


Systematic Reviews

An Overview

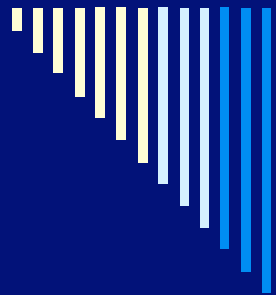
Mezna AlMarzooqi



Overview

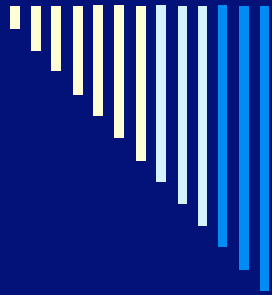
- ☐ What is research?
- ☐ Why research?
- ☐ Steps in research process
- ☐ Literature review
- ☐ Systematic review





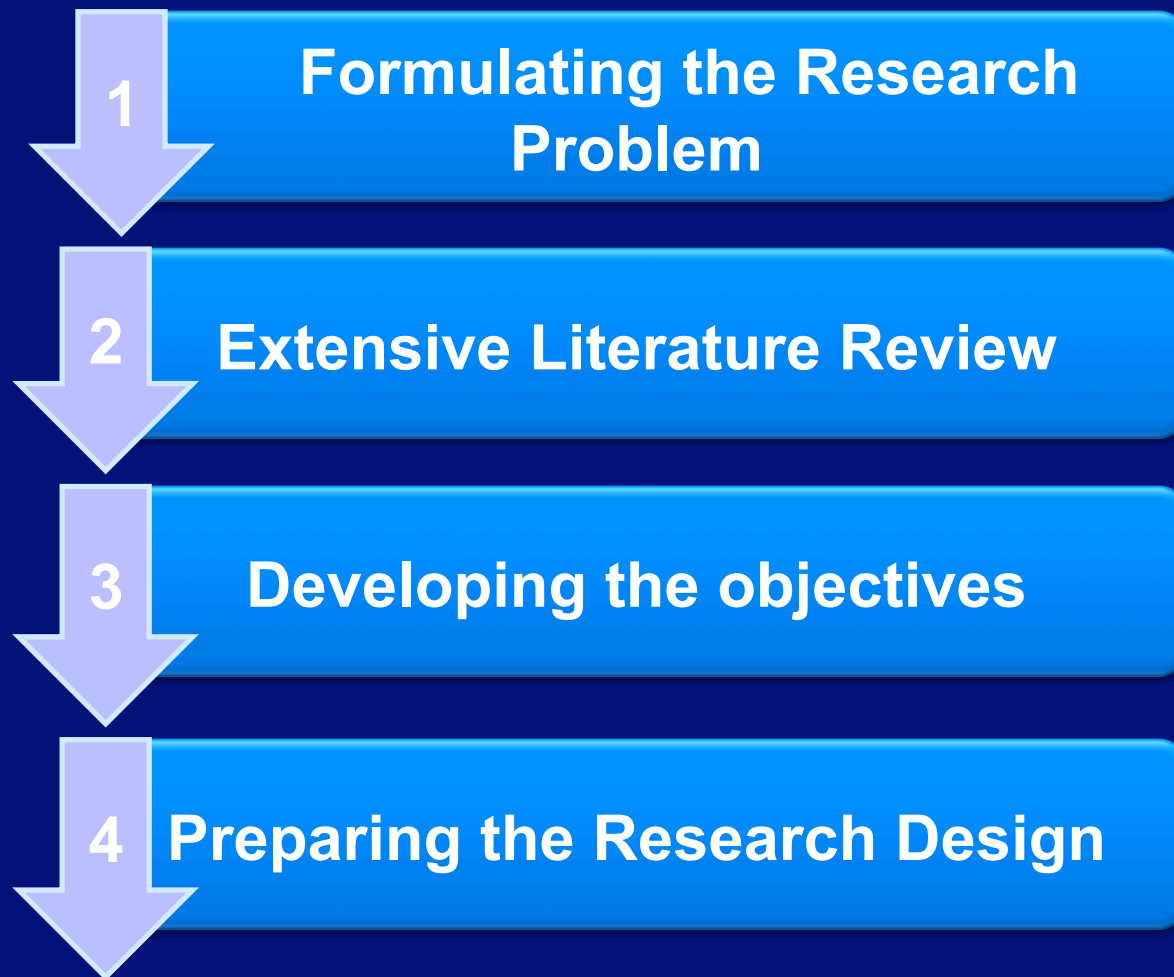
What is research?

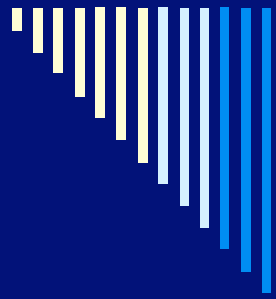




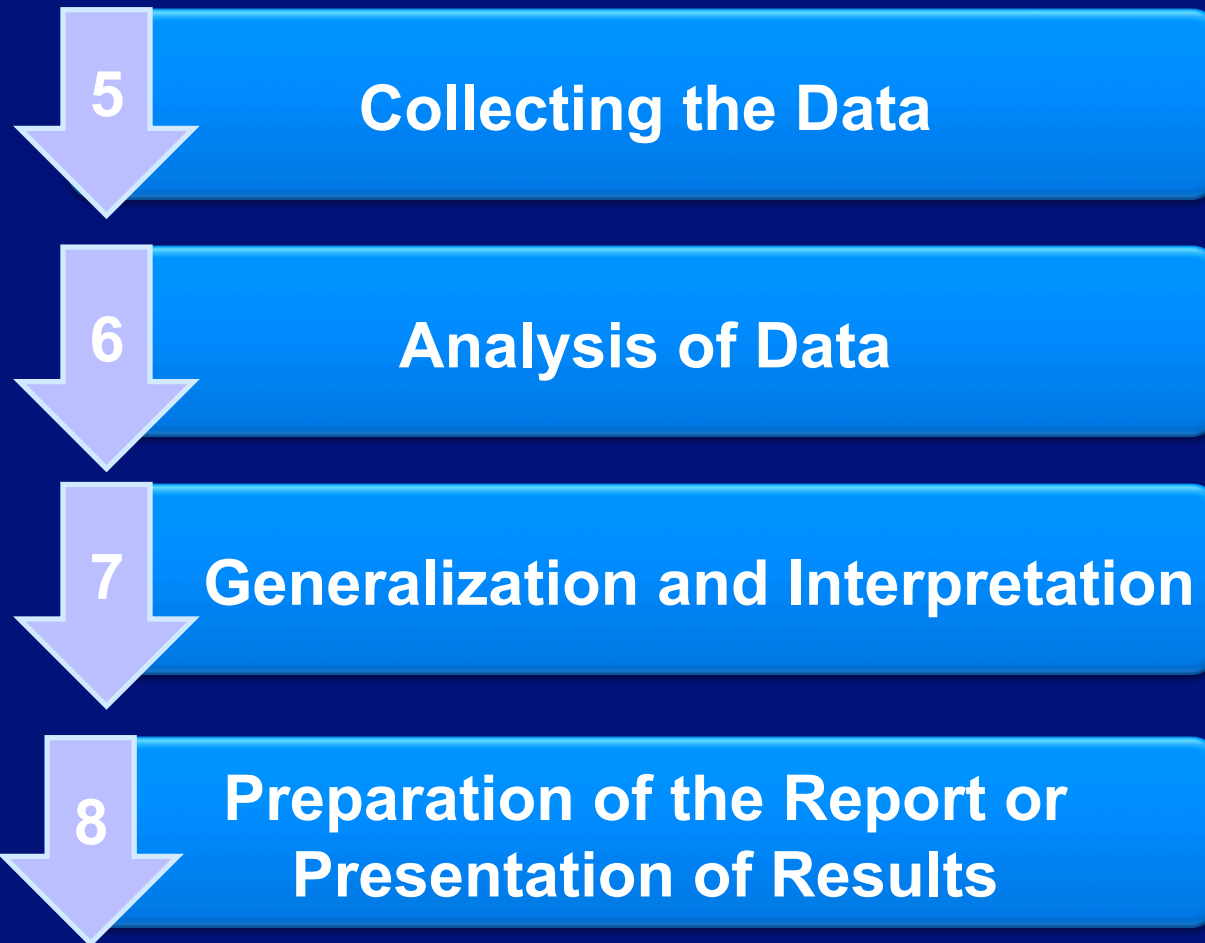


Steps in Research Process





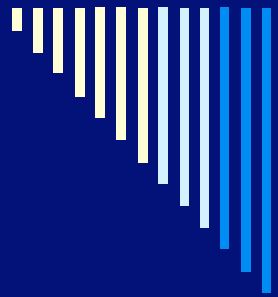
Steps in Research Process





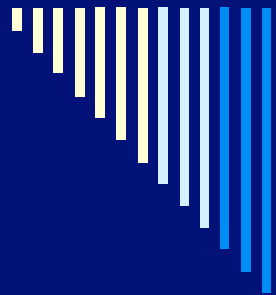
Literature Review

- ❑ The review of literature is an organized critique of the important scholarly literature that support a study
 - ❑ The goal of the literature review is to develop a strong knowledge base to carry out research.
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Objectives of Literature Review

1. Determine what known and unknown about the subject.
 2. Determine gaps, consistencies and inconsistencies.
 3. Uncover research findings.
 4. Discovers conceptual **tradition used to examine the problems.**
 5. Uncover a new practice interventions.
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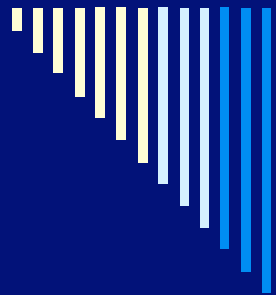
Objectives of Literature Review, cont'd...

6. Promote evidence based revision and development of new practice.
 7. Generate useful research questions and hypothesis.
 8. Determine an appropriate research design.
 9. Determine the need for replication of the study.
 10. Synthesis the strengths and weaknesses and findings of available studies.
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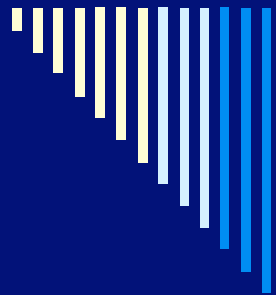
Steps of Literature Review

1. Determine topic or problem.
 2. Identify variables/ terms.
 3. Conduct computer search.
 4. Weed out irrelevant sources.
 5. Organize sources.
 6. Review relevant sources.
 7. Conduct preliminary reading.
 8. Critically read each source.
 9. Synthesis critical summaries of each article.
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Types of Information Sources for Review of Literature

- ❑ Conceptual literature : as documents, chapters in books, books discussing theories, videotapes and web based online articles and federal agencies
 - ❑ Data base literature: published quantitative and qualitative studies, unpublished studies, unpublished research abstracts.
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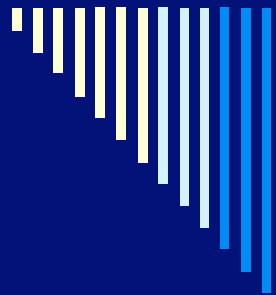
Primary and Secondary Sources

- Primary source: Is the person who conduct the study (the original author).
- Secondary sources: is someone other than the original author (summary or critique of researchers work).



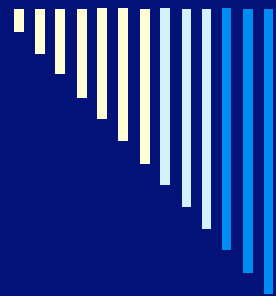
Systematic Review

- “A review that is conducted according to clearly stated, scientific research methods, and is designed to minimize biases and errors inherent to traditional, narrative reviews.”
 - “A systematic review is a more scientific method of summarizing literature because specific protocols are used to determine which studies will be included in the review.”
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Systematic Review

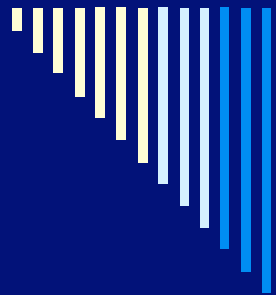
- ❑ Indicate the question the review will address, the method of reviewing the primary sources, the selection process, and the technique.
- ❑ If other researcher use the criteria will draw the same conclusion.
- ❑ Condense large amount of original studies into a meaningful form.



Why are Systematic Reviews Necessary?

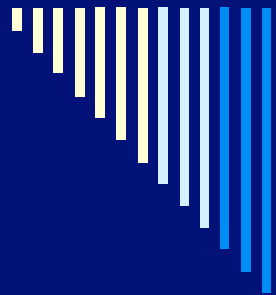
- Every year, researchers and scientists publish more than three million new articles in scientific journals
- It's been estimated that a healthcare professional would need to read around twenty articles every day just to stay on top of their field.





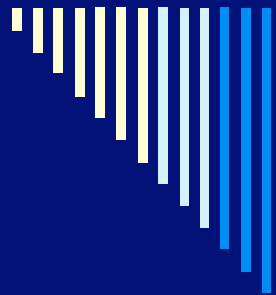
What is the significance of Systematic Reviews?

- ❑ Systematic reviews are a useful tool for those seeking to promote the translation of knowledge into action.
- ❑ Systematic Reviews minimize bias.
- ❑ They can help researchers and policymakers to identify gaps in knowledge, as well as areas where further research is not needed.



Key Characteristics of Systematic Reviews

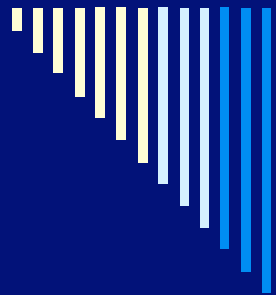
- Clearly stated title and objectives
- Comprehensive strategy to search for relevant studies (unpublished and published)
- Explicit and justified criteria for the inclusion or exclusion of any study
- Clear presentation of characteristics of each study included and an analysis of methodological quality
- Comprehensive list of all studies excluded and justification for exclusion



Characteristics of Systematic Reviews (cont.)

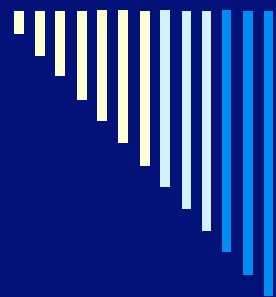
- Clear analysis of the results of the eligible studies
 - statistical synthesis of data (meta-analysis) if appropriate and possible;
 - or qualitative synthesis

 - Structured report of the review clearly stating the aims, describing the methods and materials and reporting the results
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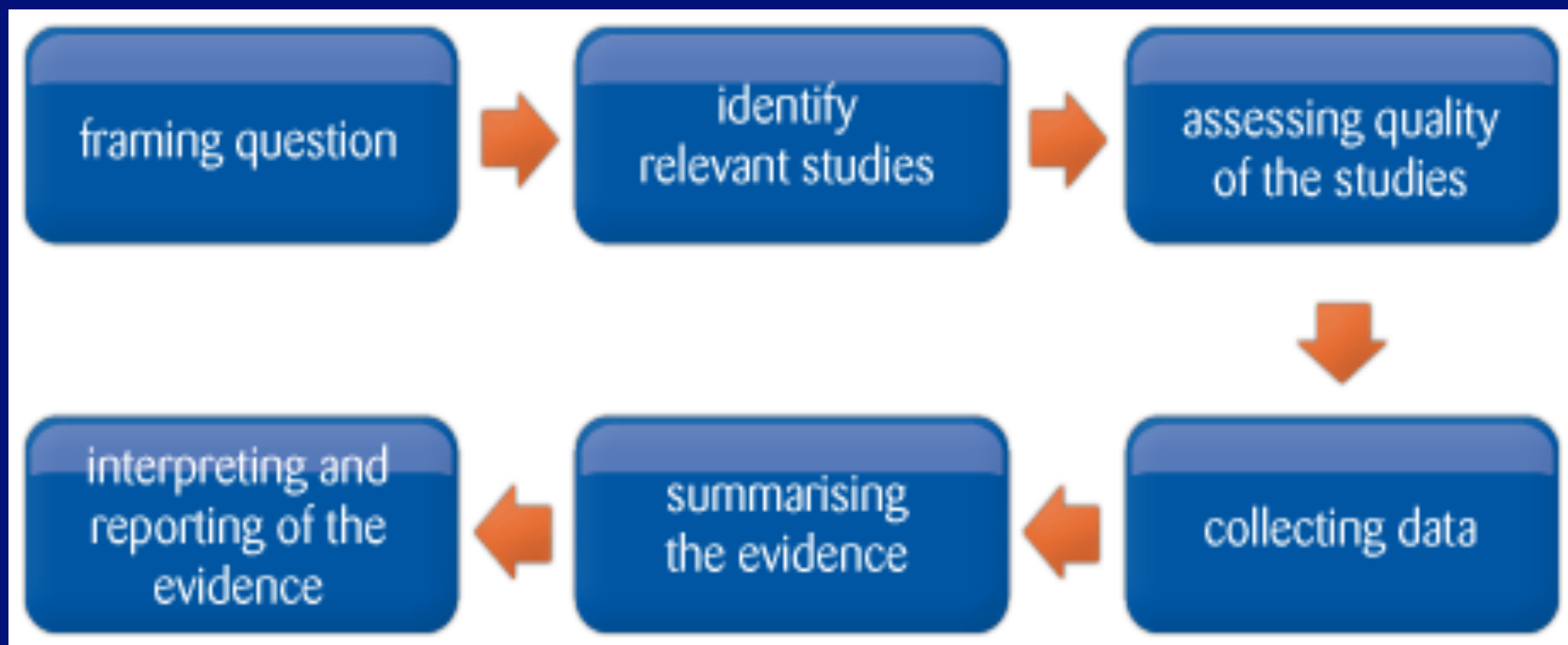


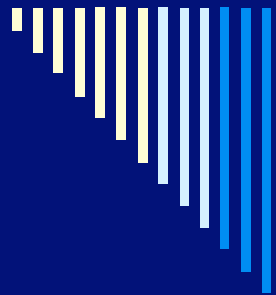
An author of a good Systematic Review...

- ❑ Formulates a Question
- ❑ Conducts a Literature Search
- ❑ Refines the search by applying predetermined inclusion and exclusion criteria
- ❑ Extracts the appropriate data and assess their quality and validity
- ❑ Synthesizes, interprets, and reports data



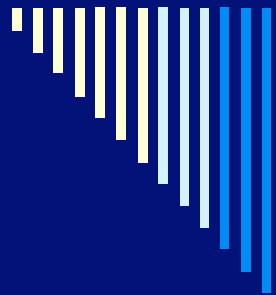
Systematic Review Process includes:





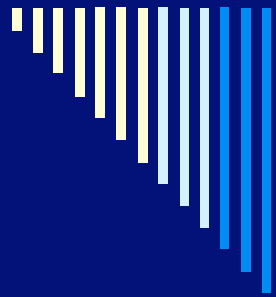
Focus of the Question

- The structured question will determine the inclusion and exclusion criteria:
 - What is the population of interest?
 - What are the interventions?
 - What are the outcomes of interest?
 - What study designs are appropriate?



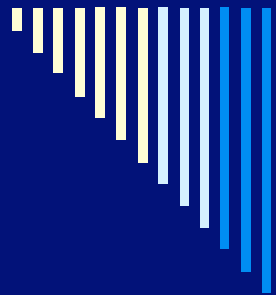
Inclusion/Exclusion Criteria

- “Once the study question is formalized, the authors must compose a comprehensive list of inclusion and exclusion criteria.”
- “To avoid selection bias, inclusion and exclusion criteria should be agreed upon and formalized before data extraction and analysis.”



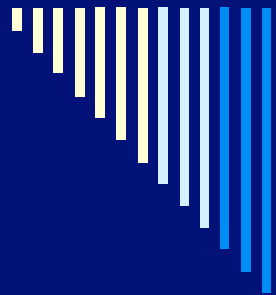
Literature Search

- “A comprehensive and reproducible literature search is the foundation of a systematic review.”



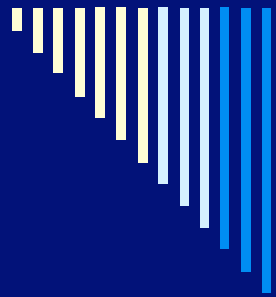
Data Collection

- “The list of data to be extracted should be agreed upon a priori consensus during the design stage of the study.”



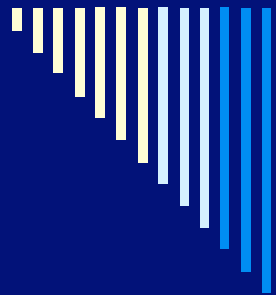
Data Collection (cont.)

- Collected data includes:
 - Study characteristics
 - Sample demographics
 - Outcome data



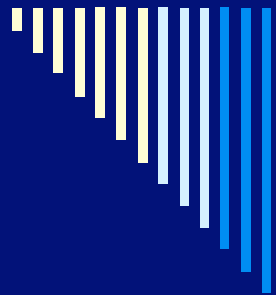
Data Synthesis

- “Once the data have been extracted and their quality and validity assessed, the outcomes of individual studies within a systematic review may be pooled and presented as summary outcome or effect”



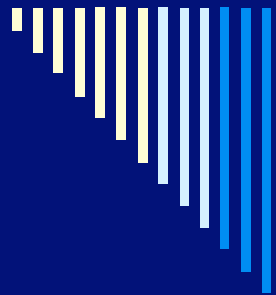
Data Synthesis (cont.)

- The authors summarize heterogeneous data qualitatively
 - “Data that are very conflicting and widely variable should not, under most circumstances, be combined numerically.”



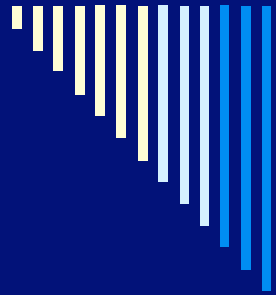
Meta-Analysis

- “Meta-analysis is a statistical technique for combining the results of independent, but similar, studies to obtain an overall estimate of treatment effect.”



Meta-Analysis (cont.)

- “While all meta-analyses are based on systematic review of literature, not all systematic reviews necessarily include meta-analysis.”



Systemic Review

For Example

**Diagram 1:
Flowchart of
the
study
selection
process**

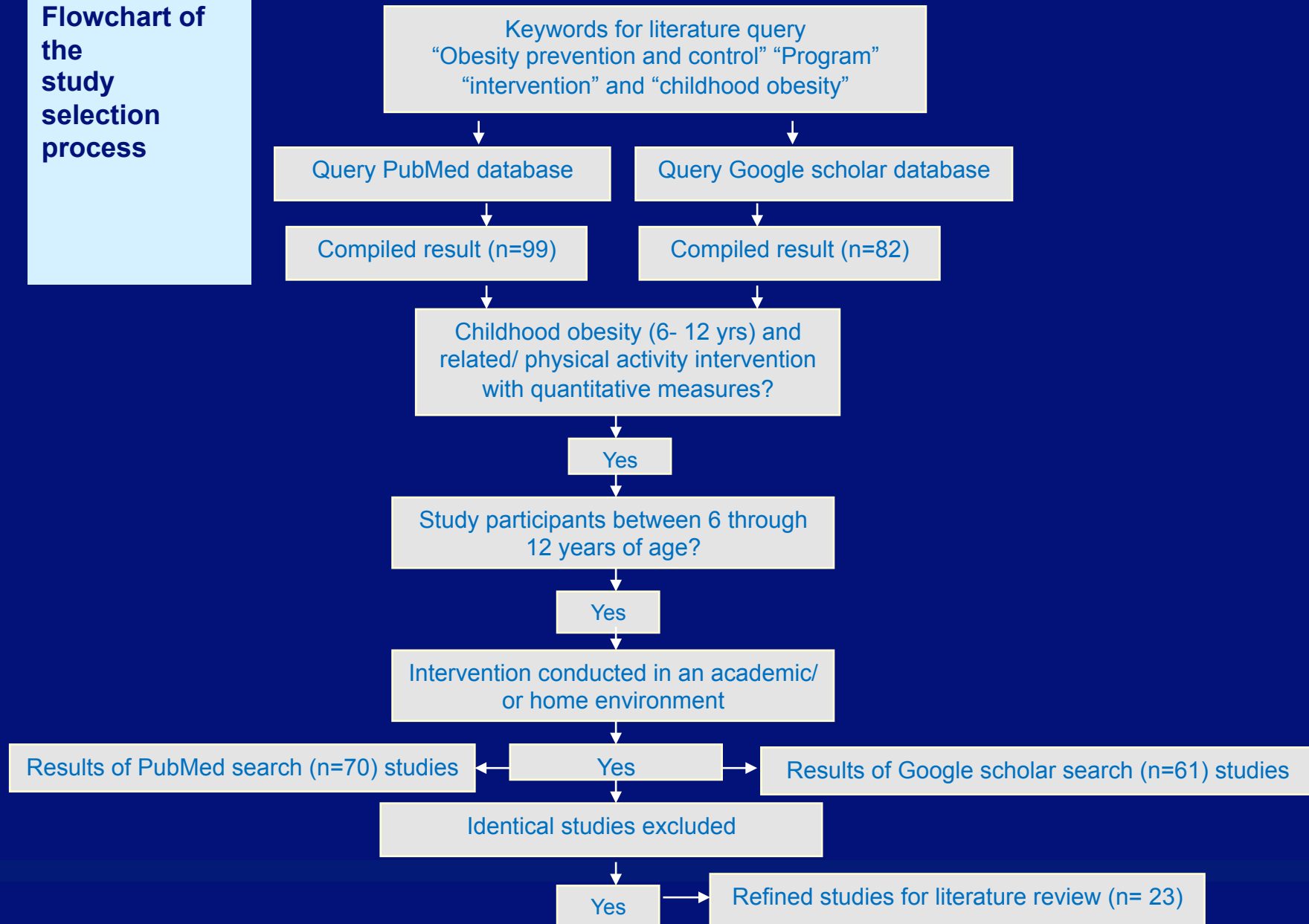
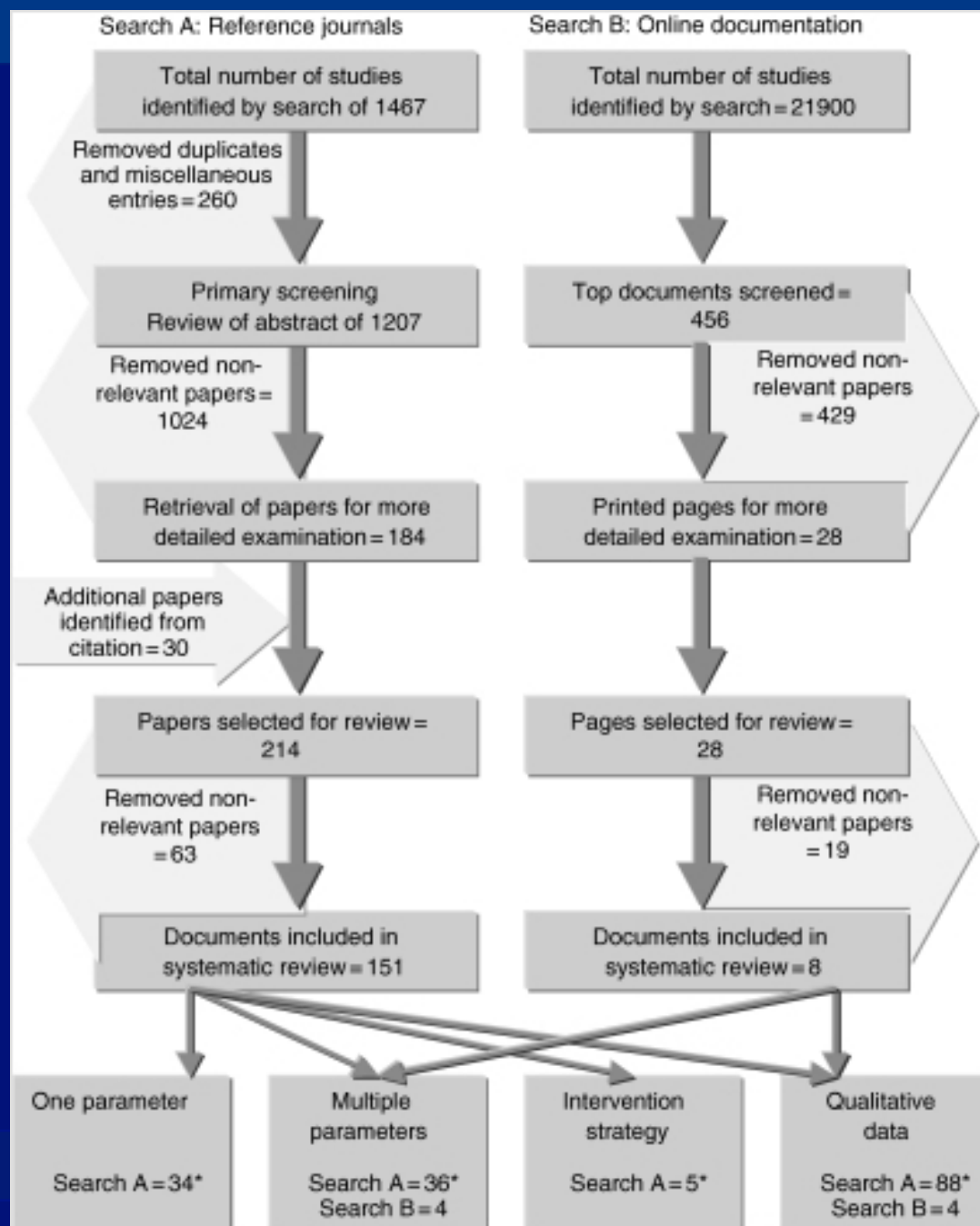
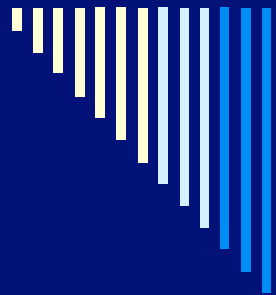


Diagram 2:

**Stages of the
selection
process of
journal papers
and Internet
pages**



*Papers may be placed in more than one category



Frequently asked Questions

1- How far back the research should go?

3-5 years

2- What do I need to know?

Keywords

3- How do I complete the search?

- ✓ Read the abstract carefully
- ✓ Review the references of your article.



Conclusion

- There is need for Systematic review in health care
 - Writing a SR requires the extraction of the detailed data on publication
 - There is some sources of bias, but
 - Such reviews can nonetheless have substantial validity
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Recommended Resources:

- “Reading Medical Articles,” in Statistics in Medicine. Robert H. Riffenburgh. 2nd edition. Boston: Academic Press, 2006.
 - Meta-analysis: New Developments and Applications in Medical and Social Sciences. Ralph Schulze, Heinz Holling, Dankmar Bohning (eds.) Toronto: Hogrefe & Huber Publishers, 2003.
 - [“Finding and Using Health Statistics”](#) - an online course offered by the National Library of Medicine
 - Margalioth, Zvi, Kevin C. Chung. Systematic Reviews: A Primer for Plastic Surgery Research. PRS Journal. 120/7 2007 .
 - Kevin C. Chung, MD, Patricia B. Burns, MPH, H. Myra Kim, ScD. “Clinical Perspective: A Practical Guide to Meta-Analysis.” The Journal of Hand Surgery. vol. 31A no.10 December 2006.
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