Systematic review: strengths and challenges of an in-pairs review process and quality assessment of included studies

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Systematic literature review

Exhaustive literature search

- ✓ Formulate a research question

- ✓ Identify key words (search strategy)

  - ✓ All possible variations of the key terms (read the literature on the subject, consult dictionaries, consider English and American expressions); **consult librarian or documentarist !**

- ✓ Identify databases (e.g. PubMed, Embase, etc.)

- ✓ Develop protocol (PRISMA-P)

- ✓ **PROSPERO registry**

- ✓ Conduct search

- ✓ Select studies

- ✓ Evaluate studies for quality
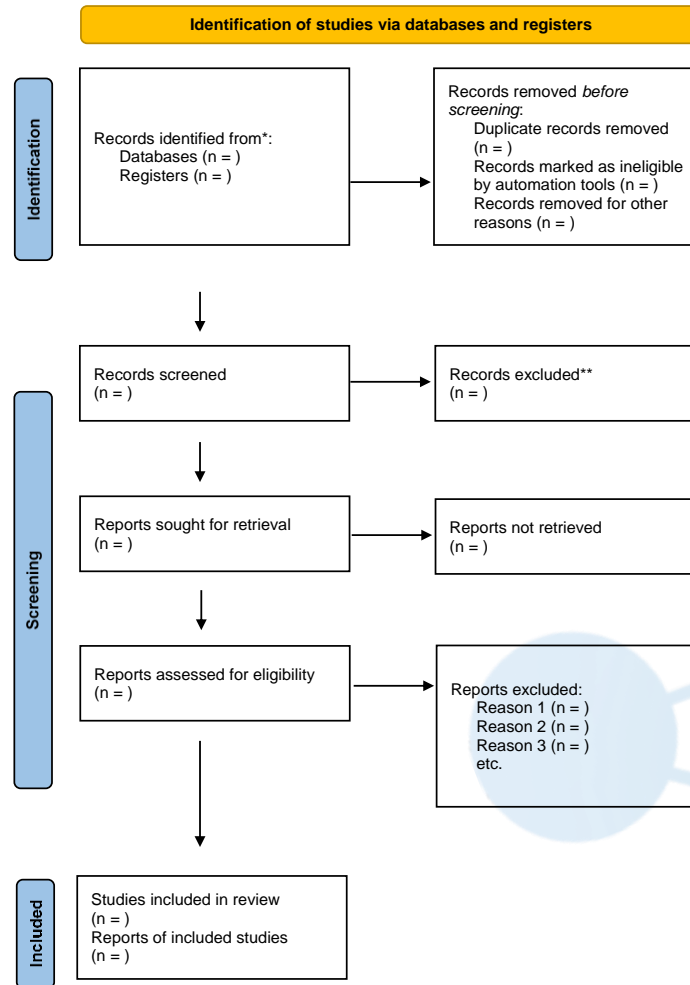
- ✓ Extract the data

- ✓ Summarize and interpret the data

PHIRI WP5.2 REVIEW : multimorbidity, frailty, socioeconomic characteristics, Covid-19, study designs (e.g. cross-sectional…)

* https://guides.lib.uwo.ca/c.php?g=256182&p=5183622

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- ✓ Evaluate studies for quality
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In-pairs assessment

- ✓ Summarize and interpret the data

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| Covid-19 (Adjusted from Lazarus et al. 2020) | (((((((((((((((((((("Betacoronavirus"[MeSH Terms] OR "Coronavirus Infections"[MeSH Terms]) OR "COVID-19"[Supplementary Concept]) OR "Coronavirus"[MeSH Terms]) OR "Severe Acute Respiratory Syndrome Coronavirus 2"[Supplementary Concept]) OR "2019nCoV"[All Fields]) OR "betacoronavirus*"[All Fields]) OR "corona virus*"[All Fields]) OR "coronavirus*"[All Fields]) OR "coronovirus*"[All Fields]) OR "CoV"[All Fields]) OR "CoV2"[All Fields]) OR "COVID"[All Fields]) OR (("COVID-19"[Supplementary Concept] OR "COVID-19"[All Fields]) OR "covid19"[All Fields])) OR ((((((("COVID-19"[All Fields] OR "covid 2019"[All Fields]) OR "Severe Acute Respiratory Syndrome Coronavirus 2"[Supplementary Concept]) OR "Severe Acute Respiratory Syndrome Coronavirus 2"[All Fields]) OR "2019 ncov"[All Fields]) OR "SARS CoV 2"[All Fields]) OR "2019nCoV"[All Fields]) OR (("wuhan"[All Fields] AND ("Coronavirus"[MeSH Terms] OR "Coronavirus"[All Fields])) AND (2019/12/1:2019/12/31[Date - Publication] OR 2020/1/1:2020/12/31[Date - Publication])))) OR "HCoV-19"[All Fields]) OR "nCoV"[All Fields]) OR "SARS CoV 2"[All Fields]) OR "SARS2"[All Fields]) OR "SARSCoV"[All Fields]) OR (((("sars virus"[MeSH Terms] OR ("sars"[All Fields] AND "virus"[All Fields])) OR "sars virus"[All Fields]) OR ("sars"[All Fields] AND "CoV"[All Fields])) OR "sars cov"[All Fields])) OR (("Severe Acute Respiratory Syndrome Coronavirus 2"[Supplementary Concept] OR "Severe Acute Respiratory Syndrome Coronavirus 2"[All Fields]) OR "SARS CoV 2"[All Fields])) OR "severe acute respiratory syndrome cov*"[All Fields]) AND (2019/11/17:3000/12/31[Date - Entry] OR 2019/11/17:3000/12/31[Date - Publication]) OR "COVID-19"[MeSH Terms] OR "SARS-Cov-2"[MeSH Terms] OR "SARS CoV-2" OR "SARS-CoV-2" OR SARSCoV2 OR "CoV-2" OR "covid 19" OR covid2019 OR "covid-2019" OR "novel CoV" OR "corona pandemic*" OR "wuhan virus*" OR "CoV 2" OR ((wuhan OR hubei OR huanan) AND ("severe acute respiratory" OR pneumonia*) AND outbreak*) |

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only

Identification of studies via databases and registers

Identification

Records identified from*:
Databases (n =)
Registers (n =)

→

Records removed *before screening*:
Duplicate records removed (n =)
Records marked as ineligible by automation tools (n =)
Records removed for other reasons (n =)

Screening

Records screened
(n =)

→

Records excluded**
(n =)

Reports sought for retrieval
(n =)

→

Reports not retrieved
(n =)

Reports assessed for eligibility
(n =)

→

Reports excluded:
Reason 1 (n =)
Reason 2 (n =)
Reason 3 (n =)
etc.

Included

Studies included in review
(n =)
Reports of included studies
(n =)

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

Study selection – title/abstract screening

Reasons for exclusion

1 = Language not English

2 = Not an original research (e.g. editorial, protocol, etc.) or no original results

3 = Unrelated topic

4 = …

- *2 first* reviewers
- *10 second* reviewers
- *3rd* reviewer

- *Pilot test* (between 1st and 2nd reviewer and between 2 1st reviewers)
- *Weekly meetings group and individual (heterogeneity!)*

- Conducted in *Rayyan*
- *Hierarchical* order/selection of criteria
- *Screening:* include, exclude, maybe

Study selection – full text screening

Reasons for exclusion
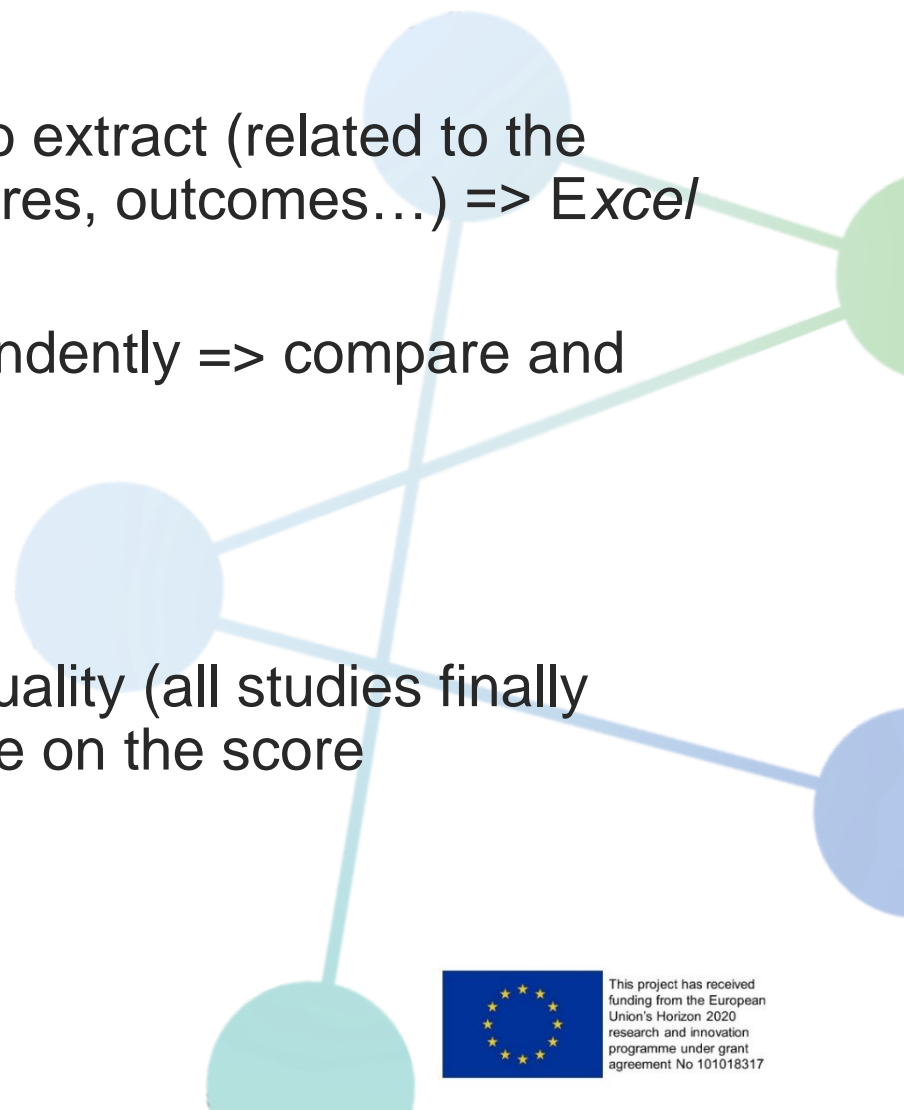
1 = Not a population-based study
2 = SARS-CoV-2 infection diagnosis not clear
3 = Study does not consider people with frailty…
4 = Outcome not within the scope of the objectives
5 = Outcome measurement tool not clear
6 = Risk factor measurement tool not clear
7 = Subpopulation (e.g. health care workers, students etc.)
8 = …

- *2 first* reviewers (same)
- *10 second* reviewers
- *3rd* reviewer

- Conducted in *EndNote/Excel*

- *Weekly meetings group and individual (heterogeneity!)*

- *Report disagreements* between 2 reviewers (and times 3rd reviewer intervened) – *for both screening phases*

Data extraction and study quality assessment

- Think of information you want to extract (related to the study, study population, exposures, outcomes…) => E*xcel table*

- Extract data in pairs but independently => compare and agree

- In parallel, assess studies for quality (all studies finally retained) => compare and agree on the score

Quality assessment

Different scales for quality assessment

- NIH quality assessment tool
- Newcastle-Ottawa scale (for cohort and case control; *adjusted for cross-sectional studies*)

Or others….

Example

Quality assessment table

Newcastle-Ottawa quality assessment scale for cohort studies
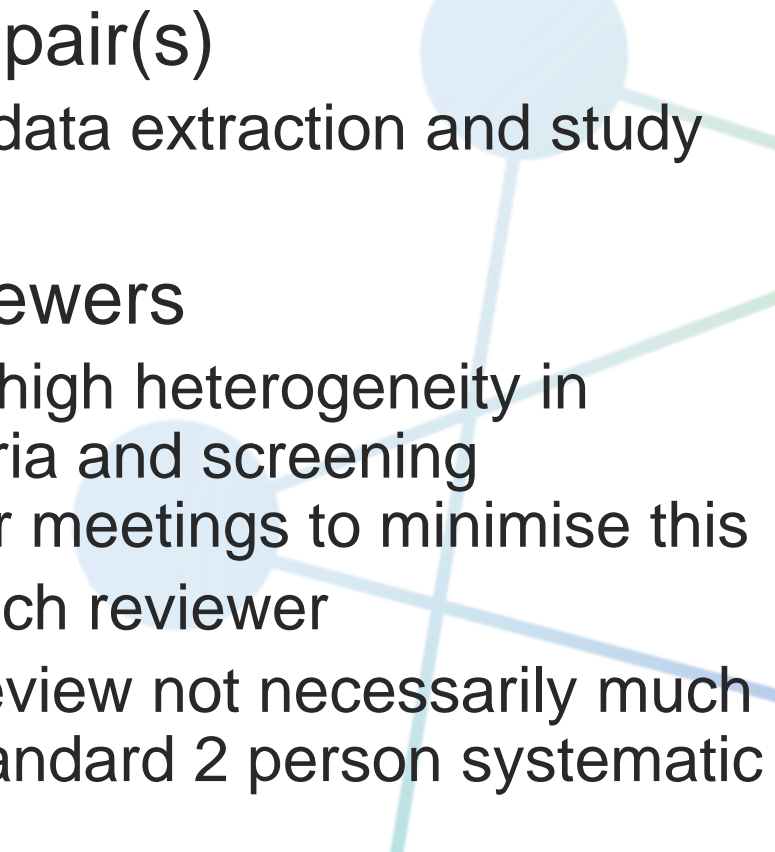
Study	SELECTION				COMPARABILITY	OUTCOME			TOTAL
	Representativeness of Exposed Cohort	Selection of Non Exposed Cohort	Ascertainment of Exposure	Demonstration Outcome of Interest Not Present at Start of Study	Comparability of Cohorts on the Basis of Design or Analysis	Ascertainment of Outcome	Adequate Length of Follow Up	Adequacy of Follow Up	
First name, year	1	1	1	1	2	1	1	1	9
	1	1	1	1	1	1	1	1	8
	1	1	1	1	2	1	1	1	9
	1	1	1	1	0	1	1	1	7
	1	1	1	1	1	1	1	1	8
	1	1	1	1	2	1	1	1	9

Conclusion

➢ Advantage working in pair(s)
  ▪ reassuring (screening, data extraction and study quality)

➢ However, if many reviewers
  ▪ be aware of a possible high heterogeneity in understanding the criteria and screening concordance => regular meetings to minimise this
  ▪ time constraint of an each reviewer
  ▪ time for conducting a review not necessarily much shorter compared to standard 2 person systematic review

Thank you for your attention

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