Systematic Reviews

Cindy Logan
clogan@k-state.edu
Livia Olsen
livia@k-state.edu
Literature review
• General discussion of topic; specific question not required
• How studies were selected/excluded for review is not described
• Thorough search not required
• Differences in study design or study quality not addressed
• Review author bias probable

Systematic review
• Must start with a very specific question
• Specific inclusion/exclusion criteria are established before searching begins
• Systematic, rigorous, documented search is required; search for unpublished research
• Identify level of evidence and bias that may exist
• Potential for review author bias removed
Steps of a Systematic Review

• Clearly formulated, very specific question
• Decide on inclusion and exclusion criteria
• Systematic and explicit methods to identify relevant research
• Critically appraise selected research
  – Determine level of evidence
  – Determine where bias may have entered the study
• Analyze and interpret results
Clearly formulated, very specific question

• Very, very well thought out and specific
• In healthcare this is called a clinical question, could be considered the research question
• Healthcare uses a P I C O format for the question
Decide on inclusion and exclusion criteria

• Inclusion criteria defines the elements of the research that MUST be found in a study
  – Examples: Synonyms, location, language

• Exclusion criteria are the elements that will eliminate a study from being reviewed/considered
  – Examples: Broad synonyms, location, language, age, time frame
Systematic and explicit methods to identify relevant research

- Strict procedure
- All possible databases searched; noting the years of coverage for the database; noting the date the review author searched the databases
- Scan the references of selected articles to include those references
- Articles of experts in the area are included
- Search for gray literature
- An exhaustive search must be conducted and documented
Documenting articles selected

Total the number of articles = note that number
- Number of duplicates = note that number
- Number of articles excluded BY TITLE following application of inclusion/exclusion criteria = note that number
- Number of articles excluded BY ABSTRACT following application of inclusion/exclusion criteria = note that number, usually final number

Have an odd number of reviewers to resolve ties, differing opinions
Records identified through database searching
   (n = )

Additional records identified through other sources
   (n = )

Records after duplicates removed
   (n = )

Records screened
   (n = )

Records excluded
   (n = )

Full-text articles assessed for eligibility
   (n = )

Full-text articles excluded, with reasons
   (n = )

Studies included in qualitative synthesis
   (n = )

Studies included in quantitative synthesis (meta-analysis)
   (n = )
Critically appraise selected articles

• Create a table that lists the basics of information: author(s), publication title and date, article title and information regarding subjects
• Determine the level of evidence
• Determine where bias could have entered the study
Analyze and interpret results

- Qualitative or quantitative
- Quantitative includes the meta-analysis (using statistical techniques to synthesize the data from several studies into a quantitative estimate or summary effect. Not just looking at clinical significance but the strength of the relationship)
Guiding Entities

• PRISMA – Provides flow diagram and checklist
• Prospero – Repository for systematic reviews ongoing/done
• Cochrane Collaboration – Non-profit, international organization that promotes, supports, disseminates systematic reviews and meta-analyses.
• Campbell Collaboration – Social sciences focus (policy and practice)
Questions?

Cindy Logan – clogan@k-state.edu

Livia Olsen – livia @k-state.edu