How to Critically Evaluate Systematic Reviews in Order to Inform Clinical Decision Making

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November, 2015
• Globally, published peer-reviewed health care literature has grown exponentially
• It is unrealistic for nurses to review a large amount of literature in a timely manner
• Systematic reviews now provide a tool for nurses to be able to quickly access literature
• Systematic reviews are part of the evidence-based tools needed to inform decisions in clinical practice
In order to be able to fully and appropriately use systematic reviews to inform clinical decisions, nurses need to have an understanding of:

- What a strong systematic review is
- What the steps are in conducting a systematic review
- How to use existing tools to critically appraise systematic reviews
What is a Systematic Review

• Systematic review
  – Overarching review name
  – Examines and synthesizes findings from multiple studies
  – Studies retrieved in response to answering a specific research question

• Systematic reviews are to be conducted using a rigorous process that is transparent, and therefore can be replicated with similar results
• Dependent on the research question
  – Quantitative studies
  – Qualitative studies
  – Or both quantitative and qualitative studies
• With systematic review research methods, results can be presented in different ways including in a
  – Narrative format
  – Tabular format
  – Statistical format
• With quantitative studies, results are often determined statistically, using different statistical methods including for example
  – Effect sizes
  – Meta-analyses

• Several different synthesis approaches are used when reviewing the findings from qualitative studies
Steps to Conducting a Systematic Review

- In the systematic review process, specific steps are used to conduct a systematic review.
- In order to understand how to appraise a systematic review, it is important to understand the steps that occur in the systematic review process.
- These are nine basic steps in conducting a systematic review.
Steps to Conducting a Systematic Review

1. Determine who will be on the systematic review team
2. Determine a clear research question
3. Develop a study protocol that will guide the systematic review process
4. Choose the:
   a. Databases that will be searched
   b. Key words that will be used
   c. Inclusion and exclusion criteria that will be used for study retrieval
Steps to Conducting a Systematic Review

5. Complete literature retrieval
6. Complete a dual blinded review
   a. Title review
   b. Abstract review
   c. Full-text review
7. Extract data from full-texts that meet inclusion criteria
8. Synthesize the data
9. Report and provide implications on the findings
When critically appraising a systematic review to be used for clinical decision making

- Essentially the nurse is seeking to find out if a clearly focused question was addressed
- If valid methods were used in the review
- What are the results of the review
- Are the results useful for clinical decision making
This review was too complicated

This review was too simple

...But this open data systematic review with sound methodology was just right

Goldilocks and the 3 Reviews

Statistically-funny.blogspot.com
Tools for Systematic Review Appraisal

• There are multiple tools that already exist in the international literature, that are available for nurses to use when appraising systematic reviews.

• For example these tools include:
  – The “10 questions to help you make sense of a review” sheet from the Critical Appraisal Skills Programme.
  – The Centre for Evidence-Based Medicine “Systematic Review Appraisal Sheet” sheet asks five questions to determine if the results of the review are valid, and one question that examines how the results are presented.
• Other tools include
  – AMSTAR is a tool that uses 11 questions to assess the methodological quality of systematic reviews
  – A seven step checklist to analyze systematic reviews is provided by Ressing, Blettner & Klug (2009)
  – Joanna Briggs Institute provides a table “Critical Appraisal of a Systematic Review” in their “Appraising Systematic Reviews” information sheet
Each of these tools presents a different approach to critical appraisal

Some of the tools present very specific questions and others use broad questions

A critical appraisal of a systematic review for clinical decision making is guided by asking different types of questions
1. Was there a clear question that guided the systematic review?

2. Was an ‘a priori’ study protocol used?

3. What were the inclusion and exclusion criteria in the systematic review?

4. Was the literature search comprehensive and described in detail?
Questions for Systematic Review Appraisal

5. Were there at least two reviewers working independently to determine study inclusion and data extraction?

6. Was the scientific quality of individual studies assessed?

7. Was heterogeneity between studies assessed?

8. Were the statistical methods used appropriate and precise?
9. Was the synthesis of the studies appropriately conducted?

10. Were limitations of the review provided?

11. Were the results presented clearly?

12. Are the results of the study applicable to guide clinical decisions?
Relevance of Systematic Reviews

• Systematic reviews provide a rigorous appraisal and synthesis of large bodies of original research
• Systematic reviews provide an efficient method for clinicians to quickly access healthcare literature that can be used to inform clinical decision making
• However it is important for nurses to be able to quickly appraise systematic reviews to determine if these reviews are trustworthy and reliable sources of evidence-based research
Confidently Using Systematic Reviews

• By understanding
  1. What comprises a strong systematic review
  2. The steps that are used to conduct a systematic review
  3. Questions that are typically asked in appraising systematic reviews

The nurse can confidently determine when and how systematic review results can be used to inform day-to-day clinical decisions!

http://handbook.cochrane.org/

http://www.campbellcollaboration.org/
International Systematic Review Resources

http://www.cebm.net/?o=1040

http://www.who.int/alliance-hpsr/projects/unicatolica_srcrcrosscutting/en/

Centres for systematic reviews of health policy and systems research in low-and middle-income countries

http://joannabriggs.org/

http://www.crd.york.ac.uk/prospero/

http://www.york.ac.uk/inst/crd/pdf/Systematic_Reviews.pdf
Thank you...