Data extraction and synthesis

Chris Carroll
School of Health and Related Research, University of Sheffield, UK
Today

- Introduction to two types of synthesis
- Extracting data from qualitative studies
- Extracting data for thematic analysis
- Coding data against the framework

- Practical: Extracting and coding data
- Discussion
Methods of qualitative evidence synthesis

- Thematic synthesis; Critical Interpretive Synthesis; Meta-ethnography
  1. Only include “good” qualitative studies (?)
  2. Constant comparison; iterative; interpretations generated from the data by reviewers
  3. Create a theory

- Inductive (theory-generating)

- Examples:
  - **Thomas J, Harden A.** Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology* **2008**; 8.
Methods of qualitative evidence synthesis

- Framework synthesis:
  1. Only include “good” qualitative studies (?)
  2. Map data from included studies onto an existing framework to test the framework/theory (a role for theory)
  3. Build a conceptual model or framework
    - Deductive (theory-testing)

- Examples:
  
Methods of qualitative evidence synthesis

- “Best-fit” framework synthesis
  1. Identify relevant pre-existing conceptual models or frameworks
  2. Identify and extract all relevant qualitative studies satisfying review’s inclusion criteria
  3. Code data from included studies against framework
  4. Use secondary thematic analysis/synthesis to generate completely new themes to supplement the framework’s themes
  5. Create new framework and conceptual model or theory

- Deductive and Inductive
- Framework and Thematic synthesis

- Carroll C, Booth A, Cooper K. A worked example of “best-fit” framework synthesis: A systematic review of views concerning the taking of potential chemopreventive agents, *BMC Medical Research Methodology* 2011; 11: 29
Methods of qualitative evidence synthesis

“the output of some methods of synthesis (Thematic Synthesis, textual Narrative Synthesis, Framework Synthesis, and ecological triangulation) is more directly relevant to policymakers and designers of interventions”


Thematic synthesis

Framework synthesis

1. Question
2. Identify existing "best-fit" model or theory
3. Deconstruct model(s) and define themes in framework
4. Framework analysis to map these themes against the data
5. New framework as a result of synthesis
6. New model or theory

Thematic analysis to generate new themes not covered by framework
The case study: Questions

- HTA effectiveness and qualitative review on various agents for the primary prevention of colorectal cancer

- Questions:
  1. *Which interventions are effective in the primary prevention of colorectal cancer?*

  2. *What are the barriers and facilitators reported by individuals concerning the taking of one or more of the dietary supplements or agents of interest (vitamins, minerals, non-steroidal anti-inflammatory drugs, but not herbs) for chemoprevention or for long-term or chronic conditions?*
Identifying studies

- The search combined terms describing the agents of interest (NSAIDs, aspirin, vitamins, etc.) with a published, validated filter for identifying qualitative studies, together with the medical subject heading "qualitative research".

- Databases searched for published and unpublished material included:
  - MEDLINE, PreMEDLINE, CINAHL, EMBASE, AMED, ASSIA, IBSS, PsycINFO, Science Citation Index, and Social Science Citation Index, and the HMIC and King’s Fund databases.

- Studies were limited to those in English published from 2003 onwards to capture contemporary views and attitudes.

- The search identified 1,805 unique citations; 15 were relevant; 5 more studies were identified from reference lists and other sources

- **Result:** 20 primary research studies of qualitative evidence
Data extraction

- What is it?
  - An attempt to reduce a mass of material (your included papers) to a much smaller body of text and numbers, amenable to analysis and the interpretation of findings
Data extraction form

- Location
- Setting
- Sample (n)
- Age
- Gender
- Ethnicity
- Socio-economic status
- Intervention (if any)
- Quality assessment criteria
- Results?
- Further citations

- See Handout 1 (completed for Oldham 2004, except Results)
- Format?????
What results do you extract?

- What is your question?

- Question:
  
  What are the barriers and facilitators reported by individuals concerning the taking of one or more of the dietary supplements or agents of interest (vitamins, minerals, non-steroidal anti-inflammatory, but not herbs) for chemoprevention or for long-term or chronic conditions?

  Keep the question in mind as you read:
  Are the data relevant to this question?
  Is the question answered by the data?
Extraction of results

- Results sections of included studies:
  - Verbatim quotations and/or
  - Authors’ statements clearly-supported by data

- “... It was often difficult to distinguish [Schutz’s] first-from second-order constructs”


Extraction of results

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  - Verbatim quotations and/or
  - Authors’ statements clearly-supported by data:

- “Family members influenced supplement use for some participants. Daughters were mentioned as the primary source of supplements: ‘My daughter sent me a bottle and it’s got calcium, potassium, and magnesium, and they’re real good’ and ‘My daughter-in-law is a very healthy person, very health conscious; she’s given me lots of supplements.’”

  Oldham et al. 2004, p.661
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Extracting data for thematic analysis

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- The news and television were cited as being a source of information for a number of participants. According to one participant, "You hear all about everything [vitamins] now-a-days on it [television]. But I can't take all of them!"

- Most participants did not discuss supplement use with their physician. However, one participant valued her doctor’s input and was comfortable asking questions about supplement use. This participant said, “I listen to the news, but I'll tell you what, I listen to my doctor, what he tells me to do, that's what I do. If I see something and I wonder, I'll ask him; he usually says no.”
Extracting or “coding” data using framework analysis

<table>
<thead>
<tr>
<th>Theme</th>
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<tbody>
<tr>
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<td>Family input into decision-making</td>
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</tr>
<tr>
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<td>TV, radio, internet and press influence …</td>
</tr>
<tr>
<td>Health professionals’ input into decision-making</td>
<td>Doctors, nurses, occupational health influences …</td>
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<td>Negatives when taking agents</td>
<td>Side-effects, image, convenience, difficulties of compliance, lack or absence of adequate effect</td>
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The table presents various themes and their definitions related to factors influencing decision-making.
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Extraction and coding: Practical

- Your are the second reviewer in a team. You must do the following:
  - Check extracted data in Handout 1 against Results section for Oldham et al. 2004

- Questions you need to be asking:
  - Have all relevant data been extracted?
  - Have any irrelevant data been extracted?
  - Is the coding acceptable or are any open to challenge?
    - **Note**: Data may be assigned more than 1 theme
    - **Note**: If the “new theme” category has been specified, or you wish to specify it, because the data do not “fit”, do not assign a new theme!

- **20 minutes**: Individual; **5 minutes**: Pairs (same results or different?); **15 minutes**: Discussion of results and experiences
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