KTDRR's Workshop on Scoping Review Methods
for Producing Research Syntheses

Introduction to Scoping Reviews and Synthesizing Evidence

Session 1: April 27, 2016 (3-4:30 PM ET)

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What We Are Going To Do!

- **Context of systematic reviews**
- **How can a scoping review inform disability research and rehabilitation?**
- **Approaches to scoping reviews**
- **Major steps of a scoping review**
- **Reflections on scoping review approach**

Introduction

- **Growing variation in evidence synthesis methodology to meet different objectives of evidence synthesis**
- **Classical models of systematic reviews and meta-analyses can be resource intense and have work burden**
- **To meet a variety of user needs, offshoots of the classical models have been developed**
  - **These can be more or less mature**
  - **Determining unique contributions of each can be a challenge**

Understanding the Context of Systematic Reviews

- **Narrative**
- **Evidence-Mapping**
- **Quantitative**
- **Qualitative**
- **Rapid Evidence**
- **Scoping Review**

Narrative Review

- **Traditional literature review ⇨ biased sample of the full range of literature on the subject**

- **Usually only one reviewer who gathers and interprets the literature in a given field**

- **Reasons for including some studies and excluding others are not explicit ⇨ bias of the author**

- **Literature search and inclusion criteria not explicit ⇨ cannot be replicated**

(Torgerson, 2003)

Narrative Review (cont.)

Narrative Review (cont.)

- **Relevant studies could have been excluded from review ⇨ potential selection and publication bias**

- **No quality assessment ⇨ no differentiation between methodologically sound and unsound studies**
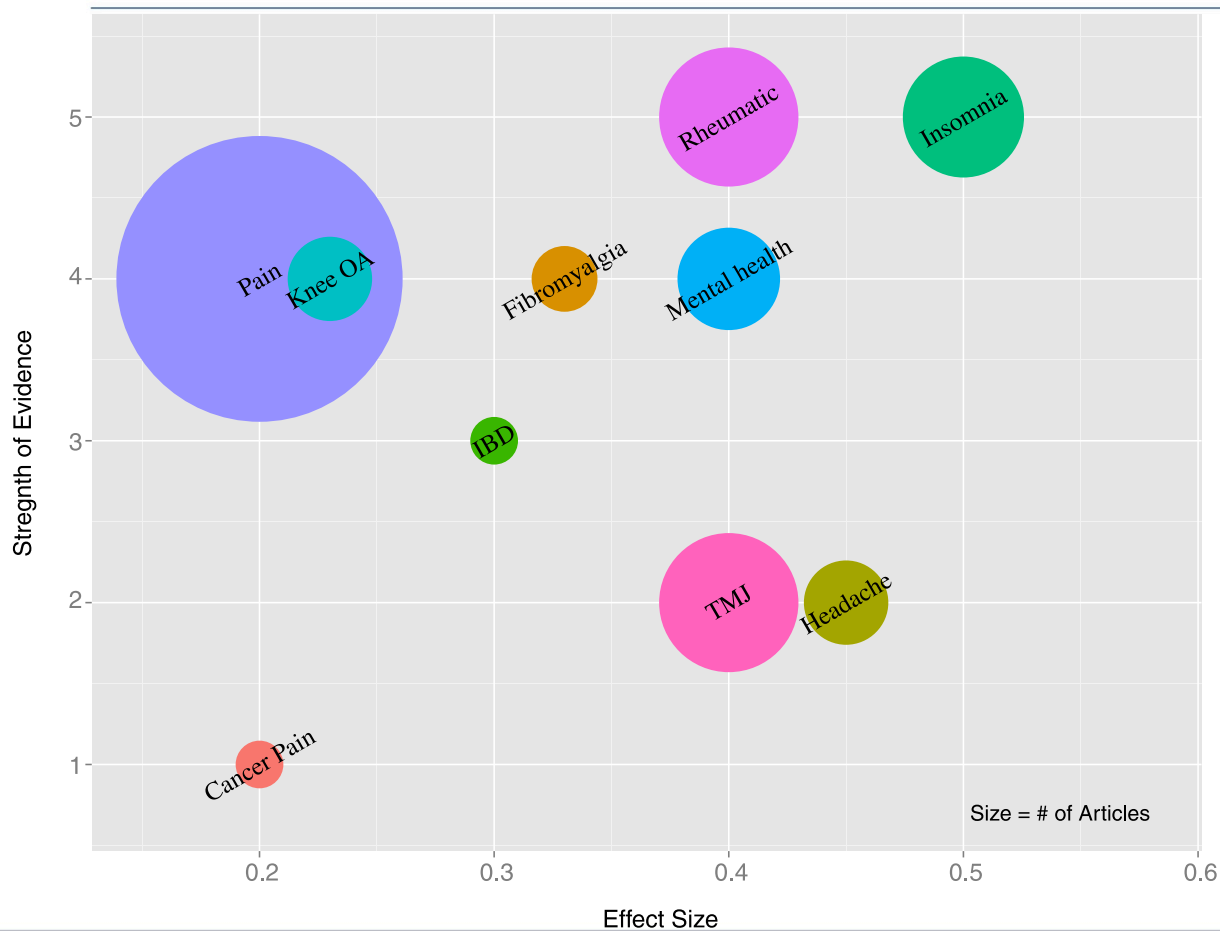
(Young et al., 2002)

Evidence-Mapping

- **Aims to identify all relevant literature within a research field ⇨ comprehensive assessment of both what is known and where the research gaps exist**

- **Based on explicit research question**
  - **May vary in depth, but should be informed by end-users**

- **Thorough and reproducible search strategy**

- **Tabular format to summarize literature characteristics**

- **Early in its development, no consensus yet on mapping methodology**

(Hetrick et al., 2010; Miake-Lye et al., 2016)

Evidence-Mapping Example

Evidence map of acupuncture for pain (Miake-Lye et al., 2016)

Quantitative Reviews

A Systematic Review is

"The application of procedures that limit bias in the assembly, critical appraisal, and synthesis of all relevant studies on a particular topic. Meta-analysis may be but is not necessarily part of the process" (Chalmers et al., 2002).

Quantitative Reviews (cont.)

A Meta-analysis is defined as:

"The statistical analysis of a large collection of results from individual studies for the purpose of integrating the findings" (Glass, 1976, p. 3)

- Adopted by many fields (e.g., medical and allied health sciences, education, psychology, etc.) to document evidence-based practices
- Used to synthesize research findings and evaluate the effectiveness of treatments or accuracy of diagnostic tools

Qualitative Review

- "The synthesis of individual qualitative research reports" related to a topic to arrive a new understanding (Patterson et al., 2001)
- Findings from qualitative studies are aggregated, integrated and/or interpreted (Sandelowski & Barroso 2007)
- Organizing the synthesis according to a concept, a theory, and/or research objective
- Similar to other systematic reviews, it should follow a transparent, systematic, and rigorous method
- Can be combined with quantitative review

Rapid Evidence Review

- **A modified full systematic review**
- **Primary difference: information retrieval and analysis of data are abbreviated to speed up the review production**
- **Primary goal: provide a quantitative overview of an issue by focusing on more recent and recognizable studies**

Rapid Evidence Review cont.

- **Capture the most evidence in the shortest time**
- **Prepare summary for dissemination quickly**
- **Present tentative and potential general estimate of effect**
- **Focus summary on major methodological and policy related issues of topic (Thomas et al., 2013)**

Scoping Review

- **Narrative summary that is designed to provide an overview of a evidentiary base in a field/on a topic**
- **The process can be systematic**
- **Assess the breadth of research available by mapping literature base to**
  - identify primary sources of potential evidence
  - identify primary scholars in topical area
  - identify contemporary issues in topical area
- **Pose questions needing answers**

(Gough et al., 2012)

Systematic vs Scoping Review

(Armstrong et al., 2011)

Systematic Review	Scoping Review
Focused research question with narrow parameters	Broad research question
Inclusion/exclusion usually defined at outset	Inclusion/exclusion can be developed post-hoc
Application of quality filters	Quality not an initial priority

Systematic vs Scoping Review cont. (Armstrong et al., 2011)

Systematic Review	Scoping Review
Detailed data extraction	May or may not involve data extraction
Often with quantitative synthesis	Synthesis often more narrative; typically not quantitative
Includes quality assessment, ends in conclusion to focused research question	Used to identify parameters and gaps in body of literature

Possible Ordering of Knowledge-Synthesis Methodologies

(modified from Dijkers, 2015)

	Term	Steps Involved
1	Narrative Review	Review of literature that is unsystematically searched and minimally extracted to answer a broad question that may be vaguely stated.
2	Evidence Mapping	Adds: explicit questions, systematic search for evidence, and tabular summaries of the nature and findings of the studies.
3	Scoping Review	Adds: a narrative integration of the relevant evidence.

Possible Ordering of Knowledge-Synthesis Methodologies cont.

(modified from Dijkers, 2015)

	Term	Steps Involved
4	A. Quantitative Systematic Review	Uses a narrow question, adds: evaluation of the quality of the evidence, and recommendations based on a qualitative synthesis of all the evidence or only the high-quality evidence.
	B. Qualitative Systematic Review	Adds: aggregating qualitative evidence; addresses questions directly related to an effectiveness review; similar to quantitative review follows transparent, rigorous and systematic methods
5	Meta-Analysis	Adds: a quantitative synthesis of the evidence based on statistical pooling of the findings of studies selected.

What's the Value of a Scoping Review ?

1 - How Can a Scoping Review Inform Disability and Rehabilitation Research?

- **Provides an organized summary of extant literature**
- **Provides a bases for dissemination of methods, findings, and conclusions**
- **Demonstrates the breadth and depth of description, research, advancements, and needs in the subject area**

2 - How Can a Scoping Review Inform Disability and Rehabilitation Research?

- **Guide in the development and adoption of policy in the subject area**
- **Provide basis for a full systematic review and analysis**
- **Refine the nature of specific issues**

Primary Consumer Audience for a Scoping Review

- **New and Senior Researchers looking to identify research needs**

- **Graduate and Undergraduate Students in training**

- **Clinicians looking for guidance on available research**

- **Patients/Consumers searching for latest information or research**

Scoping Review: Strengths

- Identifies gaps in research and knowledge
- Provides starting point for the size and sources of literature
- Provide guide for full systematic review

- Less resource intensive than other types of review
- Can focus on how terms are used in the literature
- Can identify basic issues, documents, or directives that guide in developing or evaluating policy and practice

Scoping Review: Weaknesses

- Scoping studies are always a 'rapid response'
- Focus can be wide and shallow and not supportive of extended 'what works' reviews
- Can result in a limited or unsystematic review

- Does not necessarily appraise the quality of evidence
- Does not synthesize results
- Scoping Reviews are "indicative and suggestive rather than definitive and prescriptive" (p.10)

(Anderson et al., 2008)

Example of a Scoping Review

Example

Workplace Accommodations for People with Mental Illness: A Scoping Review

(McDowell & Fossey, 2015)

Workplace Accommodations for People with Mental Illness

Purpose:

"….to investigate the research evidence about the types and frequencies of workplace accommodations provided for employees with mental illness, as well as their associated costs and outcomes." (p. 206)

(McDowell & Fossey, 2015)

Workplace Accommodations for People with Mental Illness

Methodology

Workplace Accommodations for People with Mental Illness

Methodology

1. Searched 5 databases for peer-reviewed articles that included:

   - Quantitative and Qualitative studies

   - Cohort studies

   - Phenomenological studies

   - Grounded Theory studies

2. Excluded

   - Opinion papers

   - Reports

   - Case Descriptions

Workplace Accommodations for People with Mental Illness

Findings

Workplace Accommodations for People with Mental Illness

Search Results

39 articles identified

6 were excluded based on study design (opinion or case description)

7 were excluded due to participant group undiagnosed

16 were excluded due to focus on broader employment issues

10 studies met inclusion criteria

Workplace Accommodations for People with Mental Illness

<u>Geographic Location of Studies</u>

   6 studies were from USA

   1 study each from UK, Canada, Sweden, Netherlands

<u>Study Focus</u>

   4 Supported Employment

   2 Occupational Rehabilitation

   3 Combination of Accommodations

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Workplace Accommodations for People with Mental Illness

Summary Data Organization

Workplace Accommodations for People with Mental Illness

1. **Types and Frequencies of Workplace Accommodations**

   a. **Supported Employment Worker**

   b. **Workplace adjustment: scheduling/reduced hours, modified job training or description, physical accommodations**

2. **Need for and Provision of Workplace Accommodations**

   a. **Mentally Ill significantly less likely to receive accommodations**

   b. **Employees with depression or alcohol abuse reported significantly less provision**

   c. **Employees with larger number of limitations received more accommodations (e.g., more hours of support from supervisor or coworker)**

Workplace Accommodations for People with Mental Illness

Summary Data Organization

3. **Outcomes and Costs of Workplace Accommodations**

   a. **More accommodations may improve job tenure for those who disclose, less accommodations and shorter tenure for those who did not disclose**

   b. **4 studies considered cost of accommodations**

      i. **Majority of accommodations has no direct costs associated**

      ii. **Indirect costs were not measured in any study**

Workplace Accommodations for People with Mental Illness

Conclusions

1. "….likely unmet need for workplace accommodations in this population, particularly among employees and job seekers without the support of a supported employment agency" (p. 201).

2. "When disability discrimination legislation was introduced, employers had concerns about the costs of making reasonable accommodations. This scoping review indicates that the direct costs associated with accommodations for people with mental illness are often nil or low, although there may be indirect costs [30], such as the time required for extra supervision or to offer more frequent breaks." (p. 201).

McDowell & Fossey, 2015

Workplace Accommodations for People with Mental Illness

Limitations

"….the main limitations of the included studies were small sample sizes, convenience sampling, and lack of standardized assessment tools" (p. 201).

McDowell & Fossey, 2015

Major Steps of a Scoping Review

Major Steps of a Scoping Review

1. *Identify the research questions*: what domain needs to be explored?
2. *Literature search*: Find the relevant studies.
3. *Select the studies* that are relevant to the question(s)
4. *Chart the data*, i.e., the information on and from the relevant studies
5. *Collate, summarize and report the results*
6. *(Optional) Consult stakeholders* (clinicians, patients and families, policy makers, or whatever is the appropriate group)

Arksey & O'Malley, 2005; Levac, Colquhoun, & O'Brien, 2010

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Identify the Research Question

- **Clarifying and linking the purpose and research question**
- **Guides and directs the development of the specific inclusion criteria**
- **Clarity in the review question assists in developing the protocol, facilitates effectiveness in the literature search, and provides a clear structure for the development of the scoping review report**
  - **Context -- Population -- Concept**
- **Can have major question and sub-questions**
  - **How evidence is to be mapped**

Literature Search

- **Very comprehensive ⇨ identify published and unpublished (grey literature) primary studies plus other reviews**

- **Search for all sources of evidence (e.g., primary studies and text/opinion articles) simultaneously with the one search strategy**

- **Search strategy will be iterative as reviewers become more familiar with the evidence base, additional keywords and sources, and potentially useful search terms may be discovered and incorporated into the search strategy**
  - **Sensitivity of search strategy is key**

Study Selection

- **"Inclusion criteria"** ⇨ **basis on which sources will be considered for inclusion; should be clearly defined**
- **At a minimum consider P-C-C:**
  - **Types of participants (Population)**
  - **Concept**
    - **Outcomes**
  - **Context**
- **Types of sources: can include any existing literature**
  - **May leave "open" to allow for the inclusion of any and all sources**

Chart the Data

- **Data extraction process**

- **Provides logical and descriptive summary of the results that aligns with the objective and question/s**

- **Develop draft charting table or form at the protocol stage to record the key information**

- **Can be an iterative process whereby the charting table is continually updated**

- **Trial the extraction form on two or three studies to ensure all relevant results are extracted**

Summarize Results

- **Results may be presented as a map of the data extracted from the included papers in a diagrammatic or tabular form, and/or in a descriptive format**

- **Elements of the PCC inclusion criteria may be useful to guide how the results should be mapped**

- **Narrative summary should accompany the tabulated and/or charted results and should describe how the results relate to the review objective and question/s**

Consult Stakeholders

- **Reviews can be enhanced if consumers and practitioners contribute to the work**

- **Consultants may provide additional references as well as insights into issues of effectiveness and cost-effectiveness of services that the review part alone does not reveal**
  ⇨ consultation exercise can add value to the literature review

Reflections on Scoping Review Approach

Types of Organization for Review Results

1. **Treatment Outcome Variables**
2. **Independent Variables**
3. **Topical Summary**
4. **Quality of Evidence**

Treatment Outcome Variables

1. **Carer-led Pre-Health Check Questionnaires and Patient-Held Records (*n*=3)**

2. **Carer-led Intervention for Health Promotion (*n*=12)**

3. **Carer-led Symptom Monitoring and Management (*n*=4)**

4. **Carer-led Interventions for Mental Health (*n*=4)**

5. **Screening Delivered by Carers (*n*=1)**

Hithersay, et al. 2014

Treatment Outcome Variables Example: Hithersay, et al. 2014

"In a pilot RCT involving 50 families, Moens and Braet (2012) found that a combination of healthy lifestyle, behaviour change and parenting training for parents of overweight children led to significant reductions in their child's BMI. The BMI in a wait-list control group (WLC) did not change significantly....

Two earlier RCTs were more comprehensive: Golley, Magarey, Baur, Steinbeck, and Daniels (2007) randomised the parents of 111 overweight pre-pubertal children to parenting skills plus lifestyle education (PS + LE), parenting skills (PS) alone, or WLC. Participants in the PS + LE and PS groups both showed significant reductions in BMI Z-score....." (p. 891)

Independent Variables

Synthesized Speech Output and Children: A Scoping Review (Drager, Reichle, & Pinkoski, 2010)

- Dependent Variables: Intelligibility and Comprehension of Speech
- Independent Variables
  - Influence of Variables Related to Stimuli
    - Context
    - Speech Rate
  - Influence of Variables Related to Listener
    - Age
    - Listener's native language
    - Experience with Synthesized Speech

Independent Variables
Example: Drager, et al. 2010

"Age. There is sparse evidence available that the age of the child listener (younger vs. older children) has a significant impact on the intelligibility of synthesized speech. Two studies were identified that included children of different ages (Drager et al., 2006; Von Berg, Panorska, Uken, & Qeadan, 2009)." (p. 262)

"Three studies investigated the comprehension of synthesized speech with child listeners, all using a sentence verification task (Koul & Hanners, 1997; Reynolds & Fucci, 1998; Reynolds & Jefferson, 1999). Reynolds and Jefferson (1999)c ompared children from two age groups (6-7 year olds and 9-11 year olds). The children were asked to listen to three-word sentences, half of which were false, and half of which were true." (p. 263)

Topical Summary

- **A categorical organization by the author e.g., topics or key findings across included studies.**

- **Serves as an 'overview' of the state-of-knowledge**

- **May serve a 'mapping' function of the literature**

- **May refer to quantitative findings without judging the quality of the evidence**

Topical Summary

- **Key Findings**
  - Family Wellbeing Outcomes

- **Predictor of Family Wellbeing**
  - Individual Health Functioning
  - Individual Behavioral Symptoms
  - Family Characteristics
  - Extra-familial Characteristics

(Tint & Weiss, 2016)

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Topical Summary

"Individual health and functioning."

"Varying measures of the individual's overall health and functioning have also been associated with family wellbeing. Families of individuals with ASD and co-occurring physical and mental health problems report low ratings of wellbeing, including high anxiety, parental burden, and poor parent–child relationships (Kring et al., 2008; Lounds et al., 2007; Magaña & Ghosh, 2010). ASD symptom severity, age of symptom onset, and adaptive functioning have also been shown to relate to family wellbeing (e.g., Barker et al., 2011; Gray and Holden, 1992; Jones et al., 2013; Pozo et al., 2013)." (p. 267)

(Tint & Weiss, 2016)

Quality of Evidence

ALERT: Personal Bias

Quality of Evidence

- Inconsistent application of the assessment of the quality of evidence in a Scoping Review

- Included studies could be organized as a subset of a review in which the quality of the evidence could be presented to compare the quantitative findings of the study

- Processes exist for conducting an evaluation of the quality of the evidence for reviewer transparency and replicability that would not require a statistical analysis of the study data

In Conclusion:
Why a Scoping Review?

- Purpose/goal of the review is an overview of the state-of-knowledge
- Appropriate methodology for answering broad questions of extant literature
- The goal is to include all literature relevant to question
- Quality of evidence is not a primary consideration
- If there are limited resources available
- Offers a more systematic way to understand literature to reduce bias
  - Transparent
  - Replicable
  - Documentable

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Readings for Session 2 -
May 25 (3:00 p.m. EDT)

Hithersay, R., Straydom, A., Moulster, G. & Buszewicz, M. (2014). Carer-led health interventions to monitor, promote and improve the health of adults with intellectual disabilities in the community: A systematic review. *Research in Developmental Disabilities, 35,* 887-907.

The Johanna Briggs Institute Reviews' Manual 2015: Methodology for JBI Scoping Reviews, http://joannabriggslibrary.org/index.php/jbisrir/announcement/view/51

Questions?

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