13TH ISPRM WORLD CONGRESS – 2019

Cochrane rehabilitation workshop: Apply Cochrane Evidence with Confidence (ACREC)

10th June 2019
CRITICAL APPRAISAL OF SYSTEMATIC REVIEWS

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Trusted evidence.
Informed decisions.
Better health.
Conflict of Interest Disclosure

No, nothing to disclose
Seventy-Five Trials and Eleven Systematic Reviews a Day: How Will We Ever Keep Up?

Hilda Bastian, Paul Glasziou, Iain Chalmers

Published: September 21, 2010 • https://doi.org/10.1371/journal.pmed.1000326

The Landscape
Where Are We Now?
How Close Are We to Archie Cochrane’s Goal?
Outline

• What is critical appraisal?

• Role of critical appraisal in Evidence based medicine?

• Advantages and disadvantages of critical appraisal?

• How to do critical appraisal?

• Hands on exercises

• Summary and take-home message
What is critical appraisal?

Critical appraisal is the process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision.

Hill and Spittlehouse, 2001
What is critical appraisal?

A systematic process used to identify the strengths and weaknesses of an article in order to assess the usefulness and validity of research findings.
Critical appraisal is **NOT**

Negative dismissal of any piece of research

Assessment based on results alone

Based entirely on statistical analysis

Performed by experts only

Adapted from presentation by Chris Redman And Alex Sanchez-vivar for Health Protection Network
The need for critical appraisal of a SR?

Increasing number of systematic reviews and expanding literature
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149,707
The need for critical appraisal of an article?

Increasing number of systematic reviews and expanding literature

Limited time

What to study? How to study? What to believe and what to disregard?

Relevance to your patient (treatment, prognosis, cost evaluation)
Advantages of critical appraisal of a SR?

- Identify high quality relevant information
- Able to differentiate between statistical significance and clinical significance
- Speed reading
- Better patient care

*Helps become a better writer and peer reviewer!!*
Disadvantages of critical appraisal?

Time consuming and focused exercise

Some Knowledge of statistics mandatory

Frustrating if do not get the answer
How to do critical appraisal?
No 'gold-standard' instrument for critical appraisal exists.
General Points

• The criteria used to assess the validity and relevance of scientific literature are not static; they must evolve *

• A structured approach to critical appraisal could potentially improve the quality of this process **

• Simple checklists can be useful to screen out research that is of low quality or of little relevance


The simple things matter most
General Points

• Don’t let yourself be taken in by scientific jargon and complex use of language!! Good articles are written in plain English.

• Even authoritative journals with a high impact factor contain bad articles and vice versa.

• Focus on research question (PICO), methodology and results.

• Don’t worry too much about statistics!

• Be critical!! Always ask yourself: does this make sense?
Steps in critical appraisal

Basic Questions

Detailed appraisal

General Appraisal

Basic Questions

• Is the journal peer reviewed?

• Is the journal reputable?

• What is the impact factor of the journal?

• Do your colleagues/seniors/experts often quote this journal?
Title and abstract

• Does the tile convey useful information?
• Does the abstract make sense?
• Can you identify the important information and main findings by reading the abstract?
• Are keywords used similar to your keywords?
Introduction

Does the SR attempt to answer the same question as your clinical question?

Is the review recently published (within 5 years) – updated version

Are the aims /objectives clearly stated?

Materials and Methods

Are inclusion and exclusion criteria clearly described?

Are methods used available / relevant to your patient population? Is the treatment feasible in your settings?

What types of interventions have been included?

What are the outcome measures?

Materials and Methods

Selection of studies? Data extraction and management?

Assessment of risk of bias

Are the outcome measures valid for the health condition you are researching?

Is the follow-up long enough to be meaningful?

Results

Are the subjects’ demographics clearly mentioned?

Are the baseline demographics between groups similar?

Is your patient so different to those in the study that the results cannot apply?

Are the statistical tests appropriate for the study design and clinical question?

Results

Are the results statistically significant and how large is the difference between groups?

CONSORT statement flowchart

Consolidated standards of reporting trials

Discussion

Are the important results of the study summarized?

Do the authors attempt to compare their findings with the local and global findings?

Do the authors acknowledge limitations in the SR?

Are there any conflicts of interests mentioned?

Detailed appraisal

- Making sense of the p-value
- Confidence intervals
- Relative risk reduction and absolute risk reduction
- Sample size estimation
CASP- Making sense of evidence

Critical appraisal Skills Program

www.casp-uk.net/
CASP approach to Critical appraisal

1. Are the results of the study valid?
2. What are the results?
3. Will the results help locally?
Critical Appraisal tools

Critical appraisal is the systematic evaluation of clinical research papers in order to establish:

1. Does this study address a clearly focused question?
2. Did the study use valid methods to address this question?
3. Was the study conducted in a setting that is relevant and applicable to the clinical situation of interest?
Summary and Take home message

- Evidence based medicine can improve the quality of care and outcomes of health care interventions
- Increasing number of SR—limited time and increasing responsibilities
- Critical appraisal – important part of EBM
- Useful skill that can be learned and mastered
- Does not always require in-depth knowledge of statistics
"It's not what you look at that matters, it's what you see."

Henry David Thoreau
Questions ? Comments ? Additions ?

Copy of the presentation

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