Qualitative synthesis methods: A decision tree for aggregating, integrating and interpreting islands of knowledge

Centre for Critical Qualitative Health Research

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Far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise.

(John Tukey, 1962, p. 13).
Outline

- Highlight the context of qualitative synthesis within Cochrane and Campbell Collaborations
- Present a protocol for systematic synthesis
- Explore methodological issues
- Provide a forum for discussion about the merits of systematic synthesis
Qualitative Research

• The last twenty years have witnessed a proliferation of two “growth industries” in social sciences:
  – Evidence Based Practice
  – Qualitative Research

  (Estabrooks, 1999, p. 274)

• Parallel growth patterns with few attempts to cross-pollinate:
  – Ongoing debates about the feasibility and merit of integrating EBP and qualitative
EBP Qualitative
Qualitative Research and EBP

• Recent discourse of qualitative articles and EBP:
  – Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? (Barbour, 2001)
  – The utility of qualitative research findings in Evidence-Based Public Health Practice (Jack, 2006)
  – Qualitative research and EBP as a valuable partnership (Given, 2006)
  – Helping practitioners understand the contribution of qualitative research to EBP (Newman et al, 2006)
  – Qualitative research: another voice in the EBP debate (Rizzo Parse, 2007)
• Clinical expertise should consider the *best available* external clinical evidence from systematic research in a “conscientious, explicit and judicious” manner (Sackett, Resenberg, Gray, Haynes, & Richardson, 1996, p 71)

• “Integrating individual practice expertise with the best available external evidence from systematic research, as well as considering the values and expectations of clients” (Gambrill, 1999: p 346)
As important as “Did it work?”

- Qualitative research can inform:
  - The experiences and perceptions of clients
  - The contextual considerations that influence the delivery of services
  - The experiences of non-client groups
  - How systems function socially, such as in the criminal system
  - Insights from documentary analysis into the creation of social, legal and political dominant discourses
Enhancement to “Did it work?”

**Beginning Phase**
- What are the contextual factors that need to be considered to begin the systematic review?
- What theory of change guides the intervention?

**Middle Phase**
- What can we learn about the heterogeneity of the findings?
- What can we learn from the experiences of those involved in the interventions?

**End Phase**
- What retrospective evidence assists in understanding the complexity of the interventions?
- What can we know about the relevance and applicability of the findings?
Example #1 of Qualitative Integration

• An ethnographic study to explore the implementation of an EBP treatment in a child mental health centre

• Found that trainers struggled with the implementation of the treatment
  – some abandoned the treatment, while others considered selective or partial application of the treatment

• Barriers to implementation included:
  – lag time between initial training and use of treatment in practice
  – competence in treatment use
  – clinician engagement with the project
  – clinician-treatment fit
  – clinicians' first impressions of the EBP treatment after initial use

(Palinkas, et al., 2008)
Example #2 of Qualitative Integration

- Random allocation of hazardous drinkers among an Indigenous Australian Community Medical Centre
  - brief intervention vs. usual care

- Found low participation in the study:
  - Power was set at 400 participants (200 intervention, 200 control)
  - Only 10 participants agreed to participate and none of them indicated to have drinking problems above safe levels

- Researchers suspended the study, choosing instead to conduct interviews
  - Patients were embarrassed or resentful about being approached about their drinking
  - Aboriginal health workers were uncomfortable to approach patients about drinking habits

(Sibthorpe, et al., 2002)
Qualitative research is best referred to as a complex family of research methods (Denzin & Lincoln, 1994)

Virtually all qualitative studies, regardless of the ontological epistemological approach, share in common a few key ingredients:

1) a focus on naturalistic inquiry in situation;
2) a reliance on the researcher as the instrument of data collection;
3) reports emphasising narrative over numbers (Royse, Thyer, Padgett and Logan, 2006: 88).
Systematic Reviews

• The volume of social science literature has increased dramatically over recent decades

• No longer able to keep up with all publications on their area of practice / policy

• Often have to deal with contradictory research results

• Difficulties in ensuring that practice and policies are based on credible sources of “high quality” research findings
Qualitative Synthesis

• Qualitative synthesis is a method for aggregating, integrating and/or interpreting qualitative studies (Sandelowski & Barroso 2007)

• Qualitative synthesis should follow a transparent, systematic and rigorous methods

• An opportunity to enhance the “utilization value” (Smaling, 2003, p 20-21) and “power” (Kearney, 1998a) of qualitative research (Sandelowski & Barroso, 2007)
The Emergence of Qualitative Synthesis

• In 1970’s, meta-analysis emerged as a significant scientific advancement to increase the precision and power of research (Alderson, Green & Higgins, 2004)

• In 1993, The Cochrane Collaboration was founded

• In 1996, EBP “…the conscientious and judicious use of current best evidence in making decisions about the care of individual patients….integrating individual clinical expertise with the best available external clinical evidence from systematic research” (Sackett, et al., 1996)
In 1998, the Cochrane Qualitative Research Methods Group. established to develop methods for the inclusion of findings from qualitative research.

In 2008, A major revision of the Cochrane Handbook for Systematic Reviews of Interventions (Version 5.0.0) Chapter 20: Qualitative research and Cochrane reviews Jane Noyes, Jennie Popay, Alan Pearson, Karin Hannes and Andrew Booth on behalf of the Cochrane Qualitative Research Methods Group
“Evidence from qualitative studies can play an important role in adding value to systematic reviews for policy, practice and consumer decision-making” (Cochrane Handbook, version 5.0.0)

No template is currently in place to allow a Cochrane review solely of qualitative evidence

Currently, three reviews that integrate qualitative evidence and one that includes only qualitative within an empty review
• In 2001, the Implementation Process Methods Group registered with the C2 Steering Group.
  – to explore the value of including qualitative research into systematic reviews
  – to develop and disseminate methods for including qualitative research into Cochrane and Campbell reviews
  – Currently the Process and Implementation Subgroup of the Methods Group for the Campbell Collaboration

• Little guidance for qualitative synthesis within Campbell reviews of interventions

• No template currently in placed for a Campbell review solely of qualitative evidence
Family of Systematic Reviews

• Qualitative synthesis can be seen as one of several review methods that are part of, or leading to, systematic reviews:
  – Meta-Analysis (MA)
  – Qualitative Synthesis
  – Rapid Evidence Assessments (REA)
  – Scoping
  – Level of evidence reviews

Each has a unique method of answering research questions relevant to practitioners, researchers and policy-makers
The Family of Systematic Reviews

Saini & Shlonsky, 2012
Steps in Qualitative Synthesis

1. Determine the research question
2. Breadth and scope of the review
3. Information retrieval for potential studies
4. Screen studies based on substantive focus
5. Classify by Study Type
   - Qualitative
   - Quantitative
   6. Complete second screen for each study type
   7. Complete extraction for each study type
   8. Complete quality assessment for each study type
   9. Complete separate synthesis for each study type
10. Assess the potential for integration across syntheses
11. Reporting and Disseminating Results

Questions emerge from clients, practitioners, decision-makers, community organizations, and researchers
Assess resources needed and expected timeframes for completion
Scoping review to assess the size, scope and comparability of studies
Multi-leveled moving from liberal to more specific criteria
Expertise needed on the team for both quantitative and qualitative synthesis
Transparency, applicability of evidence and implications for practice and policy
Step 1: Determine the research question

• A review question should address the target population and intervention / phenomenon

• The components of the question helps to determine:
  – Types of studies (quantitative, qualitative, or both)
  – The databases and sources to search
  – Relevant search terms
Step 2: Determine breadth and scope of the review

- In collaboration with service-users, reviewers need to determine resources needed to conduct the review and the expected timeframes for completion

- Use of scoping reviews to map out the evidence of the included studies
Step 3: Complete information retrieval searches for potential studies

- Comprehensive, transparent, and must also depend on a variety of sources, published and unpublished.

- When locating qualitative studies, special attention may be necessary to draw creatively on literature that does not fit precise search criteria.
Step 4: Screen based on the substantive focus of the question

- Screening process is multi-leveled moving from liberal to more specific criteria based on the purposes of the review

- By not placing restrictions on the type of study (just that it is a study), able to get a good sense of the different types of studies that have addressed question
Step 5: Classify by study type

• Quantitative and qualitative studies should be separated and managed differently once all known studies have been located

• Important to flag mixed-method studies
Step 6: Complete separate second screen for each study type

• For quantitative studies of effectiveness, it is likely that further screening will be required due to the inclusion of different study designs.

• No existing standard guidelines for screening out qualitative studies.

• Knowledge of the different forms of qualitative research and their various strengths and weaknesses are paramount.
Step 7: Complete separate extraction for each study type

- Few extraction templates available as general guidelines for qualitative studies

- Deciding what data to extract will be influenced by the method chosen for completing the qualitative synthesis

- Qualitative software programs can help to organize, sort and sift the data according to the chosen method
Step 8: Complete separate quality assessment for each study type

- Number of tools developed, but there remains a great deal of discrepancy among them

- Questions of quality should adhere to the procedures of the method chosen
Step 9: Complete separate synthesis for each study type

• Helpful to think of the synthesis as a unique step in the review process given the complexity and intricacy involved in making sense of the grouping of studies for the review

• What to synthesize and how to go about doing this will depend on the question (s) being asked and on the chosen method for qualitative synthesis.
Qualitative Screening Levels

Electronic Databases → Hand-searching → Experts in the Field → Reference Lists → Grey Literature

Titles and Abstracts into review management software (Revman 5, Trialstat)

Retrieve Full Article

Apply Level 1 Screening

NO → Exclude

YES → Is the population related? Is the intervention / phenomena related? Is this a study (quantitative / qualitative / both)?

Quantitative

Apply Level 2 Screening

NO → Exclude

YES → Included studies in the final analysis → Data Extraction → Quality Appraisal → Data Synthesis → Meta-Analysis

Qualitative

Apply Level 2 Screening

NO → Exclude

YES → Included studies in the final analysis → Data Extraction → Quality Appraisal → Data Synthesis → Mixed-Method → Qualitative Synthesis
Synthesizing Qualitative Evidence

- It can be an aggregative, integrative or interpretive process

- Requires transparency of process

- Requires authors to identify and extract evidence from studies included in the review consistent with method chosen
Choosing An Appropriate Method

- Bayesian meta-analysis
- Critical interpretive synthesis
- Evidence for Policy and Practice Information and (EPPI) Coordinating Centre approach
- Joanna Briggs Institute (JBI) approach
- Meta-ethnography

- Meta-synthesis
- Meta-study
- Meta-summary
- Narrative synthesis
- Qualitative evidence synthesis
- Drawing on grounded theory
- Realist synthesis
- Secondary thematic analysis.
Choosing An Appropriate Method

Based on a review of a decade of qualitative synthesis research in the health sciences, it is common for reviewers:

- to make modifications of qualitative synthesis methods without explanation
- to provide little information about the procedures used
- to blur the boundaries of the methods by adopting languages across methods to describe concepts and data synthesis strategies.
- Too quick to aggregate findings instead of interpreting findings across studies, regardless of their chosen method for qualitative synthesis.

Bondas and Hall (2007)
Choosing a Method for Qualitative Synthesis

- Aggregative Methods
  - pooling frequencies of themes across qualitative reports (e.g. meta-summary)

- Integrative Methods
  - Integrating themes across primary studies to build a ‘story line’ of an event, phenomenon or experience (e.g. meta-synthesis)

- Interpretive Methods
  - to construct new interpretations, enhance understanding and generate new theory about a topic (e.g. meta-ethnography)
1. Epistemological and ontological stance of the researcher

2. Whether the research question is predefined or iterative

3. Whether the method is aggregative, integrative or interpretive*

*an additional choice of either including comparable studies or including different study designs in the interpretation of the findings across qualitative studies
6 Common Methods

• Meta-summary
• Meta-synthesis
• Grounded theory/ grounded formal theory
• Meta-Interpretation
• Meta-study
• Meta-ethnography
Meta-Summary

- **Method:**
  - To extract, group, abstract and format findings to determine frequency and effect sizes across qualitative reports

- **Objective:**
  - To summarize findings across qualitative reports in a specified research field (Dixon-Woods et al., 2006; Sandelowski & Barroso, 2003; Sandelowski & Barroso, 2007; Sandelowski et al., 2007; Thorne et al., 2004)

- **Research question**
  - Predefined and focused research question(s) (Dixon-Woods et al., 2006; Sandelowski et al., 1997)

- **Epistemology or ontology**
  - Quantitatively oriented; focused on replication, validity and uncovering patterns/themes
Meta-Synthesis

• **Method:**
  – Methods include: extracting concepts, comparing and contrasting, reciprocally translating each studies findings into each other, and synthesizing results (Sandelowski, 2007; Walsh & Downe, 2005)

• **Objective:**
  – To synthesize qualitative findings across studies in order to produce new integrated, descriptive and explanatory interpretations and perspectives of an event, phenomenon or experience (Fingfeld, 2003; Sandelowski, 2007; Thorne, 2006; Thorne et al., 2004; Walsh & Downe, 2005)

• **Research question:**
  – Research question guided by previous research and knowledge of topic area (Fingfeld, 2003)

• **Epistemology or ontology**
  – View knowledge production as meaning making as well as socially and culturally constructed (Sandelowski, 2007; Walsh & Downe, 2005)
Grounded (Formal) Theory

• **Method:**
  – Theory generation and constant comparative methods

• **Objective:**
  – To integrate substantive theory into syntheses of grounded theory studies in order to develop high level formal theory to understand and explain phenomena, processes and contexts (Fingfeld, 2004; Kearney, 1998; Walsh & Downe, 2005)

• **Research question:**
  – What are common elements across multiple substantive theories that can be synthesized to make a broadly applicable theory regarding this phenomenon?

• **Epistemology or ontology:**
  – Multiple epistemologies linked with grounded theory
Meta-Interpretation

• **Method:**
  – Involves a triple hermeneutic synthesis

• **Objective:**
  – to discover or interpret something new about the human experience instead of verifying what is known or preconceived (Weed, 2005)

• **Research question**
  – Iterative and develops with literature analysis

• **Epistemology or ontology**
  – Reality is understood as being constructed from various vantage points, including the subjective positioning of the reviewer (Weed, 2005)
Meta-Study

- **Method:**
  - A three step analysis of theory, methods and findings across studies is conducted and results synthesized (Bondas & Hall, 2007; Fingfeld, 2003; Sandelowski, 2007; Thorne, 2006; Thorne et al., 2004)

- **Objective:**
  - To develop new knowledge, theoretical interpretations and understanding through critically analyzing and synthesizing qualitative studies within socio-historical contexts (Bondas & Hall, 2007; Fingfeld, 2003; Thorne et al., 2004; Thorne, 2006)

- **Research question**
  - How can we expand knowledge and develop theory within a particular field by conducting a critical socio-historical analysis? (Thorne, 2006)

- **Epistemology or ontology**
  - Critical and discursive approach (Thorne et al., 2004)
  - View research production and representation as socially constructed and culturally-bound within socio-historical contexts (Sandelowski, 2007; Thorne et al., 2004; Thorne, 2006)
Meta-Ethnography

• **Method:**
  – Interpretive vs integrative or aggregative (Pope et al., 2007)

• **Objective:**
  – Reconceptualization and translation of concepts to construct new interpretations and enhance understanding (Doyle, 2003; Pope et al., 2007)

• **Research question**
  – What cases provide “the most opportunity to learn”? (Doyle, 2003, p. 327, )

• **Epistemology or ontology**
  – Highlights power dynamics and contextual factors within knowledge production (Doyle, 2003; Thorne et al., 2004)
  – Views researcher’s perspective as “always partial and positional” (Thorne et al., p. 1347, 2004)
Decision Tree for Choosing a Method for Qualitative Synthesis

Epistemological or ontological Continuum

Post-Positivist

Predefined

Aggregative

Meta-Synthesis

Meta-Summary

Iterative

Integrative

Inclusion of comparable study designs

Grounded Theory

Thematic synthesis

Hermeneutic analysis

Meta-Interpretation

Meta-Study

Deconstruction of methods, theory and findings

Meta-Ethnography

Interpretive

Inclusion of different study designs

Research Question
Step 10: Assess the potential for integration across syntheses and Synthesizing where possible

- Multi-level syntheses: Qualitative evidence and quantitative can be conducted as separate streams, but then linking and combining to make a ‘third synthesis’ (Thomas 2004)

- Parallel syntheses: The qualitative synthesis can then be used in parallel and juxtaposed alongside to aid the interpretation of synthesized trials (Noyes 2007).
Mix-Method Design

- **Bayesian meta-analysis:**
  - best situated within a post-positivist framework
  - focuses on the nesting of qualitative studies within quantitative meta-analytic techniques by providing a source of external evidence to inform the choice of variables to be included in the review (Dixon-Woods, et al., 2004).

- **Realist synthesis:**
  - an interpretive method that includes diverse evidence from both qualitative and quantitative research, materials from newspapers, unpublished reports, statistics, policy papers, and other relevant sources (Pope et al., 2007).

- **The EPPI approach**
  - Integrates deductive and inductive inquiry by completing parallel quantitative and qualitative analyses to address different but related elements of an overall question.
Step 11: Dissemination of results

- Comprehensive presentation of the review means keeping detailed and accurate records throughout the review process (Pope et al., 2007)

- Careful consideration must be made to contextualize findings and to weigh their applicability and potential transferability to other populations
Focus of Transparency

• Record keeping:
  – all decision points made during the review
  – a list of key questions for the review
  – a list of search terms used
  – the time period for conducting the search
  – the number of hits located
  – a detailed recording of the screening process and decisions to include or exclude studies
  – the list of included studies
  – clear articulation of the steps taken for the data analysis and report writing.
Summary of Challenges

• The research question
  – Iterative vs predetermined
• Information retrieval strategy
  – Theoretical vs comprehensive
• Critical Appraisal
  – For interpretation vs for screening out
• Choosing appropriate methods
  – Aggregative, integrative vs interpretive
• Connection of islands of evidence
  – Transferability vs generalizability
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