

*Two Days International  
Conference on*

“Innovative Trends in  
Multidisciplinary Research”

7th & 8th July 2023



# *Systematic Literature Reviews for Evidence Based Research*

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# Agenda

- Systematic review and other types of review
- Steps of SR
- Literature Search for SR
- My experience
- Avoid Plagiarism
- Publish in good journals
- Publish open access
- Q & A

"A **systematic review** attempts to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question. It uses explicit, systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings from which conclusions can be drawn and decisions made (Antman 1992, Oxman 1993).

The key characteristics of a systematic review are:

- a clearly stated set of objectives with pre-defined eligibility criteria for studies;
- an explicit, reproducible methodology;
- a systematic search that attempts to identify all studies that would meet the eligibility criteria;
- an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias; and
- a systematic presentation, and synthesis, of the characteristics and findings of the included studies".

*Cochrane Handbook for Systematic Reviews of Interventions.* (March 2011)

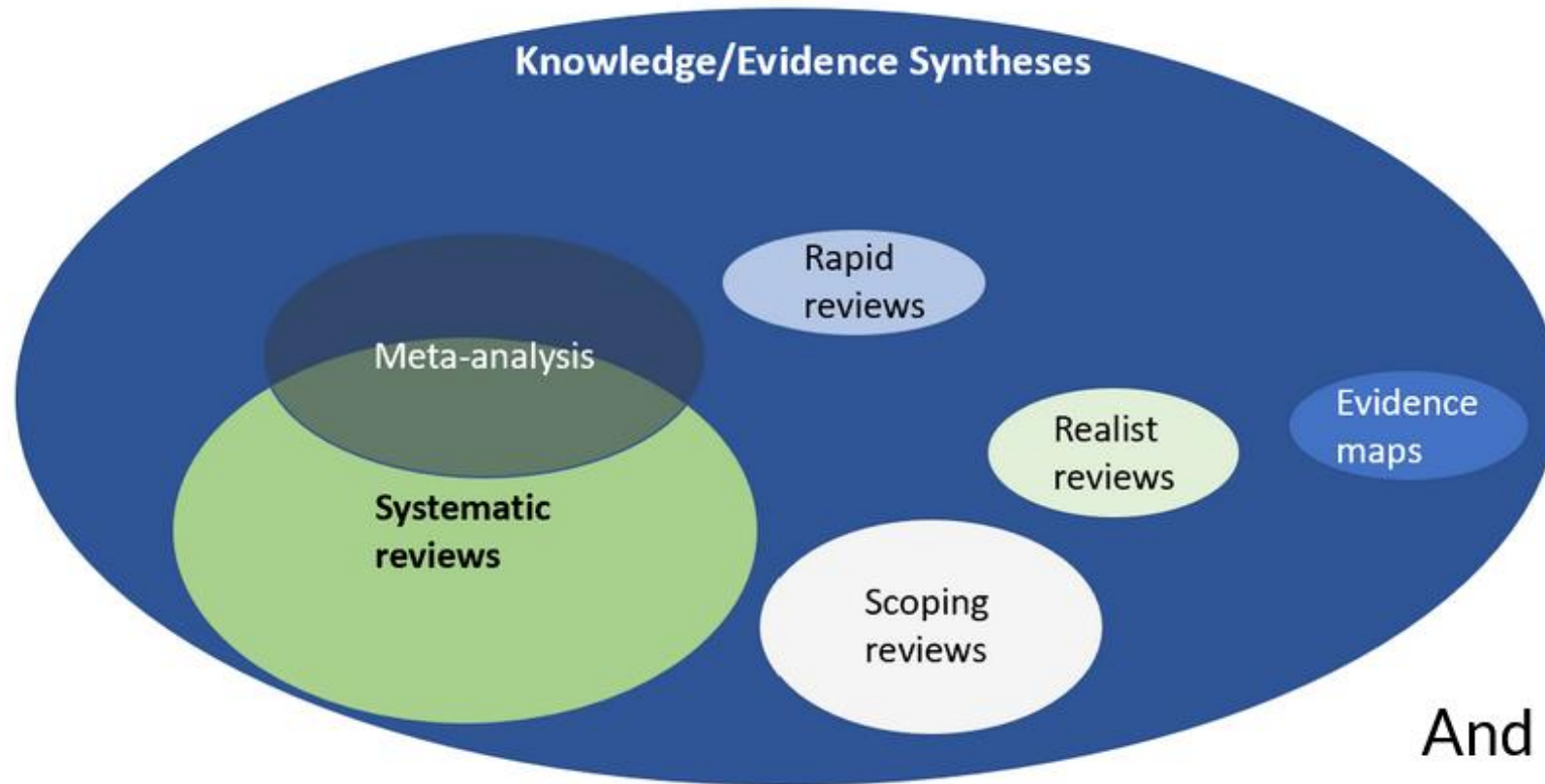
## Difference Between a Systematic Review and a Literature Review

	<b>Systematic Review</b>	<b>Literature Review</b>
<b>Definition</b>	High-level overview of primary research on a focused question that identifies, selects, synthesizes, and appraises all high quality research evidence relevant to that question.	Qualitatively summarizes evidence on a topic using informal or subjective methods to collect and interpret studies.
<b>Goals</b>	Answer a focused clinical question Eliminate bias	Provide summary or overview of topic
<b>Question</b>	Clearly defined and answerable clinical question Recommend using PICO as a guide	Can be a general topic or a specific question
<b>Components</b>	Pre-specified eligibility criteria Systematic search strategy Assessment of the validity of findings Interpretation and presentation of results Reference list	Introduction Methods Discussion Conclusion Reference list
<b>Number of Authors</b>	Three or more	One or more
<b>Timeline</b>	Months to years Average eighteen months	Weeks to months
<b>Requirements</b>	Thorough knowledge of topic Perform searches of all relevant databases Statistical analysis resources (for meta-analysis)	Understanding of topic Perform searches of one or more databases
<b>Value</b>	Connects practicing clinicians to high quality evidence Supports evidence-based practice	Provides summary of literature on a topic

Kysh, Lynn (2013): *Difference between a systematic review and a literature review.*

Figshare.<https://doi.org/10.6084/m9.figshare.766364.v1>

# The Evidence Synthesis Ecosystem



Sutton, A., Clowes, M., Preston, L., & Booth, A. (2019). Meeting the review family: exploring review types and associated information retrieval requirements. *Health Information and Libraries Journal*, 36(3), 202–222. <https://doi.org/10.1111/hir.12276>

*"The ABCs of Systematic Reviews: A Workshop for Librarians Getting Started"* by Dr. Zahra Premji and Mrs. Aditi Gupta, the University of Victoria Libraries, Canada on 20th June 2023

## **Evidence Synthesis**

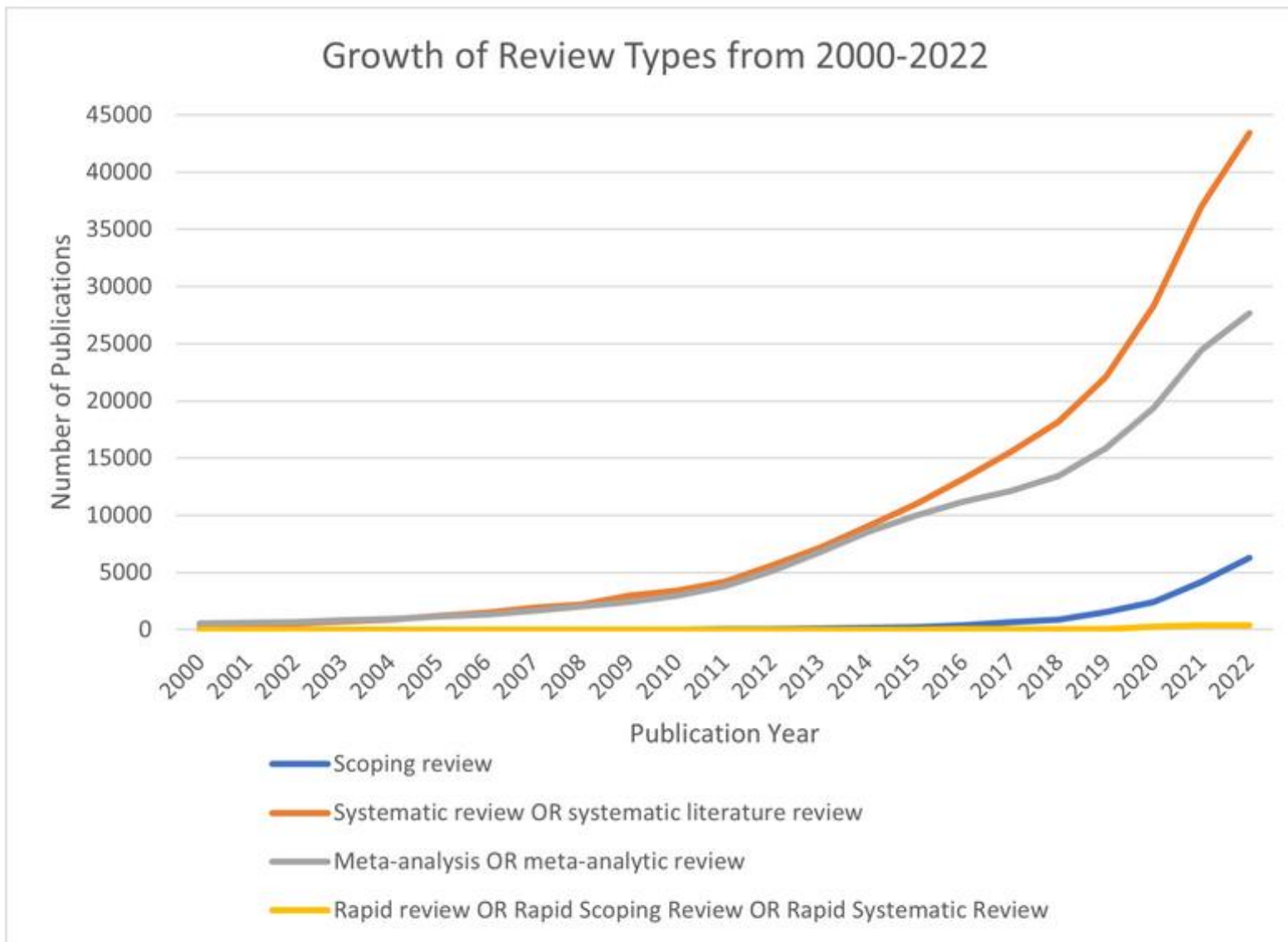
Wondering what evidence synthesis is? This explainer video from [Cochrane Ireland](#) walks you through what it is and why we need it, particularly in healthcare.

<https://www.youtube.com/watch?v=nZR0xQmZVQg&t=110s>

## **The Steps of a Systematic Review**

Wondering how to conduct a systematic review? This explainer video from [The Evidence Synthesis Academy at Brown University](#) walks you through the basic steps.

<https://www.youtube.com/watch?v=-FQSsnaAtOU&t=5s>



Year: 2000

Scoping Review - 0  
 Systematic Review - 327  
**Meta-analysis - 538**  
 Rapid review - 1



Year: 2022

Scoping Review - 6,304  
**Systematic Review - 43,445**  
 Meta-analysis - 27,682  
 Rapid review - 378

Data derived from searches of Scopus (in the title field), on June 19, 2023

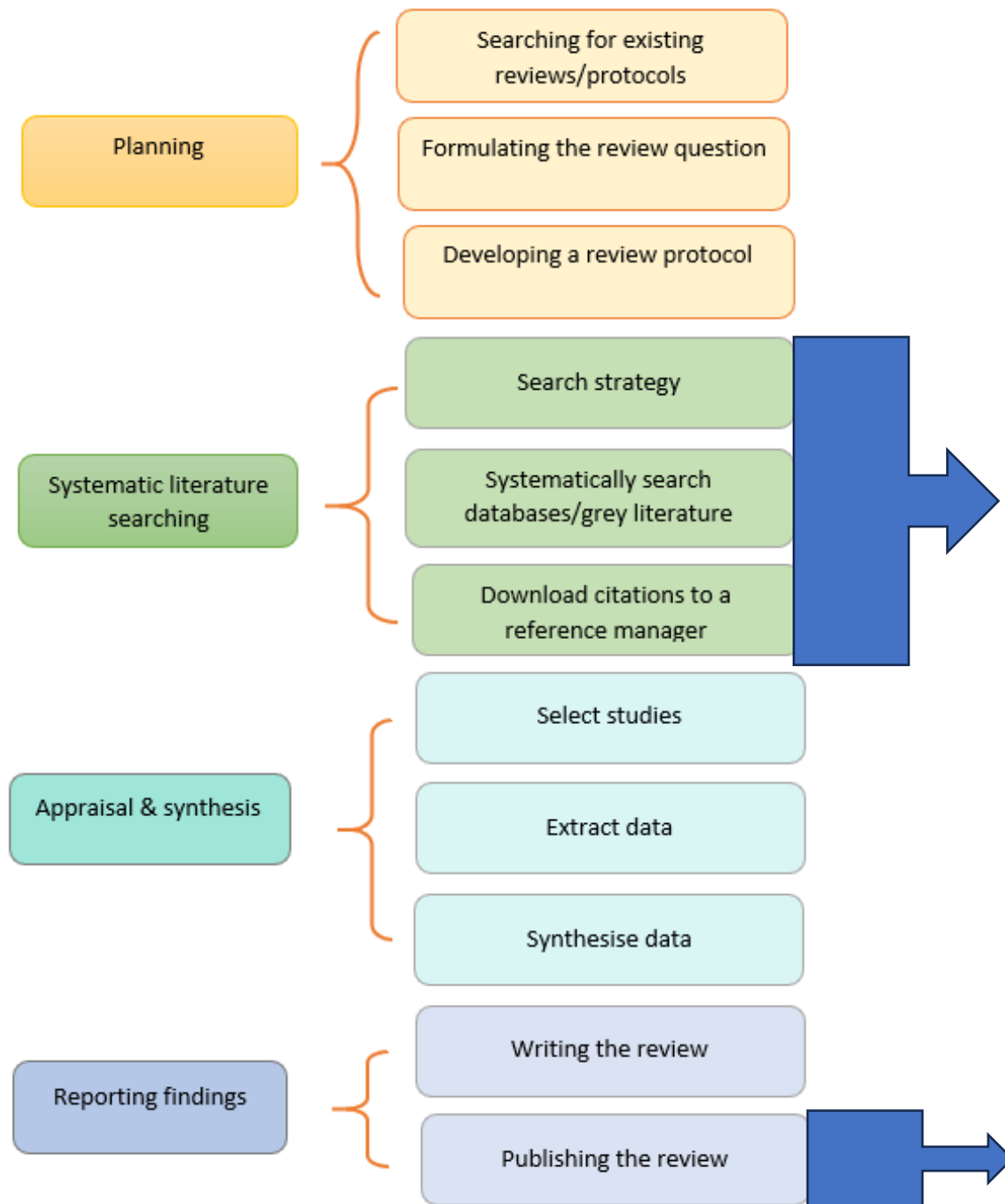
# Why are Systematic Reviews Necessary?

- “The volume of published material makes it impractical for an individual clinician to remain up to date on a variety of common conditions. This is further complicated when individual studies report conflicting conclusions, a problem that is prevalent when small patient samples and retrospective designs are used.”

Margaliot, Zvi, Kevin C. Chung. “Systematic Reviews: A Primer for Plastic Surgery Research”. PRS Journal. 120/7 (2007) p.1834



# Systematic Review Steps



# PRISMA –Search Checklist

Section/topic	#	Checklist item	Location(s) Reported
<b>INFORMATION SOURCES AND METHODS</b>			
Database name	1	Name each individual database searched, stating the platform for each.	
Multi-database searching	2	If databases were searched simultaneously on a single platform, state the name of the platform, listing all of the databases searched.	
Study registries	3	List any study registries searched.	
Online resources and browsing	4	Describe any online or print source purposefully searched or browsed (e.g., tables of contents, print conference proceedings, web sites), and how this was done.	
Citation searching	5	Indicate whether cited references or citing references were examined, and describe any methods used for locating cited/citing references (e.g., browsing reference lists, using a citation index, setting up email alerts for references citing included studies).	
Contacts	6	Indicate whether additional studies or data were sought by contacting authors, experts, manufacturers, or others.	
Other methods	7	Describe any additional information sources or search methods used.	
<b>SEARCH STRATEGIES</b>			
Full search strategies	8	Include the search strategies for each database and information source, copied and pasted exactly as run.	
Limits and restrictions	9	Specify that no limits were used, or describe any limits or restrictions applied to a search (e.g., date or time period, language, study design) and provide justification for their use.	
Search filters	10	Indicate whether published search filters were used (as originally designed or modified), and if so, cite the filter(s) used.	
Prior work	11	Indicate when search strategies from other literature reviews were adapted or reused for a substantive part or all of the search, citing the previous review(s).	
Updates	12	Report the methods used to update the search(es) (e.g., rerunning searches, email alerts).	
Dates of searches	13	For each search strategy, provide the date when the last search occurred.	
<b>PEER REVIEW</b>			
Peer review	14	Describe any search peer review process.	
<b>MANAGING RECORDS</b>			
Total Records	15	Document the total number of records identified from each database and other information sources.	
Deduplication	16	Describe the processes and any software used to deduplicate records from multiple database searches and other information sources.	

PRISMA-S: An Extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews  
 Rethlefsen ML, Kirtley S, Waffenschmidt S, Ayala AP, Moher D, Page MJ, Koffel JB, PRISMA-S Group.  
 Last updated February 27, 2020.

PRISMA (the Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

# SR Protocol

According to the Cochrane Collaboration, a **protocol is a plan** or set of steps to be followed in a study. A protocol for a systematic review should describe the rationale for the review; the objectives; and the methods that will be used to locate, select and critically appraise studies, and to collect and analyse data from the included studies.

- Accountability and transparency
  - compare planned and reported methods
- Making sure efforts aren't duplicated and wasted

Guide for registering in PROSPERO

<https://www.crd.york.ac.uk/prospero/documents/Registering%20a%20review%20on%20PROSPERO.pdf>

Registering in PROSPERO <https://www.crd.york.ac.uk/PROSPERO/>

# The PICO Framework

The PICO framework is the most used model for structuring clinical questions because it captures each key element required for a focused question. PICO stands for:

- Patient or problem
- Intervention or exposure
- Comparison or control
- Outcome(s)

<https://libguides.city.ac.uk/SHS-Litsearchguide>

**Example 1:** A comparison of the effectiveness of exercising versus a healthy diet in reducing obesity in children.

Your PICO would look like this:

Patient/Population /Problem	<b>children</b>
Intervention	<b>exercise</b>
Comparison	<b>diet</b>
Outcomes	<b>reducing obesity</b>

The search terms you need to use relate to these concepts: **children, exercise, diet** and (reducing) **obesity**.

The terms **comparison, effectiveness, versus** are generic and can be excluded from your search.

## Search strategy planning

### Worked example.

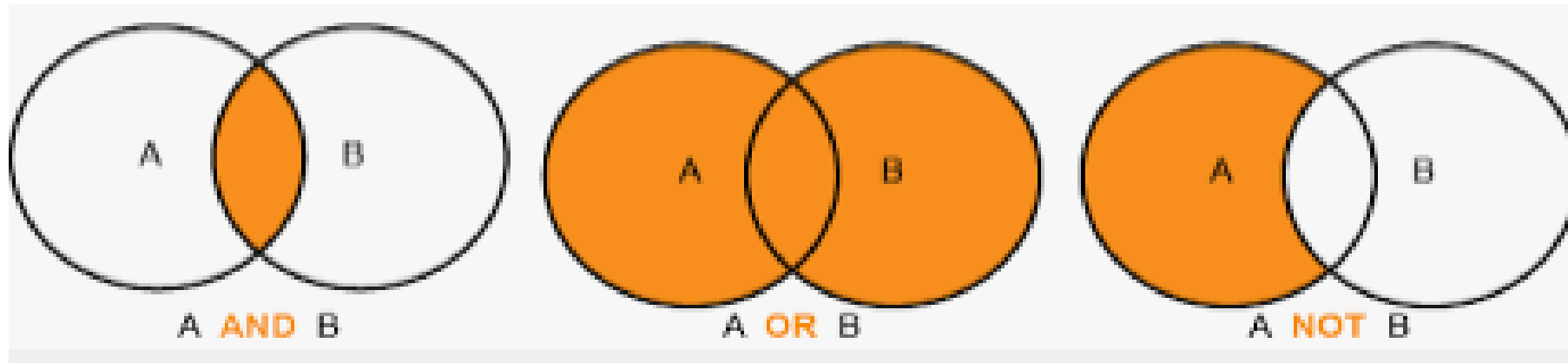
Research question:

What is the effectiveness of **music** interventions compared with **sedation** alone on **stress** response in **intensive care** patients?

Search template:

<b>Concept 1</b>	AND	<b>Concept 2</b>	AND	<b>Concept 3</b>	AND	<b>Concept 4</b>
Music		Stress		Intensive care		Sedation
<b>OR</b> song <b>OR</b> songs		<b>OR</b> anxiety		<b>OR</b> critical care		<b>OR</b> sedative(s)
<b>OR</b> sing <b>OR</b> singing		<b>OR</b> blood pressure		<b>OR</b> critical illness		<b>OR</b> Benzodiazepines
<b>OR</b> music-based		<b>OR</b> relaxation		<b>OR</b> ICU <b>OR</b> CCU		<b>OR</b> BZDs
<b>OR</b> radio <b>OR</b> CD <b>OR</b> Spotify		<b>OR</b> heart rate		<b>OR</b> ventilator		<b>OR</b> Midazolam
<b>OR</b> instrument <b>OR</b> guitar <b>OR</b> harp <b>OR</b> keyboard etc		<b>OR</b> physiological response				<b>OR</b> lorazepam
		<b>OR</b> pain score				

# Search Terms combinations



Phrase search “ ..... ”

Nested Search (..... AND .....) OR .....

Truncation .....\* \*.....

## Nested search

cancer AND child\* AND (“mobile phone\*” OR “smart phone\*” OR “cell phone\*”)

## Phrase search

“mobile phone\*”

“cell phone\*”

## Truncation

child\*

Search

child

children

childhood

\*Need minimum  
4 letters

wom?n will search woman and women

(cancer AND child\* AND (“mobile phone\*” OR “smart phone\*” OR “cell phone\*”) AND India)

# Peer Review Guideline for Electronic Searches

**TABLE 9: PRESS 2015 EVIDENCE-BASED CHECKLIST**

<p>Translation of the research question</p>	<ul style="list-style-type: none"> <li>• Does the search strategy match the research question/PICO?</li> <li>• Are the search concepts clear?</li> <li>• Are there too many or too few PICO elements included?</li> <li>• Are the search concepts too narrow or too broad?</li> <li>• Does the search retrieve too many or too few records? (Please show number of hits per line.)</li> <li>• Are unconventional or complex strategies explained?</li> </ul>
<p>Boolean and proximity operators (these vary based on search service)</p>	<ul style="list-style-type: none"> <li>• Are Boolean or proximity operators used correctly?</li> <li>• Is the use of nesting with brackets appropriate and effective for the search?</li> <li>• If NOT is used, is this likely to result in any unintended exclusions?</li> <li>• Could precision be improved by using proximity operators (e.g., adjacent, near, within) or phrase-searching instead of AND?</li> <li>• Is the width of proximity operators suitable (e.g., might adj5 pick up more variants than adj2)?</li> </ul>
<p>Subject headings (database-specific)</p>	<ul style="list-style-type: none"> <li>• Are the subject headings relevant?</li> <li>• Are any relevant subject headings missing; e.g., previous index terms?</li> <li>• Are any subject headings too broad or too narrow?</li> <li>• Are subject headings exploded where necessary and vice versa?</li> <li>• Are major headings ("starring" or restrict to focus) used? If so, is there adequate justification?</li> <li>• Are subheadings missing?</li> <li>• Are subheadings attached to subject headings? (Floating subheadings may be preferred.)</li> <li>• Are floating subheadings relevant and used appropriately?</li> <li>• Are both subject headings and terms in free text (see below) used for each concept?</li> </ul>



# Peer Review Guideline for Electronic Searches

Text word searching (free text)	<ul style="list-style-type: none"><li>• Does the search include all spelling variants in free text (e.g., UK versus US spelling)?</li><li>• Does the search include all synonyms or antonyms (e.g., opposites)?</li><li>• Does the search capture relevant truncation (i.e., is truncation at the correct place)?</li><li>• Is the truncation too broad or too narrow?</li><li>• Are acronyms or abbreviations used appropriately? Do they capture irrelevant material? Are the full terms also included?</li><li>• Are the keywords specific enough or too broad? Are too many or too few keywords used? Are stop words used?</li><li>• Have the appropriate fields been searched; e.g., is the choice of the text word fields (.tw.) or all fields (.af.) appropriate? Are there any other fields to be included or excluded (database-specific)?</li><li>• Should any long strings be broken into several shorter search statements?</li></ul>
Spelling, syntax and line numbers	<ul style="list-style-type: none"><li>• Are there any spelling errors?</li><li>• Are there any errors in system syntax; e.g., the use of a truncation symbol from a different search interface?</li><li>• Are there incorrect line combinations or orphan lines (i.e., lines that are not referred to in the final summation that could indicate an error in an AND or OR statement)?</li></ul>
Limits and filters	<ul style="list-style-type: none"><li>• Are all limits and filters used appropriately and are they relevant given the research question?</li><li>• Are all limits and filters used appropriately and are they relevant for the database?</li><li>• Are any potentially helpful limits or filters missing? Are the limits or filters too broad or too narrow? Can any limits or filters be added or taken away?</li><li>• Are sources cited for the filters used?</li></ul>

Search strategy is part of the process and needs to be documented

# NAM Standards For Documenting the Search

## STANDARD 3.4 Document the search

3.4.1 Provide a line-by-line description of the search strategy, including the date of every search for each database, web browser, etc  
<http://iom.nationalacademies.org/Reports/2011/Finding-What-Works-in-Health-Care-Standards-for-Systematic-Reviews/Standards.aspx?>



## Standards: Cochrane

### Cochrane Handbook Section 6.6

“It should be borne in mind at the outset that the full search strategies for each database will need to be included in an Appendix of the review.”

# Core Resources in the Biomedical Sciences

Resource	Subject	Cost	Notes
Medline	Biomedical	PubMed – Free Ovid, Ebsco & Others - Subscription	Controlled vocabulary (MeSH), advanced search features in Ovid
Embase	Biomedical, Pharmacy	Subscription	Strong on international content Strong on pharmaceutical indexing Over 6 million records and over 2,700 journals that are NOT covered by MEDLINE
Scopus	Multidisciplinary	Subscription	LARGE database (Embase + Medline + others) Strong on engineering content Citation tracking capabilities
Web of Science	Multidisciplinary	Subscription	Locate conference proceedings Social Sciences & Humanities content Citation tracking capabilities
Cochrane Library	Biomedical	Free/Subscription	Identify existing SRs Locate clinical trials Inform search strategies
Google Scholar	Multidisciplinary	Free	Strong search algorithm Full text searching where available Replicability and advanced search features an issue

# Allied Health and Behavioral Sciences Resources

Resource	Subject(s)	Cost	Notes
<b>CINAHL</b>	Nursing and Allied Health	Subscription	Controlled vocabulary thesaurus Contains literature that might not be found in PubMed
<b>PEDro</b>	Physiotherapy	Free	Highly specialized database Trials, reviews, guidelines
<b>PsycINFO</b>	Psychology and Behavioral Sciences	Subscription	Controlled vocabulary thesaurus Good place to search for tests and measurements
<b>SPORTDiscus</b>	Sports Medicine (and related subjects)	Subscription	Controlled vocabulary thesaurus Journals, magazines

# Global Health and Multilingual Resources

Resource	Subject(s)	Cost	Notes
<b>Africa-Wide Information</b>	Multidisciplinary	Subscription	Literature about Africa Topics covered: Cultural history and heritage, development, economic, health, history (among others)
<b>Epistemonikos</b>	Health	Free	Multilingual (Arabic, Chinese, Dutch, English, French, German, Italian, Spanish and Portuguese) Systematic reviews, links to related evidence
<b>Global Health</b>	Public Health	Subscription	International coverage Topics: public health, communicable diseases, tropical diseases, parasitic diseases, human nutrition
<b>Global Index Medicus</b>	Biomedical Public Health	Free	Maintained by World Health Organization Contains health literature from low-middle income countries
<b>LILACS</b>	Medicine Health Sciences	Free	Health literature from Latin American and Caribbean countries Contains resources in Portuguese, Spanish, and English

# My little experience

## Title:

What is the efficacy of conventional and biologic Disease Modifying Antirheumatic Drugs (DMARDs) on the management of adult patients with Rheumatoid Lung Disease. - A systematic review.

## Study Selection- Inclusion and Exclusion criteria

### Inclusion

- Patients must be 18 years and above, regardless of their gender and ethnicity that have been diagnosed with rheumatoid lung disease and is on treatment with DMARDs.

### Exclusion

- Patients that present with lung disease due to other causes like Asthma
- Patients who are not using DMARD for the management of their RLD
- Patients with RA but do not have any diagnosed RLD

## Study design

The Population, Intervention, Comparison, Outcome and Study design method (PICOS) will be used throughout this project. The above Inclusion and Exclusion criteria will prove better understanding of the review and help with decision making and act as guidelines in providing a better understanding of the purpose of the mentioned review.


This review will focus on systematic reviews relevant to the topic; recent studies are more likely to be viable and reliable.

- Population: The population will include adult patients irrespective of gender and race who have been diagnosed with RLD.
- Intervention: Patients on DMARDs (conventional and/or biologics)
- Comparison: patients using only one of the types of DMARDs, both DMARDs or no DMARDs.
- Outcome: Primary Outcomes include Improvement of respiratory symptoms like coughing, dyspnea, pleural effusion, and chest pain. Improvement of pulmonary function test in RLD like improving the restrictive pattern that is seen in ILD, improving both forced vital capacity (FVC) and (Diffusing capacity of the lung carbon monoxide (DLco) since impairment of them are associated with poor prognosis. Improvement of radiological pulmonary features such as honeycombing, fibrotic changes/ ground glass changes, reduction in the number and size of nodules.



## **Search Strategy:**

The search strategy will be adequately conducted and appropriately presented with detailed filters used and presented for each electronic bibliographic database searched: PubMed, Cochrane Register, Science Direct, and Google Scholar will be used to find relevant and valuable studies. The Google search engine will also be utilized when either full-texts are unavailable and authors need to be contacted to provide such content. Reference list will also be used to find other valuable studies not found through databases. The search terms used will be the correct keywords extracted from the PICOS elements of the research question. The Boolean Operator “AND”, “OR” will be used accordingly to link separate search terms and make the search more focused and productive.





## Searches carried out in PUBMED:

("Rheumatoid Lung Disease" OR "Rheumatoid Lung Disorder\*" OR "Rheumatoid nodule\*" OR "bronchiolitis obliteran\*" OR "pulmonary hypertension" OR "pulmonary fibrosis" OR "pleural effusion\*") AND ("disease-modifying antirheumatic drug\* OR DMARD\*")

**- 106 results (selected only 12)**

((cough\* OR dyspnea OR "chest pain" OR "Angina\*") AND ("disease-modifying antirheumatic drug\* OR DMARD\*"))

**- 57 results (selected 7)**

((("forced vital capacity" OR FVC OR "Diffusing capacity") AND ("lung carbon monoxide" OR DLco)) AND ("disease-modifying antirheumatic drug\* OR DMARD\*"))

**- 11 results (selected 5)**

**Total 22 studies selected from PUBMED**



Zotero is a free, easy-to-use tool to help you collect, organize, deduplicate, annotate, cite while you write, make reference list and share research.

There are many citation managers tools (Mendeley, EndNote etc)

**Download :** <https://www.zotero.org/download/>

**Tutorial :** [https://www.youtube.com/watch?v=JG7Uq\\_JFDzE](https://www.youtube.com/watch?v=JG7Uq_JFDzE)

# What is plagiarism

- Plagiarism occurs when a student/researcher/author presents materials taken from another person's work without a citation, and either purposefully or unintentionally passes it off as their own. If you borrow concepts or information from others, proper attribution is always required.

# How to avoid plagiarism

- **Don't procrastinate with your research and assignments.**  
Plan your research well in advance, and take help, to avoid sort of pressure that can often lead to sloppy research habits and bad decisions.
- **Commit to doing your own work.**  
Papers need to represent your *own* work.
- **Be 100% scrupulous in your note taking.**  
Mark your ideas and others' ideas clearly in your notes or draft paper. Easy with Zotero.
- **Cite your sources scrupulously.**  
Always cite other people's work, words, ideas and phrases that you use directly or indirectly in your paper.
- **Understand good paraphrasing.**  
Good paraphrasing also requires that you cite the original source. Anything less and you veer into the dangerous territory of plagiarism."

# \*AI tools in literature search



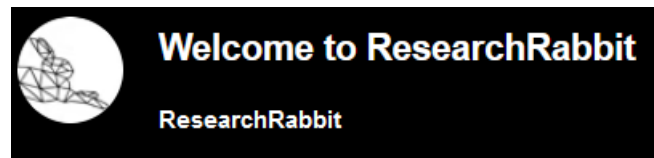
<https://www.semanticscholar.org/>



<https://elicit.org/>



<https://consensus.app>



\*not recommended as an alternative method

# How to find Indexed Journals



**Journals indexed in PubMed : Apx. 5289 (including quality OA journals)**

<https://www.ncbi.nlm.nih.gov/nlmcatalog?term=currentlyindexed>



**Scopus**

**Journals & proceedings indexed in Scopus : Apx. 25,000 (including quality OA journals)**

<https://mjl.clarivate.com/search-results>



**WEB OF SCIENCE**

**Journals indexed in Scopus : Apx. 44,000 (including quality OA journals)**

<https://www.scopus.com/sources>



**Quality Open Access Journals indexed in DOAJ : Apx. 20,000**

<https://doaj.org/search/journals>

**SJR**

Scimago Journal & Country Rank

<https://www.scimagojr.com/journalrank.php>

**Open access** is a publishing model for scholarly communication that makes research information available to readers at no cost, as opposed to the traditional subscription model in which readers have access to scholarly information by paying a subscription (usually via libraries).

© [www.openaccess.nl/en](http://www.openaccess.nl/en)





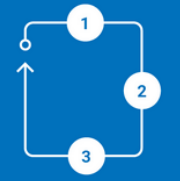
# Author OA actions

## Preprint Servers

- MedArxiv
- bioRxiv
- NIH Preprint Pilot

### The Preprint Cycle

- 1 Post publicly on preprint server
- 2 Public Comment
- 3 Revision



Self-archive  
(eg: pre-print server)

**Institutional Repository**  
**Subject Repository**  
**PMC Central**

Deposit to  
Institutional  
Repository

**Author funding**  
**Funding bodies may cover**

Pay to publish  
(Article  
Processing  
Charge - APC)



Submitted version  
Author's original  
Pre-print

Submit to  
publisher

Peer review

Edit



Accepted version  
Post-print  
AAM

Accepted by  
publisher

Copy-editing  
and typesetting



Published version  
Version of record

Publication





# **Systematic Reviews and Meta-Analysis: A Campbell Collaboration online course**

<https://oli.cmu.edu/courses/systematic-reviews-and-meta-analysis/>

## **Introduction to Systematic Review and Meta-Analysis**

<https://www.coursera.org/learn/systematic-review>



Thank you  
Questions?