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Excellence with Morality

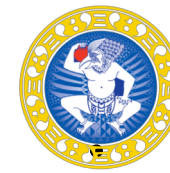
Introduction Systematic Review and Meta-Analysis

Faizul Hasan



Outline

- Introduction systematic review and meta-analysis
- Research question; PICO
- Preliminary search
- Inclusion and exclusion criteria



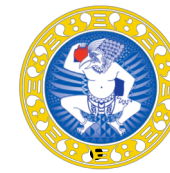
Systematic review vs meta-analysis

Systematic review (SR):

- The systematic gathering, critical appraisal, and synthesis of all relevant studies on a certain issue using scientific procedures that minimize bias.

Meta-analysis (MA):

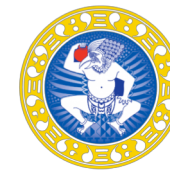
- A systematic review that includes use of statistical techniques synthesizes and summarizes the findings of multiple investigations.



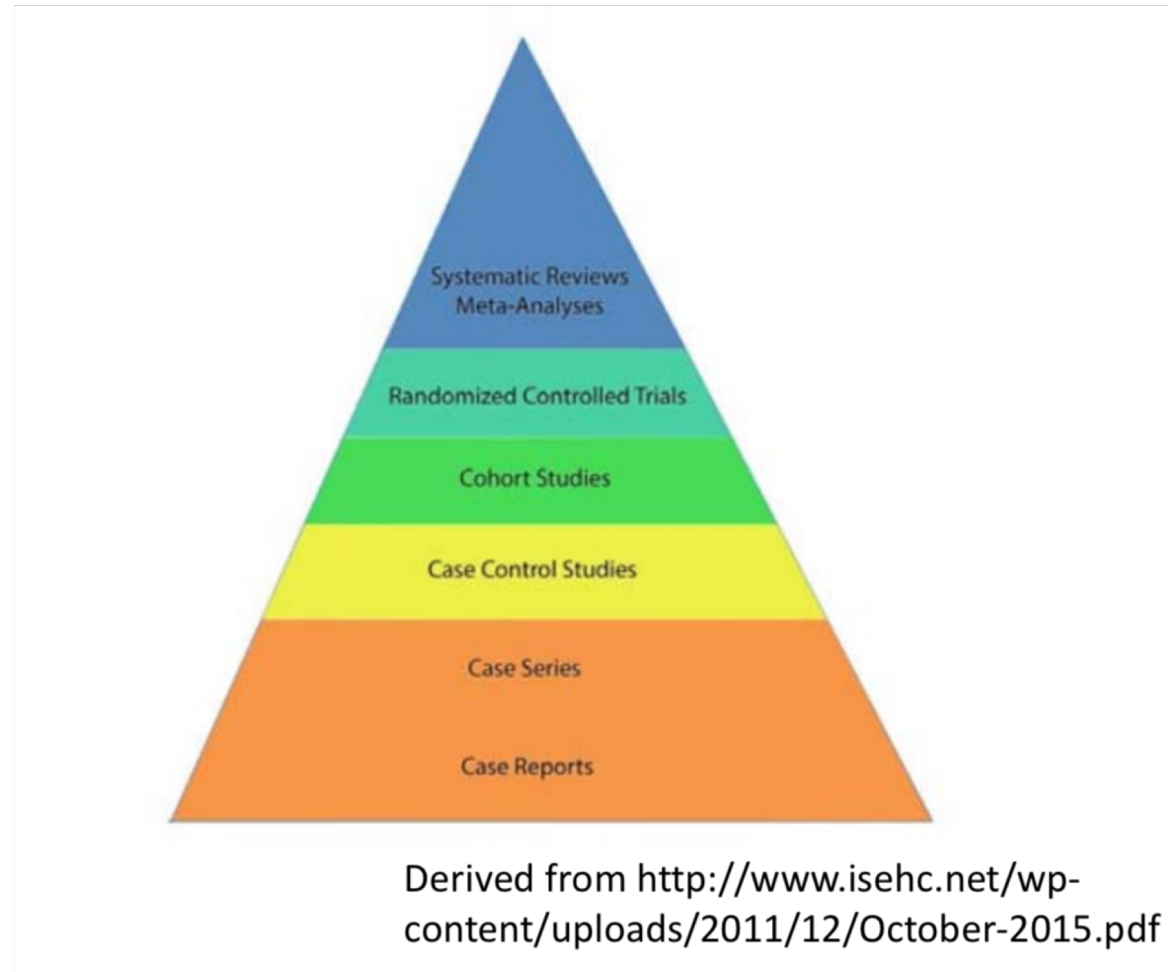
Systematic review vs meta-analysis



Adapted from: Pai M, McCulloch M, Gorman JD, Pai N, Enanoria W, Kennedy G, Tharyan P, and Colford JM.
"Systematic reviews and meta-analyses: An illustrated, step-by-step guide"
The National Medical Journal of India (2004)

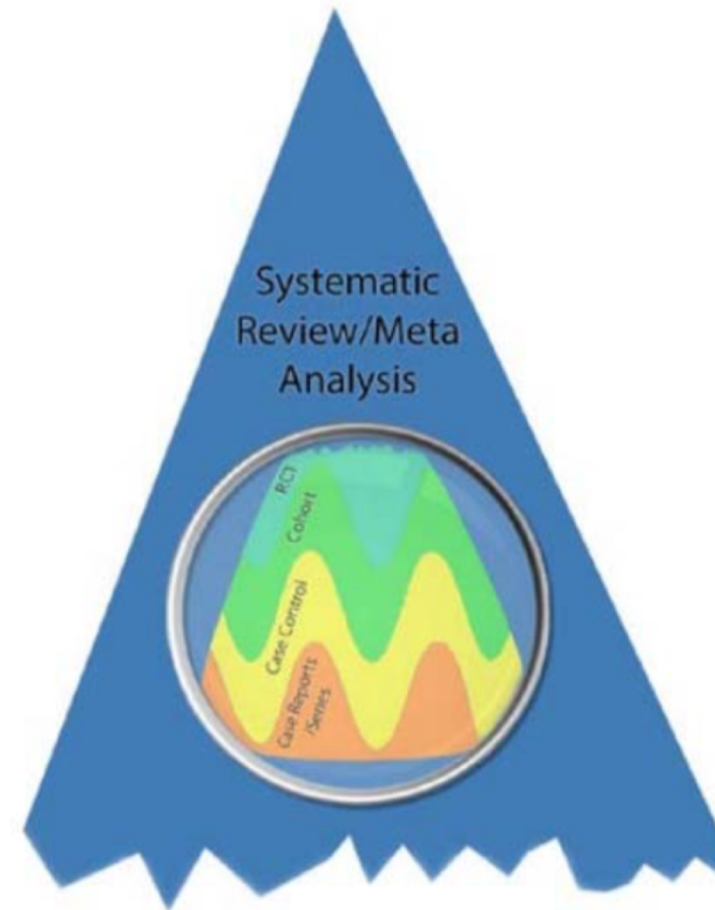
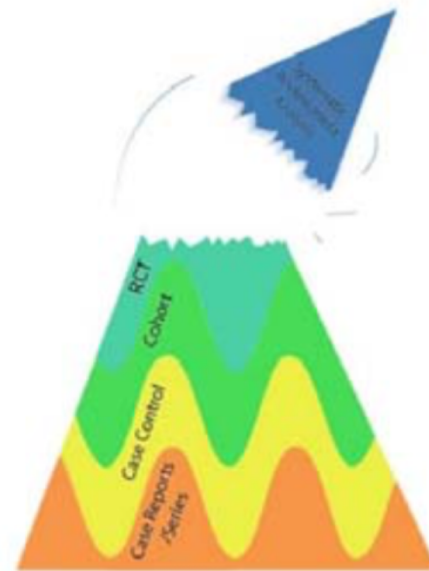


Traditional hierarchy of evidence pyramid

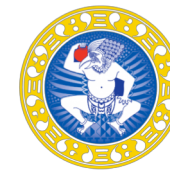




The new hierarchy of evidence pyramid



Derived from <http://www.isehc.net/wp-content/uploads/2011/12/October-2015.pdf>



Langkah-langkah SR & MA

Langkah 1: Membuat pertanyaan

Langkah 2: Mendesign meta-analysis

Langkah 3: Pencarian artikel secara komprehensif

Langkah 4: Evaluasi kualitas studi

Langkah 5: Ekstraksi data

Langkah 6: Calculation of effects

Langkah 7: Analisis data

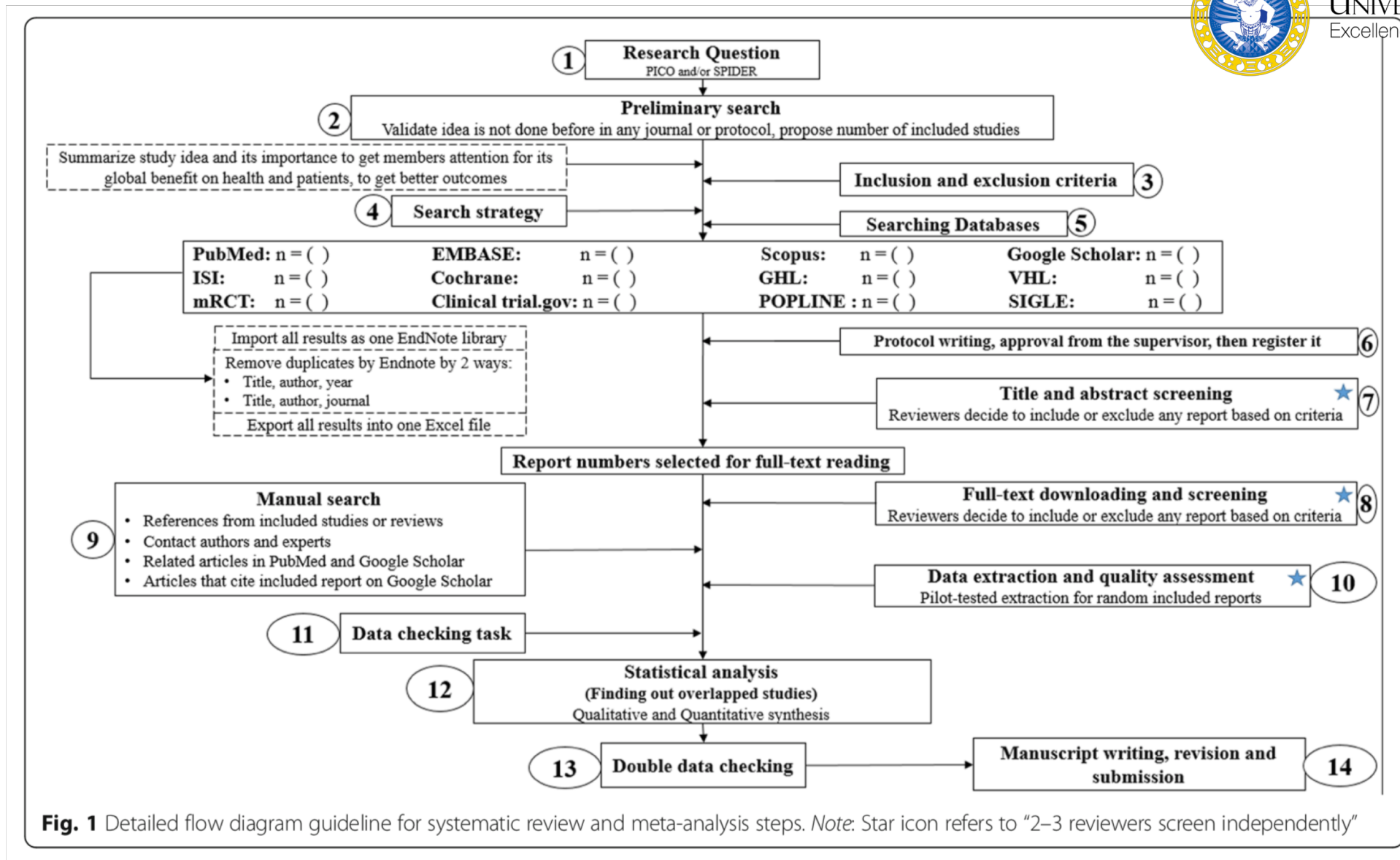
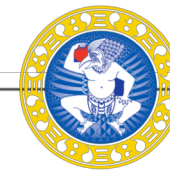
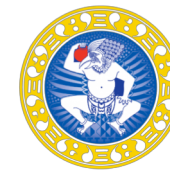


Fig. 1 Detailed flow diagram guideline for systematic review and meta-analysis steps. Note: Star icon refers to "2–3 reviewers screen independently"

Sumber (4)



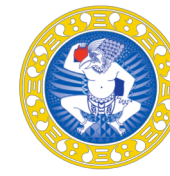
Guideline Penulisan

PRISMA

Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

MOOSE

Meta-analysis of Observational Studies in Epidemiology.



Research question; PICO

- Membuat pertanyaan penelitian dalam format PICO
 - Patients
 - Intervention
 - Comparison
 - Outcome
 - Study design

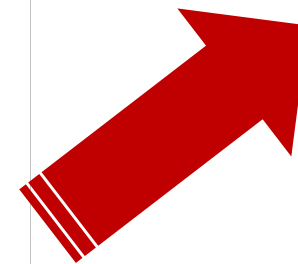




Table 1 Types of reviews

Review Type	Aim	Question Format	Question Example
Effectiveness	To evaluate the effectiveness of a certain treatment/practice in terms of its impact on outcomes	Population, Intervention, Comparator/s, Outcomes (PICO) [23]	What is the effectiveness of exercise for treating depression in adults compared to no treatment or a comparison treatment? [69]
Experiential (Qualitative)	To investigate the experience or meaningfulness of a particular phenomenon	Population, Phenomena of Interest, Context (PICo) [13]	What is the experience of undergoing high technology medical imaging (such as Magnetic Resonance Imaging) in adult patients in high income countries? [70]
Costs/Economic Evaluation	To determine the costs associated with a particular approach/treatment strategy, particularly in terms of cost effectiveness or benefit	Population, Intervention, Comparator/s, Outcomes, Context (PICOC) [14]	What is the cost effectiveness of self-monitoring of blood glucose in type 2 diabetes mellitus in high income countries? [71]
Prevalence and/or Incidence	To determine the prevalence and/or incidence of a certain condition	Condition, Context, Population (CoCoPop) [15]	What is the prevalence/incidence of claustrophobia and claustrophobic reactions in adult patients undergoing MRI? [72]
Diagnostic Test Accuracy	To determine how well a diagnostic test works in terms of its sensitivity and specificity for a particular diagnosis	Population, Index Test, Reference Test, Diagnosis of Interest (PIRD) [16]	What is the diagnostic test accuracy of nutritional tools (such as the Malnutrition Screening Tool) compared to the Patient Generated Subjective Global Assessment amongst patients with colorectal cancer to identify undernutrition? [73]
Etiology and/or Risk	To determine the association between particular exposures/risk factors and outcomes	Population, Exposure, Outcome (PEO) [17]	Are adults exposed to radon at risk for developing lung cancer? [74]
Expert opinion/policy	To review and synthesize current expert opinion, text or policy on a certain phenomena	Population, Intervention or Phenomena of Interest, Context (PICo) [18]	What are the policy strategies to reduce maternal mortality in pregnant and birthing women in Cambodia, Thailand, Malaysia and Sri Lanka? [75]
Psychometric	To evaluate the psychometric properties of a certain test, normally to determine how the reliability and validity of a particular test or assessment.	Construct of interest or the name of the measurement instrument(s), Population, Type of measurement instrument, Measurement properties [31, 32]	What is the reliability, validity, responsiveness and interpretability of methods (manual muscle testing, isokinetic dynamometry, hand held dynamometry) to assess muscle strength in adults? [76]
Prognostic	To determine the overall prognosis for a condition, the link between specific prognostic factors and an outcome and/or prognostic/prediction models and prognostic tests.	Population, Prognostic Factors (or models of interest), Outcome (PFO) [20, 34–36]	In adults with low back pain, what is the association between individual recovery expectations and disability outcomes? [77]
Methodology	To examine and investigate current research methods and potentially their impact on research quality.	Types of Studies, Types of Data, Types of Methods, Outcomes [39] (SDMO)	What is the effect of masked (blind) peer review for quantitative studies in terms of the study quality as reported in published reports? (question modified from Jefferson 2007) [40]

1. Effectiveness reviews
2. Experiential (Qualitative) reviews
3. Costs/Economic Evaluation reviews
4. Prevalence and/or Incidence reviews
5. Diagnostic Test Accuracy reviews
6. Etiology and/or Risk reviews
7. Expert opinion/policy reviews
8. Psychometric reviews
9. Prognostic reviews
10. Methodological systematic reviews



Sumber (5)



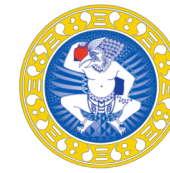
Research Question SR/MA

P: patient
I: intervention
C: control
O: outcome
S: study design



P: Covid-19
I: Mouthwash
C: Control
O: Viral load
S: RCT

What is the efficacy of mouthwash in reducing viral load in covid-19?



Patient

Participants received a diagnosis of Covid-19 with age above 19 years

Intervention

The patient received mouthwash treatment.

Control

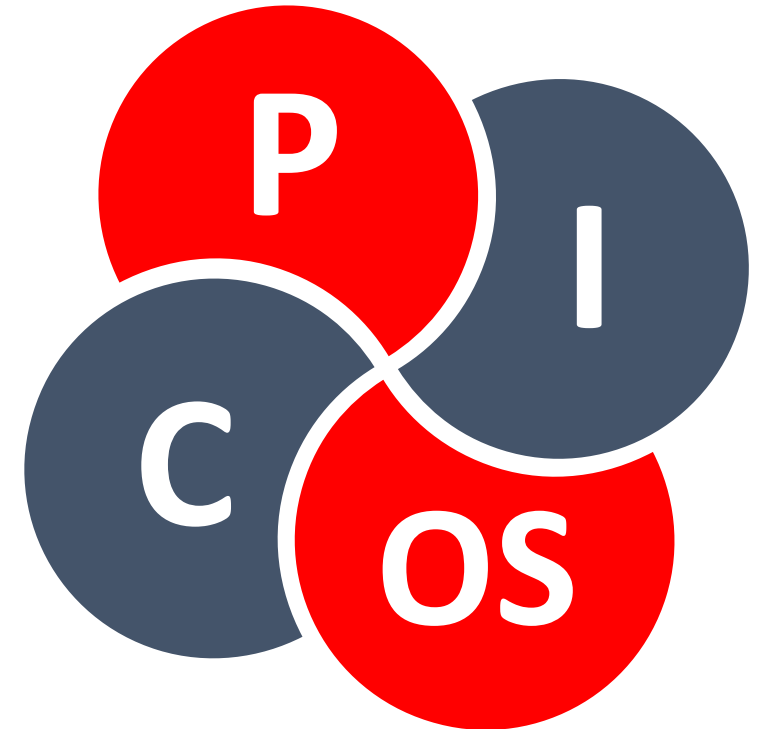
Usual care

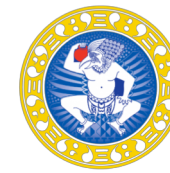
Outcome

Viral load reduction

Study design

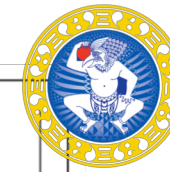
Randomized Control Trial



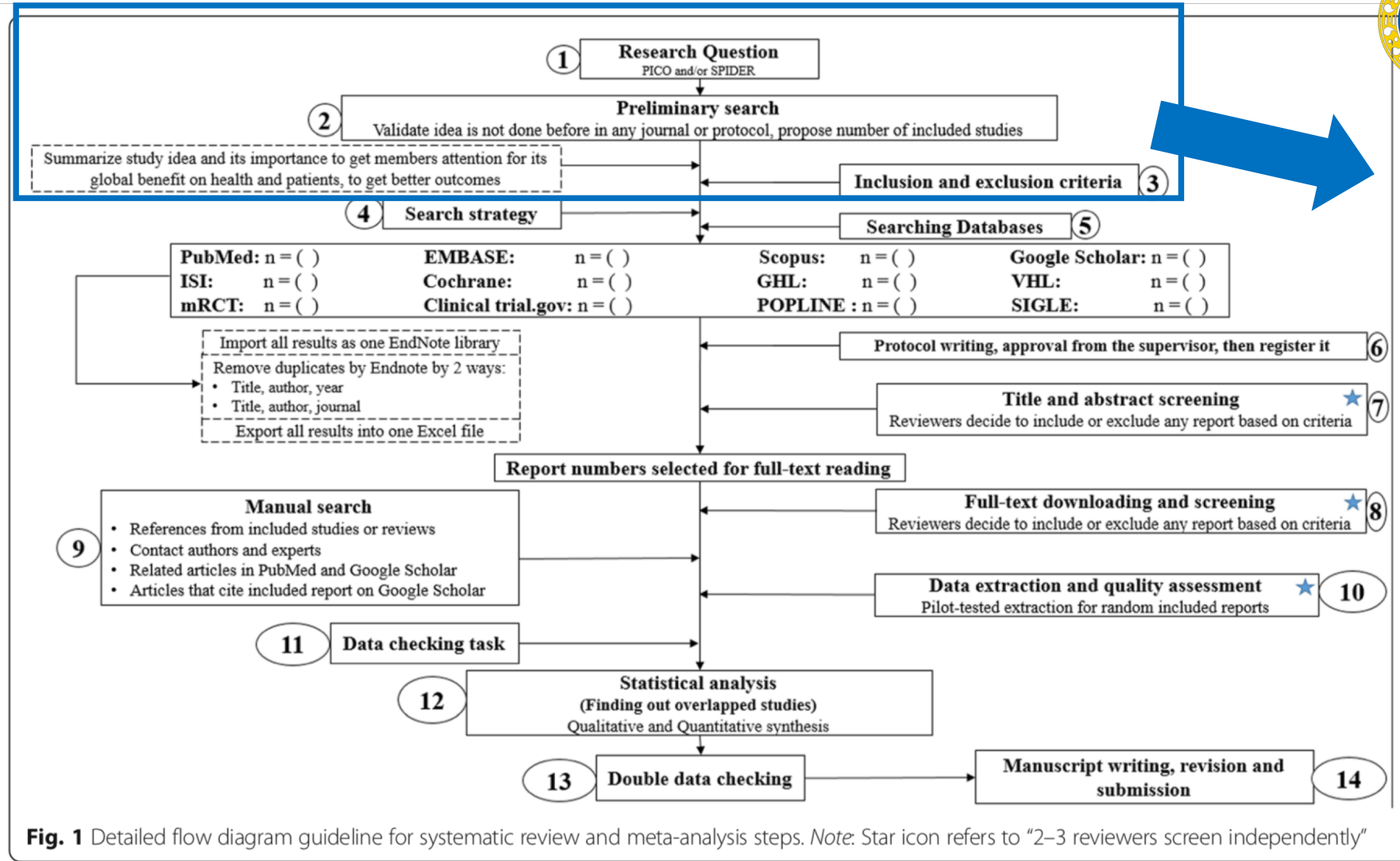


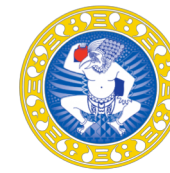
Preliminary search

- Membaca evidence yang terupdate/ yang sudah ada.
- Membaca SR sebelumnya yang sudah publish.
- Mencari GAP penelitian.
- Menekuni bidang riset sesuai peminatan.



Bagaimana caranya???





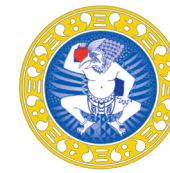
The design of meta-analysis

Project organization:

- Dekerjakan oleh minimal 2 orang
- Memiliki training terkait penulisan sesuai guidelines

Sampling

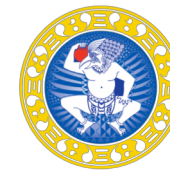
- Inclusion and exclusion criteria



Inclusion and exclusion criteria

Informasi disertakan:

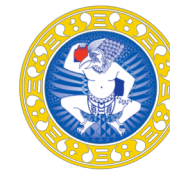
- Karakteristik pasien
- Desain penelitian
- Status publikasi (published and unpublished)
- Limitasi bahasa
- Periode penelitian



What is the efficacy of mouthwash in reducing viral load in covid-19?

Kriteria inklusi:

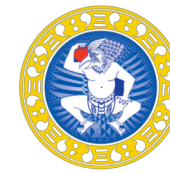
- (1) Participants' mean age ≥ 19 years;
- (2) Diagnosis with covid-19;
- (3) Reporting the outcome of viral load;
- (4) Randomized control trial study design;
- (5) Published or accepted for publication by a peer-reviewed journal.



What is the efficacy of mouthwash in reducing viral load in covid-19?

Kriteria eksklusi:

- (1) Review article
- (2) Non Randomized control trials



Reference

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