



# Narrative synthesis

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# Outline

- Narrative synthesis guidelines: approach & key steps
- Challenges in narrative synthesis
- Narrative synthesis workshop

# Narrative synthesis

- Little clear step by step guidance
- Synthesis should go beyond summarising data
- Need to think about synthesis during whole review process
  - Aims of review- use & conceptually appropriate
  - Appropriate grouping of studies, required data extraction
- Inductive approach to analysis

# Guidance on narrative synthesis

- ESRC methods programme
- Draws on systematic review of existing guidance and tools for narrative synthesis

# Key components in narrative synthesis

- Develop a theoretical model of how interventions work- how, why and for whom (and when)
- Preliminary synthesis
- Explore relationships in the data
- Assess robustness of the synthesis
- *General principles of a good synthesis- whether narrative or statistical*
- *Should be considered iterative rather than linear*

# Develop a theoretical model: how, why and for whom (and when)

- Articulate & prioritise hypothesis(es) to be tested and data to be collected/extracted
- Pre-specified hypotheses:
  - have greater integrity than post hoc
  - keep review focussed & manageable (and useful)
- Tool: logic models

# Preliminary synthesis

- Describing results
  - Data extraction
  - Identification of elements/variables worth incorporating into the analysis
    - e.g. Variation in implementation, context, study methods/approach
  - Cross study analysis
- Tools:
  - good tables
  - textual summaries of studies
  - vote counting
  - grouping studies

# Explore relationships in the data

- How identified elements influence outcomes
- Testing & refining hypothesis
  - May need to revisit theory, data extraction & preliminary synthesis
- Cross study analysis
- Tools
  - Graphical representation: forest plot, effect direction plot, logic models
  - Sub-group analysis

# Cross-study analysis

- **Use the tables to perform cross-study analysis**
  - Order the studies in different ways (easy in a database)
    - By study quality- to see where the best evidence is
    - By categories of intervention, outcome, context
    - Use of vote counting to get a feel for groups of studies reporting similar findings
  - Themes or patterns may emerge
    - Explaining differential impacts & key influences on the key outcome
    - Groups of studies which all have similar outcome & similar characteristic, and contrasting examples
    - Consider influences on outcomes and explanatory factors: variation in intervention, context, study design, study quality, implementation etc

# Assess robustness of the synthesis

- Trustworthiness of
  - evidence in synthesis- quality of included evidence
  - synthesis itself
    - Transparency of review process
    - Completeness & strength of body of evidence
- Tools:
  - weight of evidence
    - Are conclusions based on well conducted RCTs?
  - critical reflections of validity of evidence & synthesis,

# Assess robustness of synthesis

## • Dealing with mixed study quality

- If you have a large group of well conducted RCTs and two poorly conducted non-randomised studies you may want to exclude these to prioritise “best available”
- Or one particular methodological/bias issue may affect a group of studies such that they should be excluded e.g. contamination
- May review “better” quality studies separately
  - Or include and report all studies in the review but only data from “best available” studies in the synthesis
- Your decision will likely depend on the quality and quantity of data you have identified
- Be careful how you treat “best available” evidence
  - Even the best may be of little value ie rubbish!

# Assess robustness of the synthesis

- Final synthesis should reflect
  - robustness of synthesis & included data
    - Be careful that wording of conclusions does not overstate certainty
  - generalisability of data included in synthesis
  - gaps in available data & knowledge
    - What questions in the review were not able to be answered?
    - What questions emerged in the review for which insufficient data were available?
  - Is uncertainty due to:
    - Absence of data
    - Poor quality data
      - Poor supporting study methodology
      - Inadequate data- not consistently reported
    - Conflicting findings

# Challenges in narrative synthesis

- Transparency & replicability
  - Linking data to conclusions of synthesis
  - Interpretation & emphasis of reviewer
  - Presenting accessible synthesis
    - 10,000 words is not accessible to many

# Presenting narrative synthesis

*Following cross-study analysis & preliminary synthesis...*

- Organise the table with the key outcomes reported in a way that reflects how you will write the synthesis
  - For example: By intervention and/or context, and by study quality
- Prepare textual description of the reported impacts for groups of interventions while also indicating study quality, study size, and context
- Use lots of sub-headings to help the reader be clear what is being reported and how you come to your conclusion
  - For example, grouping by intervention, outcome, study quality etc
- Write concise & clear conclusions from the narrative
- Write for the evidence user
  - Are they likely to be policy makers, practitioners, academics?

# 5,000 words down to 500 (+ table)

## **Rehousing or Retrofitting With or Without Neighborhood Renewal After 1995**

Of 11 identified studies of rehousing or retrofitting, only one reported qualitative data.

### ***Intervention content, intervention integrity, study context, and study population***

One study from the United States evaluated a program that provided improved housing conditions and also alleviated overcrowding. This intervention also involved an affordable home ownership arrangement to assist those on the margins of home ownership (Habitat for Humanity). The remaining 10 studies evaluated programs of housing-led neighborhood renewal in the United Kingdom (“housing-led” refers to programs of residential neighborhood investment in which the major structural change is demolition and new build housing or housing retrofitting, but in which other neighbourhood changes are also implemented); relocation to a new neighborhood was not part of this intervention. Although it is likely that measures for improvement of warmth were part of the intervention in each study, only studies specifically reported that the intervention included upgrading or installing heating and energy efficiency measures. Nine studies assessed changes in housing conditions, 6 studies reported improved conditions, and 3 studies reported no change. Levels of intervention integrity were often unclear, and it is likely that there was considerable variation within studies with respect to the extent of intervention delivered and improved conditions experienced.

All the UK interventions were area based, targeting deprived neighborhoods. The US study targeted individual homeowners on low incomes and with families. Only 1 study reported impacts for children as well as adults.<sup>46</sup> A narrative synthesis of health impact data from the 10 UK studies of similar programs of housing-led neighborhood renewal is presented in the following paragraphs.

### ***General health impacts***

Six studies reported general health impacts. Impacts on general health outcomes were unclear. The better-quality studies (grade A or B) either reported small improvements that were not statistically significant or were not accompanied by supporting data or statistics. One study (grade C) reported a statistically significant increase in self-reported poor health (+12.3%) among adults but not children.

### ***Respiratory health impacts***

Three studies (grade B or C) assessed respiratory impact across a number of outcomes. There was little evidence of improvements in respiratory health, and in each of these studies some of the respiratory outcomes were better in the control group following the intervention. Mental health impacts. Nine studies assessed mental health impacts. Each of these studies assessed changes in mental health. In the 3 more rigorous studies (grade A), there was no clear impact on Short Form-36 measures of mental health, whereas in the less rigorous studies, statistically significant positive impacts were reported across a range of measures.

### ***Other illness or symptom impacts***

Three studies assessed other types of health or illness impacts. The range of outcomes assessed was diverse; a mix of positive and negative impacts was reported, and there was no clear overall indication of benefit or harm. Socioeconomic impacts. Three studies reported socioeconomic impacts. In 2 studies (one grade A and one grade B), residents reported that they were more able to afford basic essentials, suggesting reduced financial strain. No other studies reported socioeconomic impacts attributable to the improvement.

# How much reducing to do?

- Data often complex but a good review will provide summaries of the key points
  - less is more- dont regurgitate the primary study
    - You have read and assessed the data so others don't have to
  - To maintain transparency it can be useful to present both summary tables and more detailed tables
    - Produce full report on website
    - Publish full tables on journal website

# Visual tabulation of data

## Summary of reported health impacts following warmth & energy efficiency improvements

Author Year	Study design	Study quality	Housing condition	Interv'n integrity	Final Sample Int/Cont	Time since interv'n	General health	Respiratory	Mental
Heyman et al ( <i>subm</i> ) (21) *	RCT	A	▲	C	~96/82	2 years	<> <sub>2</sub>		
Howden-Chapman et al 2008 (22) ***	RCT	A	▲	C	175/174	4-5 months	▲	▲ <sub>11</sub>	
Barton et al 2007 (23) **	RCT	A	◀▶	C	14/13	<2 years		▲ <sub>7</sub> <sup>a</sup>	
Howden-Chapman et al 2007 (24)**	RCT	A	▲	C	1689/1623	<1 year	▲ <sub>3</sub>	▲ <sub>5</sub>	▲ <sub>3</sub>
Braubach et al 2008 (25)	PC	A	∧	C	~210/165	5-8 months	∧	∧	▲ <sub>4</sub>
Platt et al 2007(26)	PC	A	▲	B	1281/1084	1-2 years	▲ <sub>2</sub>	◀▶ <sub>2</sub>	
Lloyd et al 2008 (27)	PC	B		C	9/27	1-2.5 years			
Shortt et al 2007 (28)	PC	B	▲	C	46/54	1-3.5 years		◀▶ <sub>3</sub> <sup>b</sup>	▲ <sup>b</sup>
Somerville et al 2000 (29) ***	P	B	▲	B	72	3 months		▲ <sub>7</sub>	
Hopton et al 1996 (30) ***	PC	B	▲	C	55/77	5-11 months			◀▶ <sub>2</sub> <sup>b</sup>

Results should be tabulated along with key characteristics of study

- Study design
- Study quality
- Study size, location etc whatever space allows

# Remember “Principles of synthesis”

- Combine conceptually similar outcomes from similar studies: study design & intervention
- Produce estimate (narrative or statistical) of overall effect in light of study quality or weight of the evidence
- Transparent: clear to reader how conclusions were made
  - Good tables and clear signposting in the text
- This is relevant to both qualitative & quantitative data

# Your turn!

- You have data extracted from 8 housing improvement studies
- Look through these studies and decide if the outcomes from these studies should be synthesised together or if the studies should be split into more than one group
  - Look for important differences in study design as well as other characteristics of the PICO (Population, Intervention, Comparison group, Outcomes, and Context)
- What are the range of outcomes reported?
  - Should these be synthesised?

# Narrative synthesis

- Prepare a textual summary of one broad outcome domain (these are grouped in the results section)
  - Use the tables with the arrows to help you
  - Not more than 200 words
  - Remember to report outcomes along with key study characteristics that you think may have influenced the reported outcome, e.g. very low response rate, high levels of confounding