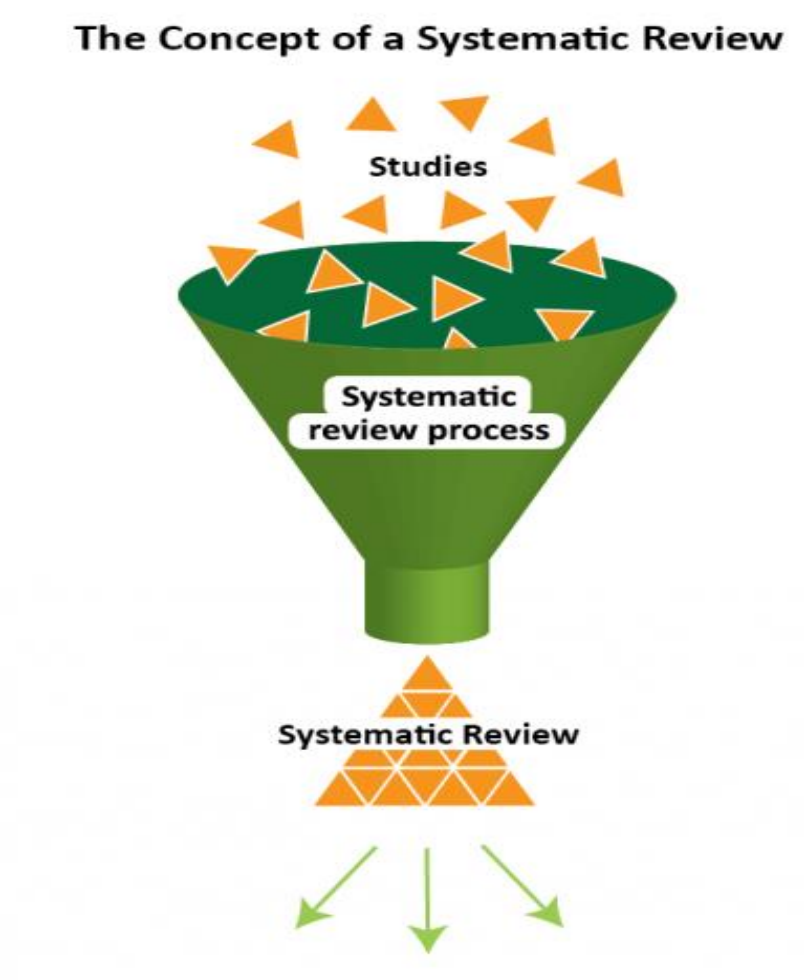
JOHNS HOPKINS

BLOOMBERG SCHOOL

of PUBLIC HEALTH

Introduction to Systematic Review and Meta-Analysis

by (Johns Hopkins University)



By

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MBA HM 24

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COURSE DESCRIPTION

- **Introduction of methods to perform systematic review and meta-analysis of clinical trials.** Systematic reviews are a type of literature review that uses systematic methods to collect secondary data, critically appraise research studies, and synthesize findings qualitatively or quantitatively. Systematic reviews formulate research questions that are broad or narrow in scope, and identify and synthesize studies that directly relate to the systematic review question.

- **-Formulation of an answerable research question**. Choosing a research question is an essential element of both quantitative and qualitative research. Investigation will require data collection and analysis.

- **-Define inclusion and exclusion criteria**. Inclusion criteria are characteristics that the prospective subjects must have if they are to be included in the study, while exclusion criteria are those characteristics that disqualify prospective subjects from inclusion in the study.

- **-Searching for the evidence**. It is important because it aims to provide the most effective care that is available, with the aim of improving patient outcomes. Patients expect to receive the most effective care based on the best available evidence.

- **-Extraction of the data**. Data extraction is the act or process of retrieving data out of (usually unstructured or poorly structured) data sources for further data processing or data storage (data migration).

- **-Assessing the risk of bias in the clinical trials**. An assessment of the validity of studies included in a Cochrane review should emphasize the risk of bias in their results. It is very important for performing a meta-analysis.

- **-Performing a meta-analysis**. Meta-analysis can be performed when there are multiple scientific studies addressing the same question, with each individual study reporting measurements that are expected to have some degree of error.

LEARNING OBJECTIVES

- STEP 1: FRAMING THE QUESTION ...
- STEP 2: IDENTIFYING RELEVANT PUBLICATIONS...
- STEP 3: ASSESSING STUDY QUALITY...
- STEP 4: SUMMARIZING THE EVIDENCE...
- STEP 5: INTERPRETING THE FINDINGS...
- RESOLUTION...
- CONCLUSION

Develop an answerable question using the "Participants Interventions Comparisons Outcomes" (PICO) framework
P (Problem or Patient or Population)
I (intervention/indicator)
C (comparison)
O (outcome of interest)
- Description of the process used to collect and extract data from reports of clinical trials
- Describe methods to critically assess the risk of bias of clinical trials
- Describe and interpret the results of meta-analyses.

- week1-**Introduction**
- Video: Lecture 1A: Introduction to Systematic Reviews
- Video: Lecture 1B: Introduction to Meta-Analysis
- week 2- **module 2: Framing the Question**
- Video: Lecture 2A: Resources for How to Frame Your Question
- Video: Lecture 2B: Deciding the Type and Scope of our Question
- Video: Lecture 2C: Elements of the Question
- week 3 -**Module 3: Finding the Evidence - Searching Principles: Claire Twose, MLIS, Guest Lecturer**
- Video: Lecture Searching Principles and Assessing Bias
- Video: Lecture 3A: Finding the Evidence: Searching Principles and building a search study

- Module 4: Assessing the Risk of Bias in Clinical Trials
- Video: Lecture 4A: Why Bias in the Individual Study is Important
- Video: Lecture 4B: Selection Bias
- Video: Lecture 4C: Information Bias
- Video: Lecture 4D: Bias in the Analysis
- **Module 5: Minimizing Meta bias**
- Video: Lecture 5A: Standards for Systematic Reviews
- Video: Lecture 5B: Selection Bias
- Video: Lecture 5C: Information Bias

Module 6: Qualitative Synthesis and Interpreting Results

Video: Lecture 6A: Qualitative Synthesis and Interpreting Results Section A

Video: Lecture 6B: What is Qualitative Synthesis

Module 8: Statistical Methods for Meta-Analysis

Video: Lecture 8A: Fixed Effect Model

Video: Lecture 8B: Random Effects Model

Video: Lecture 8C: Random Effects Model

Module 7: Planning the Meta-Analysis

KEY LEARNINGS FROM THE COURSE

- **Introduction to the high-level concepts of systematic review and meta-analysis (the procedure and uses)**
- **2-Framing the question (scope, elements and how to refine the question)**
- **3-Searching principles and bias assessment**
- **4-Minimising meta-bias, qualitative synthesis and interpretation of the results**
- **5-Planning the meta-analysis and statistical methods**

- meta-analysis is the statistical method of analyzing a large collection of results from individual studies. Information about healthcare is everywhere. To know if one healthcare intervention works better than another or if it will do more harm than good. Therefore, in order to figure that out we need systematic review. Not all review articles are systematic reviews. Only a subset of them uses these three planned scientific methods to summarize information. And the reviews that are not systematic reviews are the traditional narrative reviews. Only a subset of systematic reviews will include meta-analysis, which is statistical methods that people can use to quantify and combine the results from several independent studies. Systematic review is just a way how we summarize evidence. And it is a transparent, reproducible way of summarizing evidence. And the methods could be applied to any field. we probably have heard of evidence-based healthcare, evidence-based medicine, public health policy. It's not simply oriented to clinical trials or clinical practices, but that said, most methods we're going to learn come from clinical trials.


THANK YOU