looked for interventions that built upon identified facilitators

Findings

THEORETICAL/ METHODOLOGICAL MATRIX

Views studies		Intervention studies	
Barriers	Facilitators	Soundly evaluated interventions	Other interventions
<i>Self</i>			
▪ Taste/ texture preferences		▪ Taste-testings in schools	
<i>Practical and material resources</i>			
	▪ Healthy snacks in vending machines ▪ Better food labelling		▪ Labelling in restaurants and shops

An illustrative example: healthy eating

MAKING RECOMMENDATIONS

- We recommended soundly evaluated effective interventions for implementation. When they matched young people's views we had a better understanding of the context.
- When other interventions matched young people's views but were unclear in their effects, they were recommended for further development and evaluation.
- When gaps were apparent, we recommended that new interventions be developed and tested.

REFLECTIVE QUESTION 4

- *How did the evidence, conclusions and recommendations compare with those of traditional systematic reviews of effectiveness?*

Findings from an illustrative example

'ADDED VALUE': *outcomes synthesis*

Conclusions

- effectiveness
- gaps in evidence of effectiveness

Specific recommendations

- 4 effective interventions to implement

On the basis of:

- 7 sound outcome evaluations
- **Greater understanding of why interventions were successful in young people's terms**

Findings from an illustrative example

‘ADDED VALUE’: *Views synthesis*

Conclusions

- what ‘healthy eating’ means to young people
- barriers to healthy eating in school
- facilitators to healthy eating within the family
- young people’s recommendations for promoting healthy eating

Recommendations

- Use review findings, and consult young people, for developing policy and practice.

On the basis of

- 8 views studies

Findings from an illustrative example

‘ADDED VALUE’: Cross study type

Additional conclusions

- how effective interventions have addressed barriers and facilitators to healthy eating
- other interventions that matching barriers and facilitators to healthy eating

Additional recommendations

- 8 specific recommendations for an evaluation agenda

On the basis of

- 8 views studies, 7 sound outcome evaluations and 11 ‘other’ intervention studies

Conclusions and next steps

THE FRAMEWORK ENABLES...

- Conclusions about need, intervention design and development, acceptability and feasibility *as well as* effectiveness.
- A transparent path to recommendations for an evaluation agenda as well as which effective interventions to implement.
- Uses a larger proportion of research literature.

Conclusions

NEXT STEPS

Test wider applicability of framework to

- other types of review questions
- other types of included studies
- other areas of public policy
- other populations
- other theoretical frameworks
- reviews conducted by other teams