

Step Down Training on short course by CERHI, Benin

Thursday 10th August, 2017

Outline of Presentation

- Systematic Review and Meta-analysis –
- Template for writing Master and PHD Thesis
- Journal writing and Publication
- Use of social Media in communication of research findings
- Demonstrate use of Equist software for research planning and development aspirations

Systematic review and meta-analysis

Outline of Presentation

- What is systematic review ?
- When to conduct systematic review?
- Rationale and Benefits of systematic review?
- Steps to conduct systematic review

What is Systematic reviews?

- A **systematic review** is a review addressing a **focused question** using explicit methods to identify, select, **critically appraise**, analyze and summarize results of the best available studies; (it may or may not include a statistical technique called **meta-analysis**)
- Types
 - Interventions (randomised controlled trials),
 - observations (case control or cohort studies)
 - other study designs.

The type of study to be included depends on your research question.

Protocol

- Review authors follow a step by step plan called a protocol.
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- Typically, a protocol describes:
 - the way existing studies are found;
 - how the relevant studies are judged in terms of their usefulness in answering the review question;
 - how the results of the separate studies are brought together to give an overall measure of the expected outcome - statistical techniques used to combine the results are called meta-analysis



When to conduct a systematic review

Sometimes it is required

- As part of student dissertation/PG thesis
- To secure grant funding for research or as part of a formative research after a securing a grant;
- There is uncertainty about the results
- To propose future research agenda;
- To establish clinical or cost-effectiveness
- To establish feasibility of an intervention
- Identification of gaps – research gaps

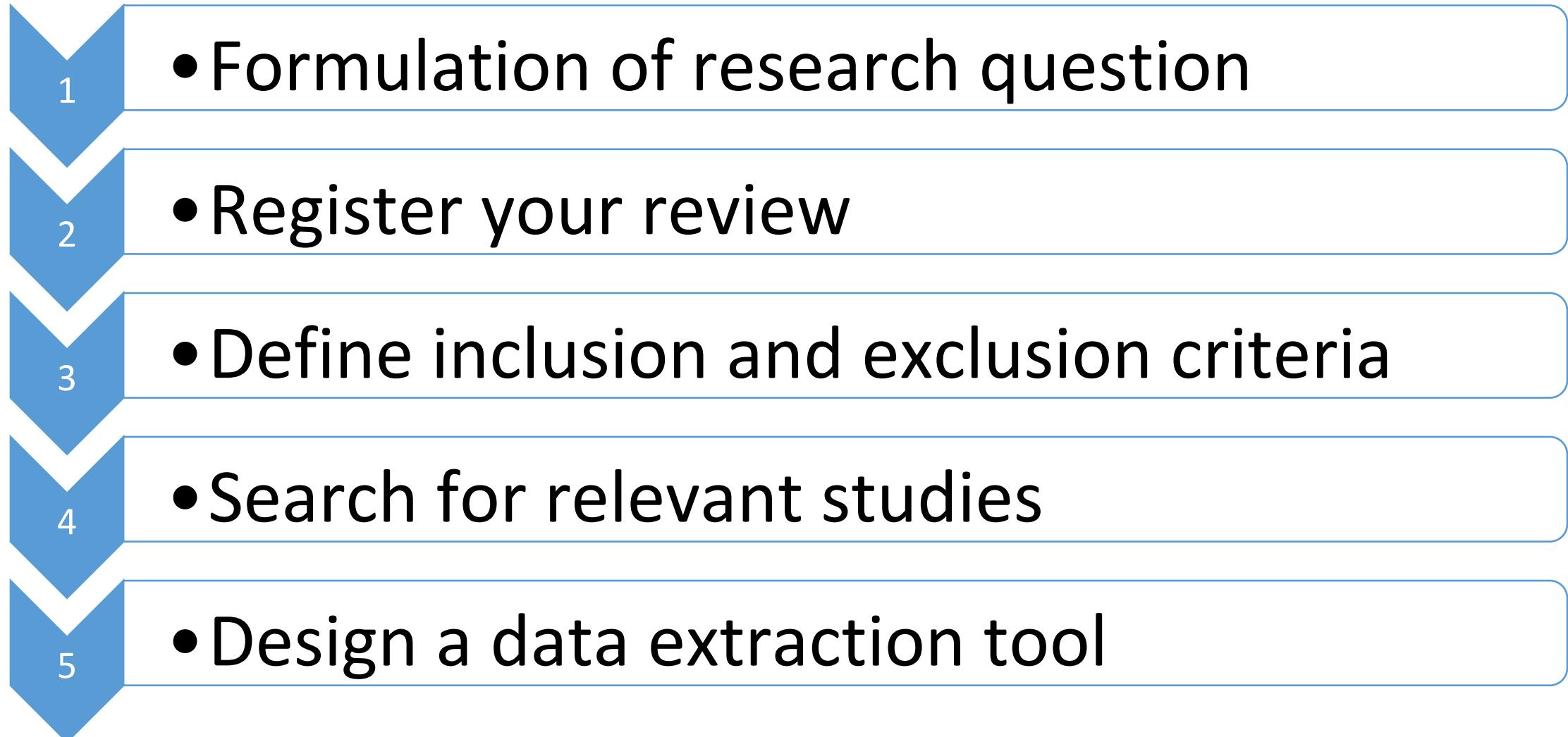
Rationale & Benefits

- Systematic review is an invaluable scientific activity.

Large volume of research (published and unpublished, print and electronic media, different languages, different countries)

- Difficulty in knowing what work has been done in an area due to the massive expansion of research output
- Sometimes, the findings can appear contradictory
- Researchers, health care providers, and policy makers need systematic reviews to efficiently integrate the numerous information in order to obtain **research evidence** for decision making.

Steps to conducting systematic review

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- 1 • Formulation of research question
 - 2 • Register your review
 - 3 • Define inclusion and exclusion criteria
 - 4 • Search for relevant studies
 - 5 • Design a data extraction tool

Steps to conducting systematic review

- 6 • Quality assessment/validity
- 7 • Biases assessment
- 8 • Data Synthesis
- 9 • Presentation of results
- 10 • Achieving and Updating

1. Formulation of Research Questions

Examples:

1. Does Integrated Management of Childhood Illness (IMCI) Training Improve the Skills of Health Workers?

2. Does Intermittent Preventive therapy among HIV positive adults prevents HIV disease progression and mortality?

- It should be clear, specific and answerable.
- Do not be over (or under) ambitious
- Check existing reviews in the area of interest
 - for size and scope,
 - identify gaps,
 - confirm that your review is not duplicating a previous review.

2. Register your review

- There are international databases where you can register your review. Examples:
- PROSPERO (health and social care) or others such as Cochrane (for interventions), Campbell Collaboration (social interventions in education, crime and justice, social welfare)
- PROSPERO <http://www.crd.york.ac.uk/PROSPERO/>
- Advantage
- Others will know that your review is ongoing
- Some journals now look for registration to ensure high quality reviews.

3. Define inclusion and exclusion criteria

- Clearly state the criteria you will use to determine whether or not a study will be included in your review.
- Examples of what to Consider:
 - Studies – date, place and language
 - Study populations
 - Study design
 - Intervention types
 - Outcomes etc.
- Be flexible – inclusion and exclusion criteria may change after you have seen some papers

4. Search for relevant studies

- Determine the key words for your search – this can be on-going but have a pre-determined list
- Identify databases that are relevant to your topic – search only in these databases
- Examples of Databases - Pubmed, Embase, AMED, Cinahl, Cochrane, Cochrane trials database, Web of Knowledge, Web of Science, PsycBITE, Clinicaltrials.gov, African Journal Online, Google Scholar etc.
- Other sources:
 - Reference lists
 - Locate non-published studies by contacting experts in the field or hand-searching conference proceedings. Seek advice from a librarian
- Collect all the retrieved records from each search into a reference manager, such as Endnote, Mendeley, and duplicate the library before screening

5. Design a Data Extraction Tool/Form

Title of study, Publishing Journal and Date. Country/State	Authors Names, Declared Interest/Funding	Aims & Objectives	Sample Population, Size, Methodology & Research design.	Data Source/ Collectio n Method	Exposure & Outcome Measured	Major Findings and Limitations	Ethical consideration and validity of the study.

6. Quality assessment/validity

An assessment of the validity of the studies included.

- There is no consensus on the best way to assess study quality, but most methods encompass issues such as:
- Appropriateness of study design to the research objective
- Risk of bias
- Other issues related to study quality:
 - Choice of outcome measure
 - Statistical issues
 - Quality of reporting
 - Quality of the intervention
 - Generalizability

7. Bias assessment

- For risk of bias you can use a Risk of Bias tool (such as the [Cochrane RoB Tool](#)) to assess the potential biases of studies in regards to study design and other factors.
- Depending on the type of studies included, you can also use the GRADE system
- A score of 0 to 1 is given for each study characteristic such as description of study population, explanation of sampling strategy, consideration of missing cases, pretesting or piloting of study instruments, description of intervention, outcome etc.
- Two or more reviewers should conduct the quality assessment independently, their assessments will be compared and disagreements resolved by discussion.
- E.g. Study design: (1 = Case studies; 2 = Observational studies without control group; 3 = Controlled observation studies (no manipulation of variable); 4 = Quasi-experimental studies (without randomisation); 5 = RCTs)

8: Data synthesis

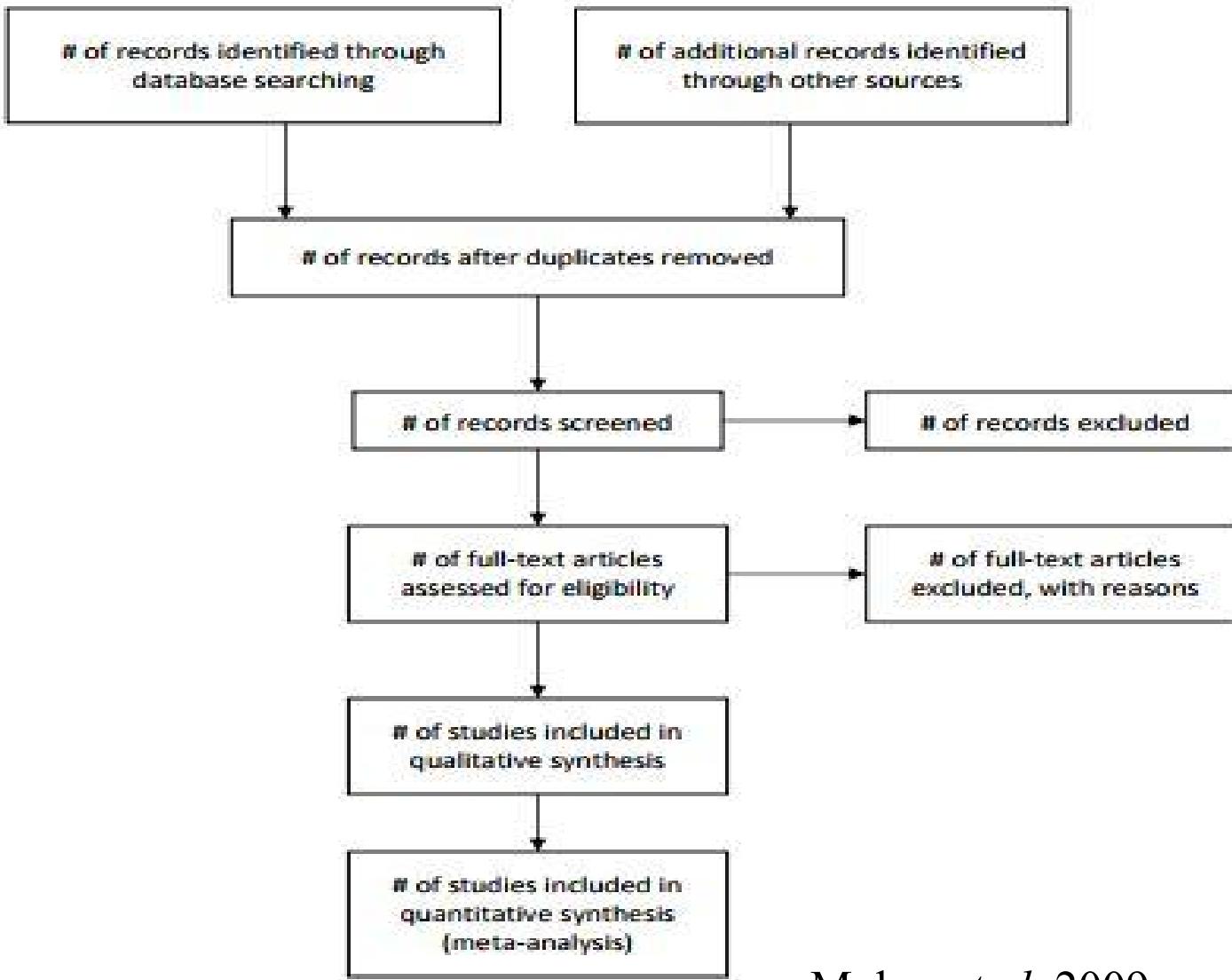
- You can present the data from the studies narratively – thematically and/or statistically (a meta-analysis).
- If studies are very heterogeneous it may be most appropriate to summarize the data narratively and not attempt a statistical (meta-analysis) summary.
- A statistical synthesis should include numerical and graphical presentations of the data, and also look at the strength and consistency of the evidence, and investigate reasons for any inconsistencies.
- The choice of synthesis method will ultimately depend on the question(s) addressed and the type of data included.

Step 9: Presentation of results

- Present your review clearly, and in accordance with current best practice.
- For a good guidance on reporting of systematic reviews including a flow chart of the studies included you may use the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) statement.
 - The PRISMA Statement consists of a 27-item checklist and a four-phase flow diagram. The checklist includes items deemed essential for transparent reporting of a systematic review. E.g. Title, Abstract, Introduction – rationale, objectives, Methods – protocol and registration, eligibility criteria, information sources etc.
 - Provide recommendations for practice and policy, future directions for research to fill identified gaps.
- (Ref: Liberati et al (2009) The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration Journal of Clinical Epidemiology 62 e1e-e34)

PRISMA Flow Chart

Identification
Screening
Eligibility
Included



□ Reasons why you should track and document your search results

Moher *et al*, 2009



Step 10: Archiving and Updating

- Ensure your review is published, and registered on the relevant database.
- Your review may need to be updated as more research findings are published.
- It is essential that you keep clear (paper and electronic) records of your search, decisions and data extraction so this can be repeated.

Use of computer soft-wares for systematic review- 2

Register for another workshop in Nnewi

Thank you