Systematic Review and Meta-Analysis

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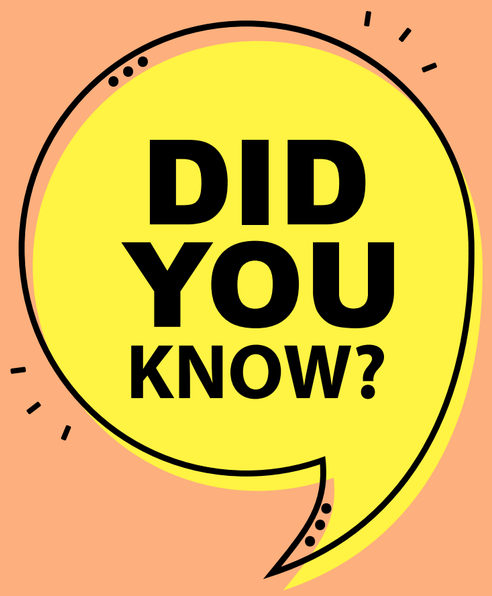
Agenda

- A short history of academic publishing
- What is a literature review?
- What is systematic review (SR)?
- Why is SR important?
- Creating an SR protocol (an example)?
- What is meta-analysis (MA)?
- A brief demonstration of MA?

When do think the first academic journal might have gotten published?

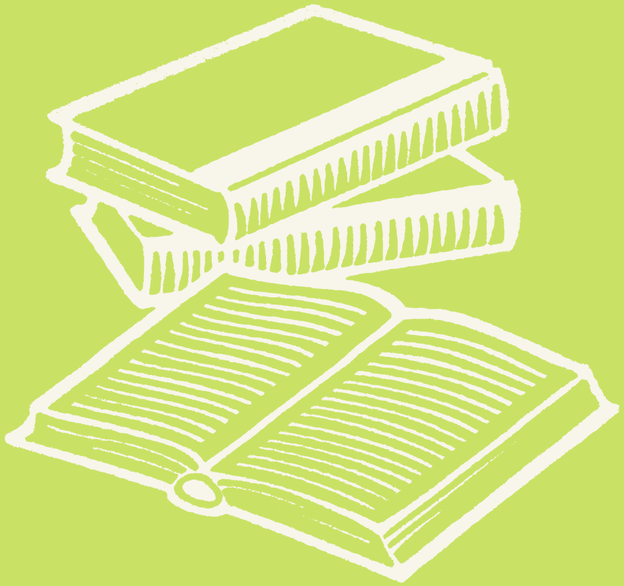


- Le Journal des Sçavans
- Philosophical Transactions of the Royal Society
- Medical Essays and Observations

LITERATURE REVIEW

What is a literature review?

Why do we review the literature?



Systematic Review

A systematic review is a literature review that is designed to locate, appraise and synthesize the all available evidence relating to a specific research question in order to provide informative and evidence-based answers.

Type of Systematic Review (Munn et al., 2018)	Goal	Research Question Example
Effectiveness	To evaluate the effectiveness of a certain treatment/practice in terms of its impact on outcomes	What is the effectiveness of Behavioral Therapy in reducing aggressive behaviors?
Meta-ethnography & Meta-synthesis	To investigate the experience or meaningfulness of a particular phenomenon	What are the Post-Traumatic experiences of refugees, if any, after migrating to another country?
Prevalence and/or incidence	To determine the prevalence and/or incidence of a certain condition	What is the prevalence of suicide attempts that were reported to hospitals in Ankara?
Diagnostic Test Accuracy	To determine how well a diagnostic test works in terms of its sensitivity and specificity for a particular diagnosis	Can BDI distinguish individuals diagnosed with depression from those who did not receive a depression diagnosis?
Psychometric	To evaluate the psychometric properties of a certain test, normally to determine how the reliability and validity of a particular test or assessment.	What are the reliability, validity, interpretability, and sensitivity of self-control scales?

SYSTEMATIC REVIEW

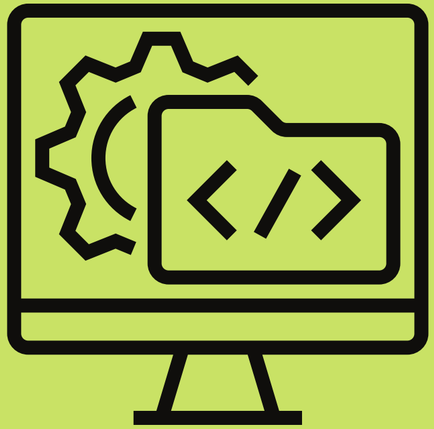
Boland et al., 2017

1. **Planning the Systematic Review**

Background search (PROSPERO)

Time

Collaborators



Tools and Organization

2. IDENTIFYING INCLUSION AND EXCLUSION CRITERIA

Finalize Research Question

Identify inclusion and exclusion criteria

Write a protocol

3. CARRYING OUT SEARCH

Library access is crucial

AND, OR, NOT

?, *, $

WILDCARDS*

Wildcard	Function	Example
?	Search for a part of a word	wom?n will find woman and women
*	Produce alternative words from the same root	psychiatr* = psychiatrist, psychiatry ...
$	Include a search term and its plurals	trial$ = trial and trials

4. APPLYING INCLUSION AND EXCLUSION CRITERIA

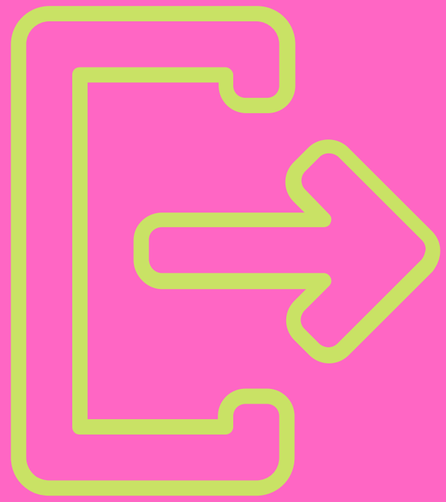
Screening titles and abstracts

Screening and selecting full-text papers

Collect references and remove duplicates

5. DATA EXTRACTION

Advise to your advisor to identify relevant data



Extract relevant data (multiple researchers)

6. QUALITY ASSESSMENT

- The quality assessment tools will vary depending on the purpose and field of your SR.

- PRISMA can be used to ascertain the quality of the SR.

META-ANALIZ

MA is a quantitative analysis of multiple studies to yield a single value showing the effectiveness of a particular method.

Kaynakça

Boland, A., Cherry, M. G., & Dickson, R. (2017). Doing a systematic review: A student's guide. Los Angelos. Sage.

https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-017-0468-4#ref-CR21