WRITING REVIEW ARTICLES

Dr L. Ghalichi
Epidemiologist

type of study

Primary – these report research first hand.

Secondary – summarise and draw conclusions from primary studies.

Secondary studies

- ***Overview or review***
  - Non systematic reviews (summary)
  - Systematic reviews (rigorous and pre-defined methodology)
  - Meta-analysis (integration of numerical data from more than one study)
- ***Guidelines*** (leads to advice on behaviour)
- ***Decision analysis*** (to help make choices for doctor or patient)
- ***Economic analysis*** (i.e. is this a good use of resources?)

A Review Article

- A critical, constructive analysis of the literature in a specific field through summary, classification, analysis, comparison.
  - On previously published literature or data
  - Results in a stand-alone publication

The process includes ….

- organizing
- evaluating
- identifying patterns and trends
- Synthesizing
- identifying research gaps
- recommending new research areas

For whom?

- Experts
- Policy makers
- Clinicians
- Researchers
- Students

- Anyone who needs to use evidence

Review methodology

- Narrative review
- Systematic Review

Narrative review

- Usually written by experts in the field.
- Often cover a wide range of issues within a given topic.
  - Can be useful for understanding new concepts.
- Informal and subjective methods of selecting and interpreting studies:
  - personal experience
  - Theories
  - Models
- Qualitative summary presented
- Between 8,000 and 40,000 words

Narrative review flaws

- Little known about selection and analysis process
- highly susceptible to reviewers' bias
  - Quality and priority based on reviewers choice
- careful interpretation needed.

Systematic review

- A scientific investigation that focuses on a specific question and uses explicit, pre-specified scientific methods to identify, select, assess, and summarize the findings of similar but separate studies
- It may include a quantitative synthesis (meta-analysis), depending on the available data.

Systematic review

- Systematic Method of study finding
- Strict systematic procedure of search and analysis
- systematic procedure of appraise
- systematic procedure of synthesize research evidence
- adhering to guidelines
- Usually less than 10000 words

Systematic vs. Narrative

- Scientific approach to a review article
- Criteria determined at outset
- Comprehensive search for relevant articles
- Explicit methods of appraisal and synthesis
- Meta-analysis may be used to combine data

- Depend on authors' inclination (bias)
- Author gets to pick any criteria
- Search any databases
- Methods not usually specified
- Vote count or narrative summary
- Can't replicate review

Advantages of Systematic Reviews

- Minimize the impact of bias/errors
- Resolve controversy between conflicting studies
- Provide reliable basis for decision making
- Can help to end confusion
- Identify gaps in current research
- Facilitate rational decision making


Systematic Reviews
Randomized Controlled Trials
Cohort Studies
Case-Control Studies
Case Series, Case Reports
Editorials, Expert Opinion

Increased Interest in Systematic Reviews

- Government interest in health costs
- Variations in practice
- Public want information
- Facilitated by computer developments

Review objective

- Status quo review
- History review
- Issue review
- Theory/model review

Status quo review

The new achievements in a field or topic

- A review of biomass potential and current utilization- Status quo for 93 biogenic wastes and residues in Germany
- The Status Quo and the Prospect of Green IT and Green IS: A Systematic Literature Review
- Status Quo of City Logistics in Scientific Literature: Systematic Review

History review

The developments and changes in a field or a topic through time

- History review of nuclear reactor safety

Issue review

Investigating a question or a point of disagreement in a specific field.

- Booster dose vaccination for preventing hepatitis B

Theory/model review

Introduction of a new theory or model in a field

- Cigarette smoking and depression comorbidity: systematic review and proposed theoretical model

All types of review

- Critical review
- Literature review
- Mapping review/systematic map
- Meta-analysis
- Mixed studies review/mixed methods review
- Overview
- Qualitative systematic review/qualitative evidence synthesis
- Rapid review
- Scoping review
- State-of-the-art
- Review
- Systematic review
- Systematic search
- and review
- Systematized review
- Umbrella review

Difference between reviews

- **Search strategy**: may be systematic, comprehensive, goal based (time, significance, controversial, …)
- **Appraisal**: may have quality assessment with or without instruments
- **Synthesis**: narrative, conceptual, chronological, graphical, tabular, …
- **Analysis**: for identifying concepts, theory, model, theme, heterogeneity, gap, direction of effect, recommendation, uncertainty, limitation,

Mandate of a review

- **Invited reviews:** experienced researchers are invited
- **Commissioned reviews:** formal contracts of authors with clients
- **Unsolicited submissions:** researchers develop an idea for a review and submit it to journal editors

Other types

- Systematic review of case reports
- Systematic review of case series
- Systematic review of animal studies
- Systematic review of in vitro studies
- Systematic review of dose-response studies
- Systematic review of systematic reviews

Types of Systematic Review Studies

- Systematic review of prevalence/cross-sectional studies
- Systematic review of observational studies
- Systematic review of randomized controlled trials
- Systematic review of diagnostic accuracy test studies

Five Types of Cochrane Review

- Intervention reviews assess the benefits and harms of interventions used in healthcare and health policy.
- Diagnostic accuracy test reviews assess how well a diagnostic test performs in diagnosing and detecting a particular disease.
- Methodology reviews address issues relevant to how systematic reviews and clinical trials are conducted and reported.
- Qualitative reviews synthesize qualitative evidence to address questions on aspects other than effectiveness.
- Prognosis reviews address the probable course or future outcome(s) of people with a health problem.

Review types

Systematic Review question

Standard formats

Systematic Review process

- ✓ Define review question – very precisely; in partnership with commissioners, clinicians, patients (as appropriate)

- ✓ Develop protocol – provides transparency; defines exact inclusion criteria and methods

Characteristics of question

- Systematic reviews can address a diverse range of questions.
- Review questions do not need to follow the formula.
- However, your review questions should be:
  - Clear
  - Focused
  - Well formulated
  - Answerable

Formulate the Question

- Questions may be broad or narrow
- Well-formulated questions will guide many aspects of the review process
  - Searching strategy
  - Inclusion/exclusion criteria
  - Data extraction
  - Choice of synthesis method
  - Presentation/dissemination of findings

Cochrane & PRISMA Statement

- A clear and concise statement of a review's objectives (or questions) is critical
- It should begin with a precise statement of the primary objective, including the interventions reviewed and the targeted problem;
- Ideally, this would be presented in a single sentence.

Types Formulating Review Question

Determining the scope is a decision dependent upon multiple factors:

- Perspectives regarding a question's relevance and potential impact
- Supporting theoretical, biologic and epidemiological information
- The potential generalizability and validity of answers to the questions
- Available resources
- The wider literature base – has a recent high-quality SR been conducted?

Formulating review question

- Often dealing with complex interventions
- Might be a need to develop working definitions of the intervention of interest

✓ Use content experts outside the review team to ensure that the resulting definitions are likely to be robust and meaningful

- Need to carefully consider appropriate study design which will answer your particular question

Formulating review question

	Advantages	Disadvantages
Broad question	Comprehensive summary of all evidence	May 'lump' interventions that are heterogeneous – apples/ pears
	Findings are likely to be generalisable	May be a lot of studies to manage (difficult for narrative synthesis)
Narrow question	More discrete and manageable inclusion criteria	May be too few studies to provide meaningful result (although this can be useful evidence of 'gap')
	Less heterogeneity	May not be generalizable at all

review question

- Time-consuming question:
  - What is the best strategy to prevent smoking in young people?
- An answerable question:
  - Are school-based interventions effective in preventing smoking in young people?

Formulating review question tools

- PICO
- CIMO
- SPICE
- SPIDER

PICO

- PICO is for effectiveness questions which usually use controlled trials

1. The **population or participants**	Who are the relevant patients?
2. The **intervention or indicator**	What is the management strategy, diagnostic test or exposure that you are interested in (such as a drug, food, surgical procedure, diagnostic test or exposure to a chemical)?
3.The **comparator or control**	What is the control or alternative management strategy, test or exposure that you will be comparing the one you are interested in with?
4. The **outcome**	What are the patient-relevant consequences of the exposure in which we are interested?

PICO

- A description of the **P**opulations
- An identified **I**ntervention
- An explicit **C**omparison
- Relevant **O**utcomes

PICO example

- **P**opulations: health care workers with prior complete 3 dose vaccination
- **I**ntervention: booster dose vaccination for HBV
- **C**omparison: No booster vaccination
- **O**utcomes: Ab level

More complete

- PICOT → population, intervention, comparator, outcome, time frame
- PICOS → population, intervention, comparator, outcome, and study design or setting
- PICOTS → population, intervention, comparator, outcome, time frame, and study design or setting

CIMO

- complex questions and multidisciplinary topics outside medicine
  - management and organization studies

- C – Context - Which individuals, relationships, institutional settings or wider systems are being studied?
- I – Intervention - The effects of what event, action or activity are being studied?
- M - Mechanisms – What are the mechanisms that explain the relationship between interventions and outcomes? Under what circumstances are these mechanisms activated or not activated?
- O – Outcomes - What are the effects of the intervention? How will the outcomes be measured? What are the intended and unintended effects?

Example: CIMO

- A Systematic Review of Performance Enhancement of Humanitarian Logistics through Transparency: Current Status and Perspectives

- It is proposed that HL performance can be enhanced through transparency

- Context: Humanitarian Logistics
- Intervention: the role of transparency in HL
- Mechanism: evidence brought about by transparency in the context of managing HL.
- Outcomes: performance

CIMO example

- Denyer and Tranfield (2009, p. 682) provide an example of a question framed with these components:

- “Under what conditions (C) does leadership style (I) influence the performance of project teams (O) and what mechanisms operate in the influence of leadership style (I) on project team performance (O)?”.

SPICE

- SPICE is designed for questions around public health interventions

1. Setting	what is the context of the question?
2. Perspective	who are the users/potential users of the outcomes?
3. Intervention/ Interest	what is being done to them?
4. Comparison	what are the alternatives?
5. Evaluation	how will you measure if the intervention is successful?

SPICE example

Older adult's experience of chronic low back pain and its implications on their daily life: a systematic review of qualitative research

1. Setting	Rural area
2. Perspective	Older people 65+
3. Intervention/interest	Chronic low back pain
4. Comparison	Not applicable
5. Evaluation	Daily living

Booth 2004