Literature Reviews Using a Systematic Approach

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Session Learning Objectives

- An overview of the overall process of a review taking a systematic approach.

- Different guidance on types of reviews and selecting what is appropriate.

- Guidance on developing review questions and eligibility criteria for sources to include.

- Guidance for the different methodological stages of literature reviews.

What does a Literature Review do?

Identifies relevant work that has been done by others in the field of research on a topic.

Identifies patterns or conflicting evidence in the research.

Critically evaluates strengths and weaknesses of the research included.

Identifies possible gaps in the research.

A Literature Review may also:

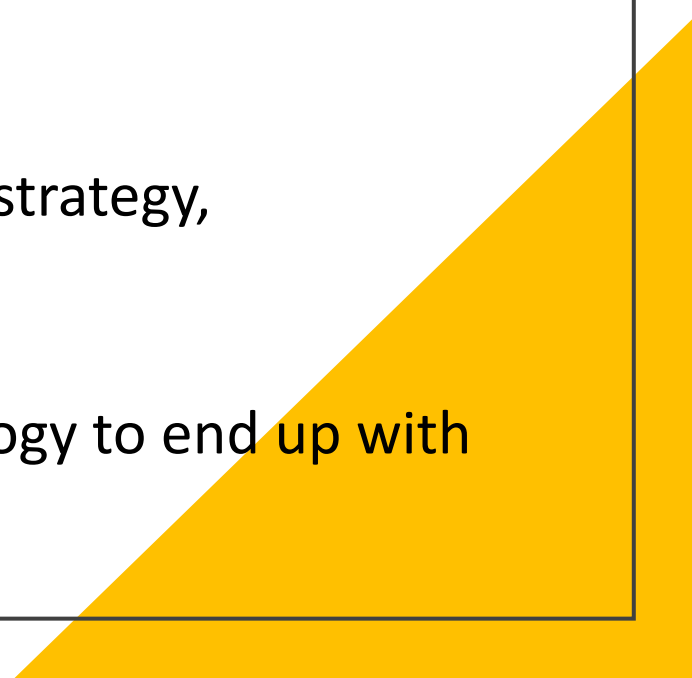Set the scene and provide context for your research.

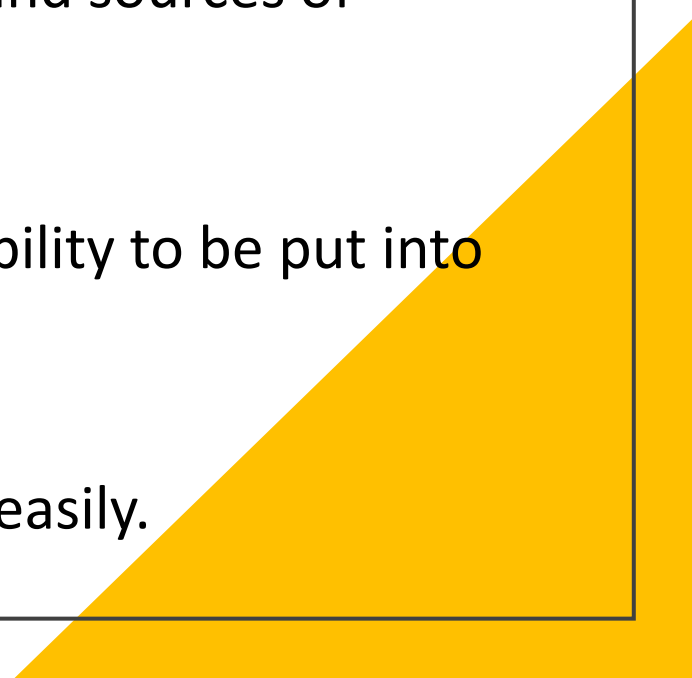Identifies possible gaps in the research to justify your enquiry.

Note. From Whitney Townsend [@bregney]. (2022, February 2). *Systematic reviews really are just technical challenges (methods are the "recipe"; lots can go wrong). If you have experience, know what you're doing, and pay close attention you have a shot at a good outcome. If not, well . . .soggy bottoms all around* [Tweet]. Twitter. https://twitter.com/bergney/status/1488664160032501763?s=12

Principles of Systematic Approaches to Reviews

- **Comprehensive** – attempting to find and include as many relevant sources of literature that meet the review criteria.

- **Objective** – clear aims and objectives, clear eligibility criteria, reduction of selection bias.

- **Rigorous** – conducted to a high level, an effective search strategy, appropriate critical appraisal of included literature.

- **Transparent** – someone else could follow your methodology to end up with the same set of included literature sources.

Why be Systematic?

- It provides a robust overview of the existing literature on your topic and ensures you are not missing out on any key literature.

- Ensures you are not missing out on any key publications and sources of information.

- Improves the reliability of the review findings and their ability to be put into practice.

- Helps others to reproduce and update your review more easily.

Types of Review

Evidence sysnthesis – aiming to bring together a body of evidence on a specific topic/to answer a review question.

There are a number of different types of review, the following articles give a good overview of these:

Sutton et al. (2019). Meeting the review family: exploring review types and associated information retrieval requirements.

Booth, A. & Grant, M. J. (2009). A typology of reviews: an analysis of 14 review types and associated information retrieval requirements.

You need to understand the purpose of each review type and match this up with what you are attempting to do with your review to select the most appropriate.

Include this justification at the start of the review to explain why you have chosen a certain type.

Choosing a Review Type

Below are a number of resources to help you decide what type of evidence review is the most appropriate for your purpose, question/topic, time/resources you have, and other considerations.

- Munn et al. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach.

- Booth, A. (2016). EVIDENT Guidance for Reviewing the Evidence: a compendium of methodological literature and websites.

- Jonkoping University. (nd.). Which review is right for you?

- You can use the Right Review Tool – online questionnaire to help you decide what type of review is appropriate.

Reporting and Conducting Guidelines and Handbooks

- Reporting guidelines give information on what you need to include in the write up of your review.

- Conducting guidelines provide more information on how to carry out and undertake each stage of a review, not just stating what to include/report.

- These are mostly designed to be used for quantitative systematic reviews i.e. reviews where the included sources are primary research of quantitative methods with a quantitative synthesis of the data.

- The majority of these are designed for healthcare/science topics, but there is an increase of these across education, business, engineering, and computer science in particular.

- Wording to be used when using these should be
'this review/protocol was reported using . . . '
'the conducting of this review was guided by . . . .'

Why use Reporting Guidelines?

- Transparent and complete reporting makes your review a higher quality piece of research.

- Allows the readers to judge the quality and trustworthiness of your review more easily.

- Also allows your review to be replicated more easily.

- Example of a review that has been reported well:

Noone, C., McSharry, J., Smalle, M., Burns, A., Dwan, K., Devane, D., & Morrissey, E. C. (2020). Video calls for reducing social isolation and loneliness in older people: a rapid review. *Cochrane Database of Systematic Reviews, 5*, Article CD013632. https://doi.org/10.1002/14651858.CD013632

Main Stages of a Review

- Title – need to state the type of review

- Abstract

- Introduction – Background, Rationale, and Objectives

- Methodology – where and how you searched, selected, appraised the quality of, and synthesised the included literature.

- Results

- Discussion – Interpretation of Results, Limitations, and Implications

- Other Info – Protocol registration, funding etc.

Scoping Search

An initial search of the broad topic.

A starting point of the literature already published.

Identify any review/research gaps.

Narrow to a focussed topic/question.

Where to do a Scoping Search?

Select a main/key database for your overall topic area.

If you are searching for reviews add 'review' as a search concept.

Keep your search terms broader at this stage – fewer concepts.

This is not the final search you will be doing – but a starting point.

Question Formulation Frameworks

Used as an organising framework to identify and list terms by the main concepts to develop the research or review question.

- PICO(S) (patient/population, intervention, comparison/control groups, outcomes, setting).

- PIO/PEO (population, intervention/exposure, outcome)

- ECLIPSE (expectation, client group, location, impact, professionals, service).

- SPICE (setting, perspective, intervention, comparison, evaluation).

- SPIDER (Sample, phenomenon of interest, design, evaluation, research type).

Examples

A comparison of solo vs group physiotherapy interventions in Parkinson's disease

Population – people with a diagnosis of Parkinson's disease

Intervention – solo physiotherapy interventions

Comparison – group physiotherapy interventions

Outcome – gait, walking speed, functional mobility, balance, falls data

Exploring the experiences and perceptions of young mothers accessing social care support.

Sample – young mothers

Phenomenon of **i**nterest – interactions with social care support services

Design – interviews, surveys, focus groups

Evaluation – experiences and perceptions

Research type - qualitative

Methodology

- Eligibility criteria – inclusion/exclusion

- Information Sources – where you are searching and when

- Search strategy

Details of how/methods used for:

- Selection process
- Data collection/charting process
- Data items
- Risk of bias/critical appraisal (if relevant)
- Synthesis

Eligibility Criteria

- Need to plan this before the search strategy as it can impact the terms you use.

- What criteria does a study need to include in order to be included in your final set of articles?

- What criteria will you be specifically excluding?

Think about:

- Topic related criteria – use the question formulation framework to identify each concept and use the scoping search results to detail this as much as possible.

- Study criteria eg. Methodology, study design, length of study, presence/absence of control groups or comparisons.

- Types of publications e.g. primary research (could be more than just journal articles), reviews, policies, etc.

- Publication dates and language of sources.

Eligibility Criteria Example

Exploring the experiences and perceptions of young mothers accessing social care support.

Concept	Inclusion	Exclusion	Considerations
Young mothers	Mothers under the age of X. How soon after becoming a mother?	Mothers over the age of X.	What about papers that include mothers and fathers?
Social Care Support	Exactly which support services are included?	Which support is being excluded?	What does 'accessing' mean?
Experiences and Perceptions	Specific types of experiences?	Any experiences that are excluded?	If research covers views of multiple groups would this be included or not?

Search Strategy

A search strategy includes **where** and **how** you are searching.

Can someone else use your process to find what you found? Again, you need to be **transparent**.

- Specific databases, journals, websites etc.
- Any other search methods e.g. citation tracking.
- The search terms you are using.
- The search fields you are searching in.
- How you are inputting the search terms and how Boolean (AND, OR) is being used.
- Any other wildcards you are using e.g. phrase searching.
- Limiters you are using to refine search results.

BINGO! I noticed something in the Systematic Review (mostly search) methods

B	I	N	G	O
Searched only one database, Google Scholar.	Total number of records from search = 10,000 Number of records after duplicates removed = 900	Single author SR	The "comprehensive" search consisted of 3 keywords	A search was conducted following PRISMA standards
Searched Ovid PubMed	PRISMA diagram does not include reasons for exclusion during full-text screening	Consulted with a librarian (but did not name them)	Reported in methods: "The search strategy incorporated MeSH" (...but the search strategy doesn't include any!)	The review was conducted based on PRISMA reporting guidelines
Searched the following major databases: EBSCO and ProQuest	The Medline search retrieved very few (~20) results, and the research question is a well-researched topic	🔴	Searched only in the title field	We adhered to PRISMA (...but the search strategy is not included)
Searched PsychInfo or CINHAL	Searched using "standardized" terms (everyone knows what those are!)	The search was conducted independently by 2 of the authors	The search strategy only contained one type of Boolean operator: AND	Citing PRISMA 2020, but including the PRISMA 2009 flow diagram
We searched Pubmed et al. (end of list!)	Included a search strategy, but not the actual search strategy used (confused? So am I!)	Data availability statement: There are no additional data	Searched 12 unique combinations of different synonyms for their 3-concept search	We adhered to PRISMA (...yet a flow diagram is not included)

Top Tips for Search Write Up

- Try to be as explicit as possible – you are aiming for someone else to be able to replicate exactly what you did.

- A table of search terms that does not show field codes or Boolean is not enough to be replicable.

- Consider what sits best in the main body and what could go in the appendices – full search strategies that show each database search line are not needed in the main body.

- For searching outside of databases try to be as explicit as possible, but some of this will be difficult to replicate exactly.

- At least try to name all the locations you searched including individual journals and websites where relevant.

Selection Process

- How are you going to select included studies from your set of search results?

- Who will be involved in this?

- How are you going to agree on methods if more than one reviewer is involved?

- What inclusion and exclusion criteria are you going to use?

- How will you keep track of how you do this?

- How are you going to record and document this decision-making process?

- Where are you going to store the studies throughout the process?

- Item 8 PRISMA checklist methodology section.
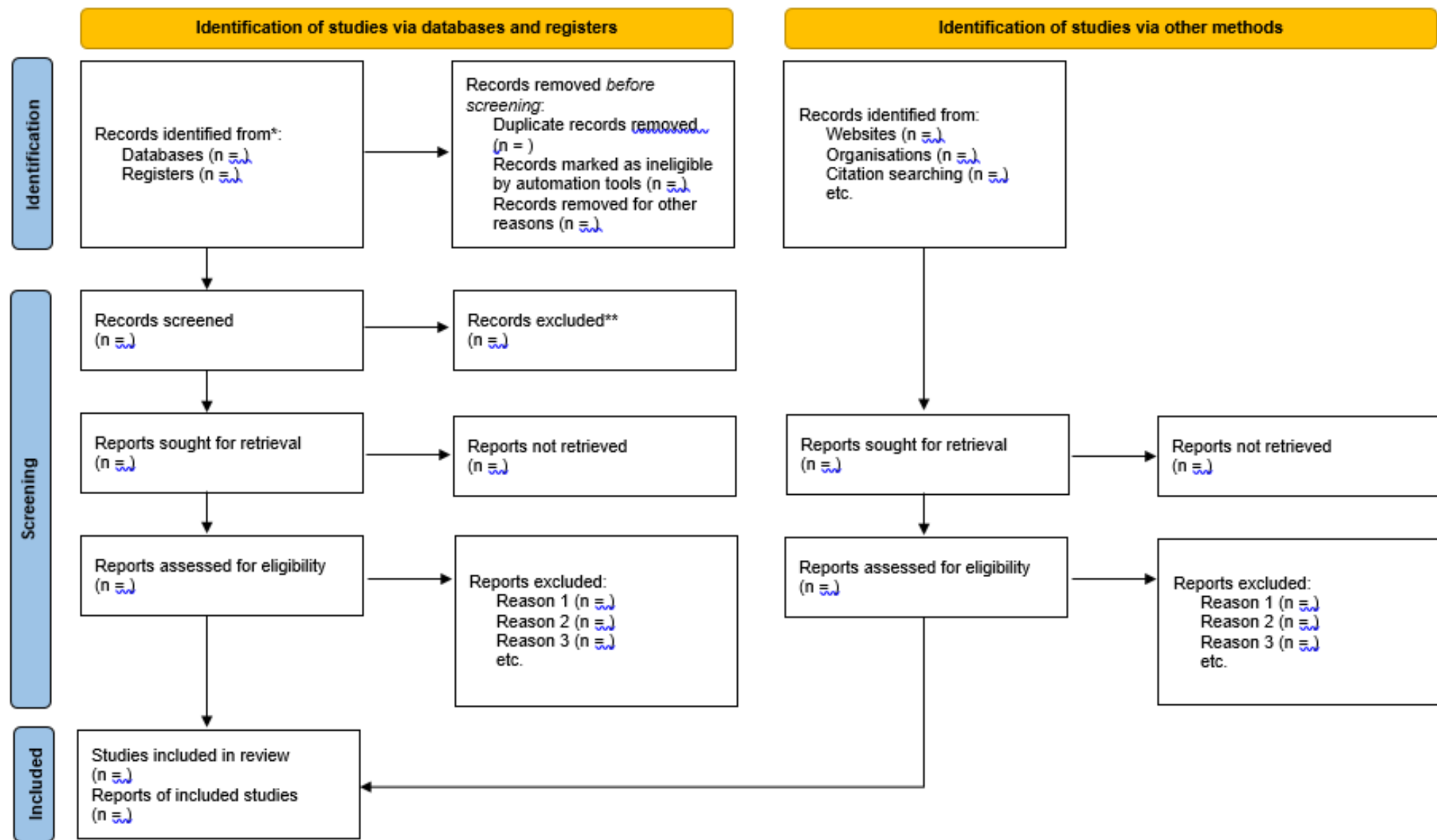
Reference Management Software

- Use to manage, organise and store your references.

- Allows you to store resources from multiple search locations in one place.

- In-built tools for the de-duplicating part of the selection process.

- Insert references into your work.

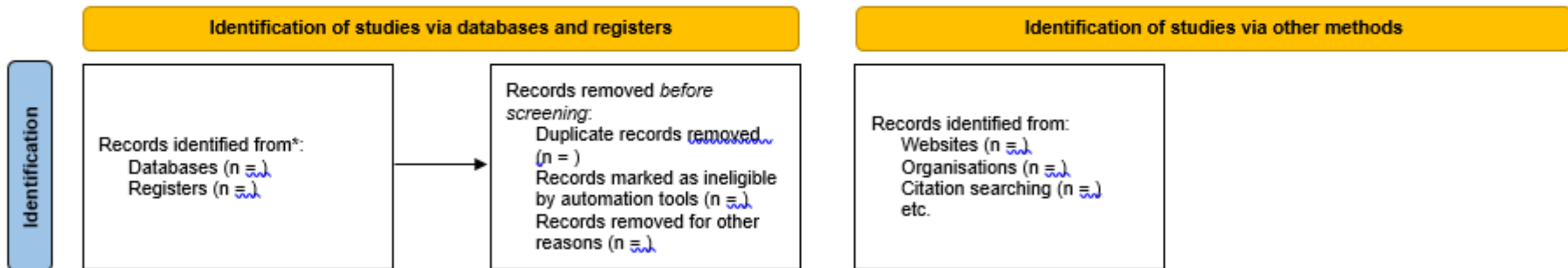- For guides on how to use see the Reference Management guide.

PRISMA Flow Diagram

- The PRISMA Flow Diagram can be used to document the search selection process.

- Use the second document down in the list – for new reviews and includes options for non-database searching to be included.

- If you are using the PRISMA or Cochrane reporting guidelines they explicitly require this process to be documented – use this template that already exists!

- Useful article on common questions on using the new flow diagram and tracking records.

- Please see the Selection Process Using PRISMA video I have created taking you through each stage of the diagram.

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources

Identification of studies via databases and registers

Identification of studies via other methods

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 =)

Records identified from:
  Websites (n =)
  Organisations (n =)
  Citation searching (n =)
  etc.

Screening

Records screened
(n =)

→ Records excluded**
(n =)

Reports sought for retrieval
(n =)

→ Reports not retrieved
(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.

Reports assessed for eligibility
(n =)

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

Included

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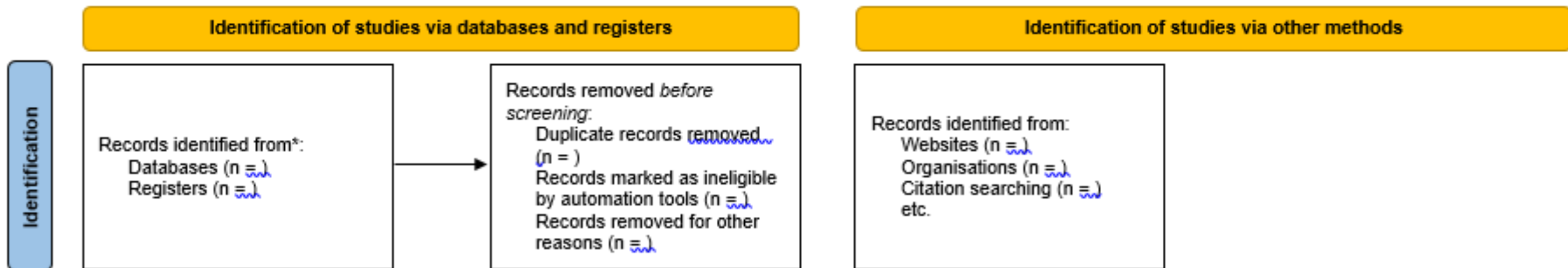Reports of included studies
(n =)

PRISMA Identification

- This is where you document the records you found during the search process.

- Registers means systematic review registers.

- All other ways of searching including journal hand searching and citation searching are captured on the right.

- Duplicates are then removed from the full set of all database results.

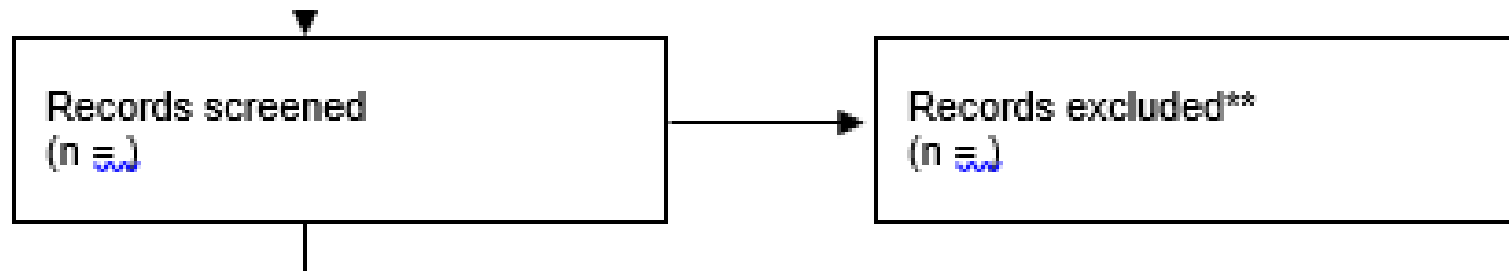- Remove anything you will not be doing e.g. automation tools.

Identification of studies via databases and registers		Identification of studies via other methods

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 =)

Records identified from:
Websites (n =)
Organisations (n =)
Citation searching (n =)
etc.

De-Duplication

- Storing all search results in one place is vital for this step. E.g. a reference manager.

- EndNote has an inbuilt tool for de-duplication – need to change the settings to improve how it finds them.

- Edit – preferences – duplicates – untick reference type.

- Would still recommend manually checking afterwards.

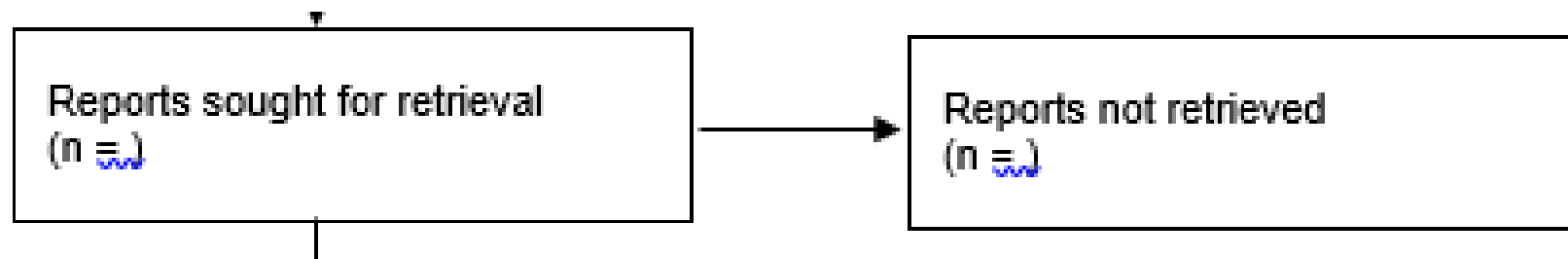- Try to keep the best record, e.g. with an abstract if possible.

Identification of studies via databases and registers		Identification of studies via other methods

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 =)

Records identified from:
Websites (n =)
Organisations (n =)
Citation searching (n =)
etc.

PRISMA Screening

- Screening – decide which articles are relevant from your database search results from the title and abstract alone.

- Use your inclusion/exclusion criteria to decide what is relevant.

```
┌─────────────────────────┐         ┌─────────────────────────┐
│ Records screened        │────────▶│ Records excluded**      │
│ (n =  )                 │         │ (n =  )                 │
└─────────────────────────┘         └─────────────────────────┘
```

- Reports sought for retrieval = the number of sources where you currently only have access to the abstract.

- Try Google/Google Scholar first, then you need to request full-text copies of the ones where you only have access to the abstract using the Interlibrary Loan Service.

- Any we cannot get hold of for you add this number to the right hand box.

```
┌─────────────────────────┐         ┌─────────────────────────┐
│ Reports sought for      │────────▶│ Reports not retrieved   │
│ retrieval               │         │ (n =  )                 │
│ (n =  )                 │         │                         │
└─────────────────────────┘         └─────────────────────────┘
```

PRISMA Screening cont.

- Assess remaining records against your inclusion and exclusion criteria by looking at the full text. Stop reading at the point you know if it is relevant or not. Eg. check intro and methods sections.

- Can add reasons related to your inclusion/exclusion criteria and the number excluded due to this.
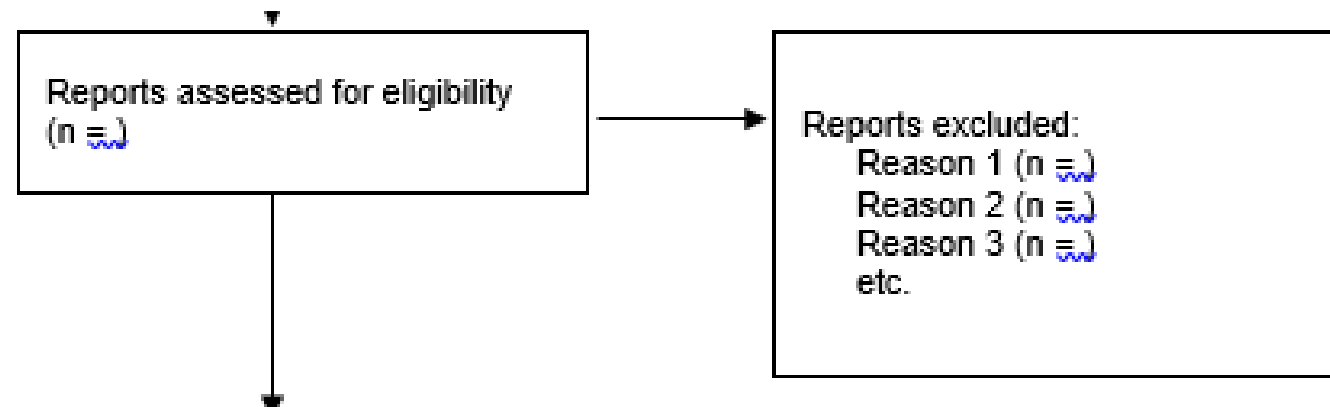
PRISMA Included

- This is the total number of studies/reports you are including in the review.
- Studies = individual pieces of research.
- Reports = the documents they have been discussed in.
- Research studies can be reported in more than one document, so you would join these together and consider them as a single study.
- If you do this you need to separately give the number of articles you have done this with as reports of included studies.
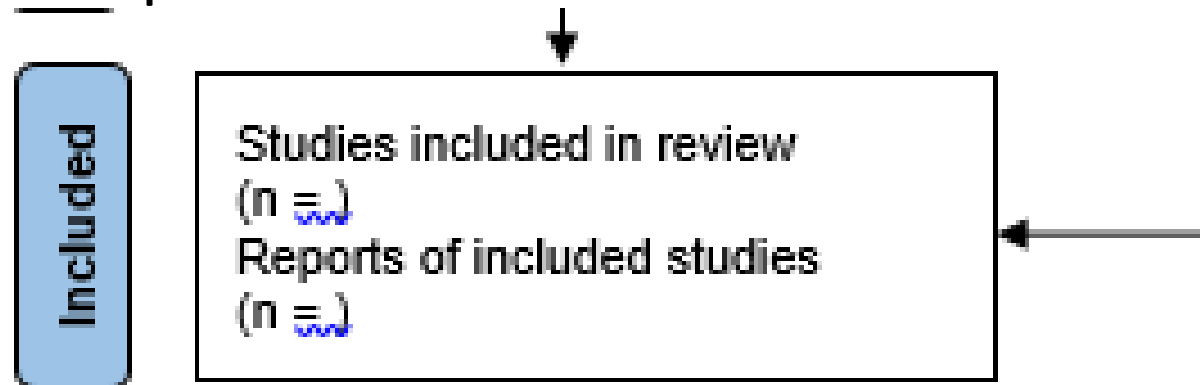
Data Collection and Charting

- Data in this context means information about a study.

- You need to decide which information you are going to record about your included studies.

- Information you document needs to align to the aims and objectives of your review, it needs to allow you to answer what you set out to.

- This could include descriptive details such as type of study, methods, participants, setting, context, interventions etc.

- And also analytical data such as outcomes, results, recommendations for practice etc.

- Usual to document and present this in a data extraction table of study characteristics.

Quality Assessment

Critical appraisal/quality assessment is a specific aspect of critical analysis where you examine and assess research in order to judge its:

- Validity

- Trustworthiness

- Value and Relevance

You are evaluating the quality of the research and how it has been conducted, as well as the findings themselves and how it has been reported.

Cochrane have made a [useful video giving an introduction and overview of critical appraisal](#).
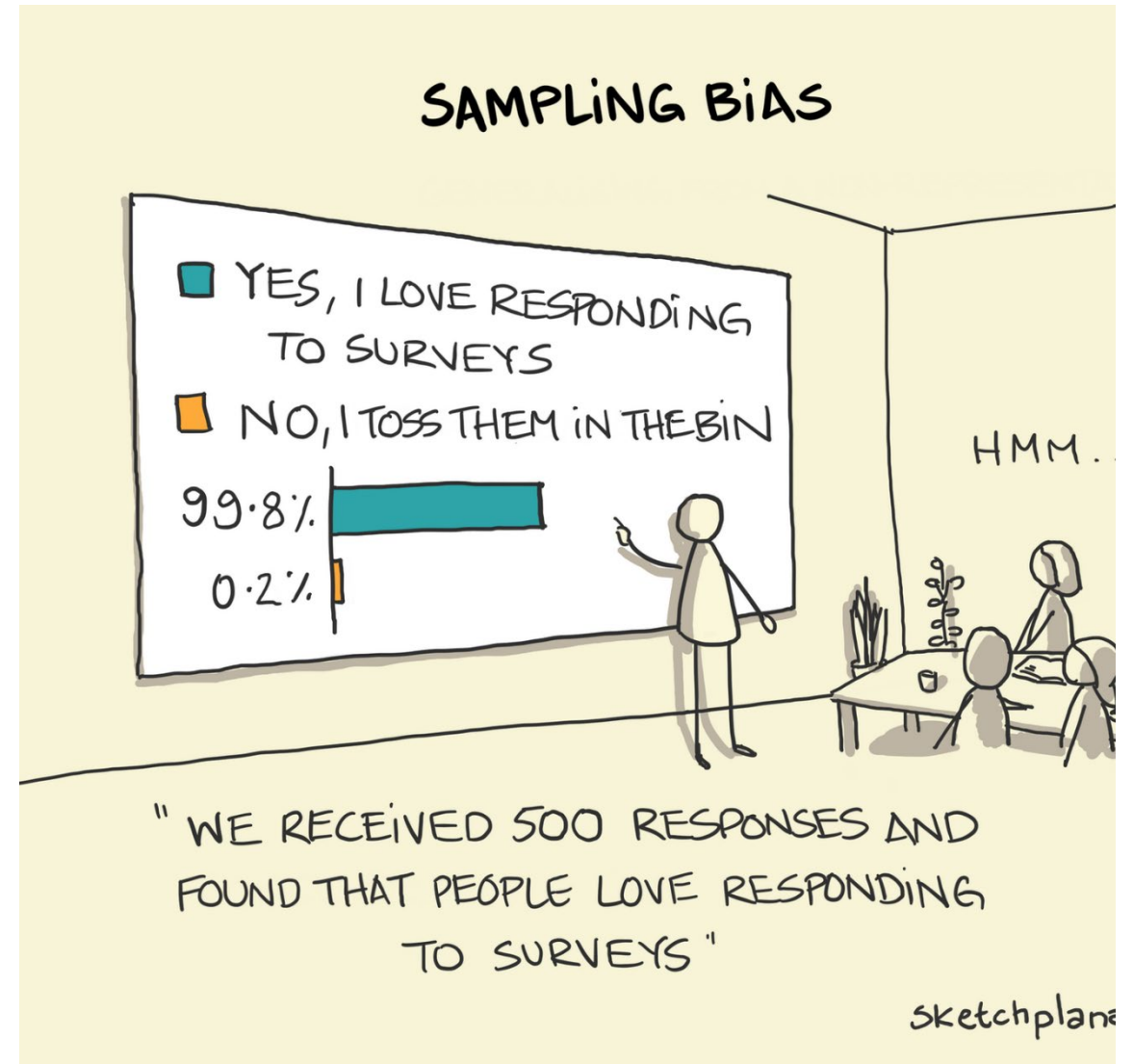
Note. From *Sampling Bias*, by Sketchplanations, n.d. (https://sketchplanations.com/sampling-bias)

Why is critical appraisal important?

- Allows you to identify any issues which could impact the reliability of the findings.

- If you are using the source as evidence in an academic assignment you want to be sure you are using reliable sources to back up your arguments.

- If you are doing a literature review this could impact your overall review findings if not addressed – review conclusions are stronger if studies with a low risk of bias are used.

- It could impact how confident you would be to apply the findings into practice – a vital part of evidence-based practice in healthcare.

Critical Appraisal Tools

- Tools for quality assessment are mainly designed for use with specific types of methodology or study design e.g. tool for qualitative studies, randomised controlled trials etc.

- The tools give you guidance and hints of what to critique and are tailored to specific study designs.

- Some tools give an overall rating as to the quality of a study e.g. high, medium, low.

- Others are meant to be used in a narrative write up way instead rather than having a score/overall assessment.

- See research textbooks, SAGE research methods database, and journal articles for more information and to find more tools.

- Useful article to see a summary of tools commonly used in healthcare reviews.

Data Synthesis

- You need to select synthesis method(s) appropriate for your included studies and review question.

- Some review types relate to the synthesis method itself.

- Standard SR conducting and reporting guidelines are designed around an analysis of quantitative data, so if this does not fit your data you need to use different synthesis guidance.

- The synthesis method(s) should be appropriate for the effect measure for your review outcomes.

Results

- In the Methods you explain what you have done, however the results is where most of the diagrams and tables will appear.

Need to include for Systematic Review according to PRISMA:

- Completed PRISMA flow diagram (item 16).
- Study characteristics table (item 17).
- Risk of bias assessment table (item 18).
- Present data from individual studies visually (item 19).
- Brief summary of characteristics and risk of bias (narrative – item 20a).
- Results of synthesis (20b-20d).
- Reporting bias (due to missing/included results 21).
- Certainty of body of evidence for each outcome (22).

Certainty of the Evidence

- Taking the process of quality assessment one step further by assessing the overall quality of the body of evidence as a whole.

- Purpose is to assess whether the body of evidence is reliable enough to put the findings into action out in practice.

- This relates to the concept of evidence based practice – we want to make these evidence based decisions on the basis of a high quality body of evidence.

- It would be usual to use GRADE in order to assess this, and Cochrane also have guide on how to use GRADE.

Discussion

- The discussion should explore the findings in relation to your aims and objectives.

- You can bring in other sources beyond the identified review literature here, linking back to other previous research or reviews, any relevant theories and textbooks, and any grey literature sources such as reports, policies, guidelines etc.

- What are the strengths and limitations of both the evidence included in the review and your review process itself?

- Are there any gaps in the evidence needed to help answer your research question?

Research Gap Type	Definition
Evidence Gap (Contradictory Evidence Gap)	Results from studies allow for conclusions in their own right, but are *contradictory* when examined from a more abstract point of view [Jacobs, 2011; Müller-Bloch & Kranz, 2014; Miles, 2017].
Knowledge Gap (Knowledge Void Gap)	Desired research findings do not exist [Jacobs, 2011; Müller-Bloch & Kranz, 2014; Miles, 2017].
Practical-Knowledge Gap (Action-Knowledge Conflict Gap)	Professional behavior or practices deviate from research findings or are not covered by research [Jacobs, 2011; Müller-Bloch & Kranz, 2014; Miles, 2017]. .
Methodological Gap (Method and Research Design Gap)	A variation of research methods is necessary to generate new insights or to avoid distorted findings [Jacobs, 2011; Müller-Bloch & Kranz, 2014; Miles, 2017].
Empirical Gap (Evaluation Void Gap)	Research findings or propositions need to be evaluated or empirically verified [Jacobs, 2011; Müller-Bloch & Kranz, 2014; Miles, 2017].
Theoretical Gap (Theory Application Void Gap)	Theory should be applied to certain research issues to generate new insights. There is lack of theory thus a gap exists [Müller-Bloch & Kranz, 2014]. [Jacobs, 2011; Müller-Bloch & Kranz, 2014; Miles, 2017].
Population Gap	Research regarding the population that is not adequately represented or under-researched in the evidence base or prior research (e.g., gender, race/ethnicity, age and etic). [Robinson, et al, 2011].

Source: Robinson, Saldanhea, & McKoy (2011); Müller-Bloch & Kranz, (2015); Miles, (2017).

Discussion cont. - Recommendations

- The discussion should also identify the potential impact of the review .

- How does the review broaden our knowledge and understanding on this particular topic or issue?

- How could this review potentially inform practice, service delivery, policy etc?

- Does the review identify and gaps and highlight a need for further research in this topic area?

- For further reading on impact of research please see the following article: McKenna (2015) Research Assessment: the impact of impact.

Dissemination of the review findings

- How are you going to share the findings from your review?

- Can you identify any appropriate journals in the field you could potentially submit for publication in?

- Use Web of Science to identify top journals in the field.

- Are there any conferences you can find for potential presentation at?

- How could it be disseminated in the workplace/professional practice?

- Do you have any professional blogs or social media accounts you could disseminate it through?

Getting help from the Library

Email us:

library@napier.ac.uk

Call: 0131 455 3500

The Literature Reviewing LibGuide provides practical guidance on how to carry out a literature review.

Also check your school subject guide for further tailored information.

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