Getting started with systematic reviews

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Overview

• Why do a Systematic Review?
• What is a Systematic Review?
• Planning a Systematic Review
What is your experience level with systematic reviews?

A. Everyone is asking for them, so I’d better get up to speed
B. Interested in them, but never done one formally
C. Done a few
D. Participated in many
Why do a Systematic Review?
The problem...
Red wine is bad for you, say experts

Government experts dismiss supposed health benefits of wine and are set to rewrite the rule book on alcohol consumption

Experts have now u-turned on the health benefits of red wine. Photo: CNN Images

By Nicola Harley
7:48AM GMT 07 Jan 2016

Red wine is bad for your health, experts reveal in a new report.
Dealcoholized red wine decreases systolic and diastolic blood pressure and increases plasma nitric oxide: short communication.
Related citations

Red wine polyphenols do not lower peripheral or central blood pressure in high normal blood pressure and hypertension.
PMID: 22421906 [PubMed - indexed for MEDLINE]
Related citations

Red wine and beer elevate blood pressure in normotensive men.
Zilkens RR, Burke V, Hodgson JM, Barden A, Beilin LJ, Puddey IB.
Related citations
Why do a Systematic Review?

To Summarize the Evidence and Answer a Question!

https://www.flickr.com/photos/patrickwilken/6093755090
Why do a Systematic Review?

To Summarize the Evidence and Answer a Question!

Policy-making

Grants, Research projects, Student projects, More!

Further Research

Decision-making

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What is a Systematic Review?

Cochrane Collaboration

A systematic review attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question.

Researchers conducting systematic reviews use explicit methods aimed at minimizing bias, in order to produce more reliable findings that can be used to inform decision making. (Antman 1992, Oxman 1993).

www.thecochranelibrary.com/view/0/AboutCochraneSystematicReviews.html
What is a Systematic Review?

Synthesis


Studies


What is a Systematic Review?

Campbell Collaboration
A systematic review uses transparent procedures to find, evaluate and synthesize the results of relevant research. Procedures are explicitly defined in advance, in order to ensure that the exercise is transparent and can be replicated.

Studies included in a review are screened for quality, so that the findings of a large number of studies can be combined. Peer review is a key part of the process; qualified independent researchers control the author’s methods and results.

www.campbellcollaboration.org/research-resources/writing-a-campbell-systematic-review/systemic-review.html
What is a Systematic Review?

- Qualitative Systematic Review
- Quantitative Systematic Review (aka Meta-analysis)
- Narrative Review
- Scoping Review
- Realist Review
- Meta-synthesis
- Meta-ethnography
- Etc, etc, etc....
What is a Systematic Review?

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Standards and Methods

• PRISMA  http://www.prisma-statement.org/

• National Academies (IoM)  

• Cochrane Handbook  http://handbook.cochrane.org/

• Campbell Collaboration  
  http://www.campbellcollaboration.org/research-resources/writing-a-campbell-systematic-review.html

• Joanna Briggs  http://joannabriggs.org/sumari.html

• BEME  http://www.bemecollaboration.org/
The Systematic Review
Key points

- Literature Search
  - Multiple databases and information sources, including hand-searching
  - Appropriate search terms (controlled and keyword)
  - Identifies any limits applied or search filters used

- Study Selection
  - At least 2 people screening results, blinded
  - Clearly defined inclusion and exclusion criteria

- Study Appraisal
  - At least 2 people appraising articles
  - Assess the risk of bias, using predefined criteria

- Data Extraction & Analysis
  - At least 2 people independently extracting data
  - Use standard extraction form
  - Conduct qualitative synthesis (and quantitative if appropriate)

- Presenting Results
  - Reports all steps in the process according to PRISMA or IoM (or others) standards
  - Utilizes appropriate images (graphs, tables, etc.) to describe process and results
  - Includes supplemental materials with additional details for replicability
1. Transparent

2. Replicable
Planning your Systematic Review

what people think it looks like

what it really looks like

Martin D. *This Is a Book*. New York: Grand Central Publishing; 2012..
The Systematic Review Protocol

A protocol is a plan or set of steps to be followed in a study. A protocol for a systematic review should describe the rationale for the review; the objectives; and the methods that will be used to locate, select and critically appraise studies, and to collect and analyse data from the included studies.

JUST TAKE DEEP BREATHS

IT'S ALL RIGHT

http://calmingmanatee.com/2
• Who is involved
• Why a Systematic Review
• Question(s)
• Search parameters
• Appraisal
• Analysis
• Writing
• Timeline
Educate team members on proper systematic review methodology

The Big Question...

DO YOU REALLY WANT TO DO

A SYSTEMATIC REVIEW?
Educate team members on proper systematic review methodology

DO YOU REALLY WANT TO DO A SYSTEMATIC REVIEW?

- Standards: PRISMA, Cochrane, National Academies (IoM), Campbell, Joanna Briggs, etc.


Educate team members on proper systematic review methodology

Suitability of the question

Does the review explicitly address a sensible question?

- Is the underlying biology or sociology such that, across the range of interventions and outcomes included, the effect should be similar?
  - Interventions standardized and similar
  - Populations similar
  - Outcomes of interest

- Does the review include explicit and appropriate eligibility criteria?
  - Population
  - Study design
  - Etc.

- What is the impact of this question?
  - Who cares?
  - How will this impact care/practice/decision-making/policy-making/future research?

Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials.

Smith GC, Pell JP

Abstract

OBJECTIVES: To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.

DESIGN: Systematic review of randomised controlled trials.

DATA SOURCES: Medline, Web of Science, Embase, and the Cochrane Library databases; appropriate internet sites and citation lists.

STUDY SELECTION: Studies showing the effects of using a parachute during free fall.

MAIN OUTCOME MEASURE: Death or major trauma, defined as an injury severity score > 15.

RESULTS: We were unable to identify any randomised controlled trials of parachute intervention.

CONCLUSIONS: As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials. Advocates of evidence based medicine have criticised the adoption of interventions evaluated by using only observational data. We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.

Republished in
Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials. [Int J Prosthodont. 2005]

PMID: 14684649   PMCID: PMC300808   DOI: 10.1136/ bmj.327.7429.1459

Free PMC Article

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Resource Availability

https://www.flickr.com/photos/dottiema/5311528896
Inform your search process

Identify questions

- PICO (or similar) format if possible
  - CLIP, ECLIPSE, MIP, PICO, SPICE, SPIDER
- Often multiple questions
- Keep the search from getting out of hand
- Identify areas you need clarification
  - Ex., What is meant by “bullying”? (physical, mental, accepted definitions, characteristics, etc.)
Inform your search process

Formulating searches
• Appropriate resources
• Search terminology
• Additional search expertise
• Limits, filters, etc.
Getting it done and published

Framework for final publication

Follow accepted standards of journals

Full team member = co-author!

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