طراحی استراتژی جستجو برای مطالعات مرور سیستماتیک

دکتر مریم رزمگیر
استادیار گروه کتابداری و اطلاع رسانی پزشکی
دانشگاه علوم پزشکی ایران
مدیر اطلاع رسانی پزشکی و منابع علمی دانشگاه
آذر ۱۴۰۴

رئوس کارگاه

- مروری بر اهمیت مطالعات ثانویه و جایگاه مطالعات مرور نظام مند
- مروری بر مراحل انجام مرور نظام مند
- فرمول بندی سوال پژوهش
- تدوین راهبرد جستجو
- شناخت انواع منابع اطلاعاتی
- تکنیک ها و ابزارهای جستجو

انواع مطالعات

- مطالعات اولیه: استخراج و بررسی اطلاعات به صورت مستقیم از نمونه ها (مثل مقالات اصیل، پیمایش، کارآزمایی بالینی، مطالعات تجربی و ...)

- مطالعات ثانویه: ترکیب و تحلیل اطلاعات مطالعات اولیه (مثل انواع مطالعات مروری)

افزایش رشد انتشارات

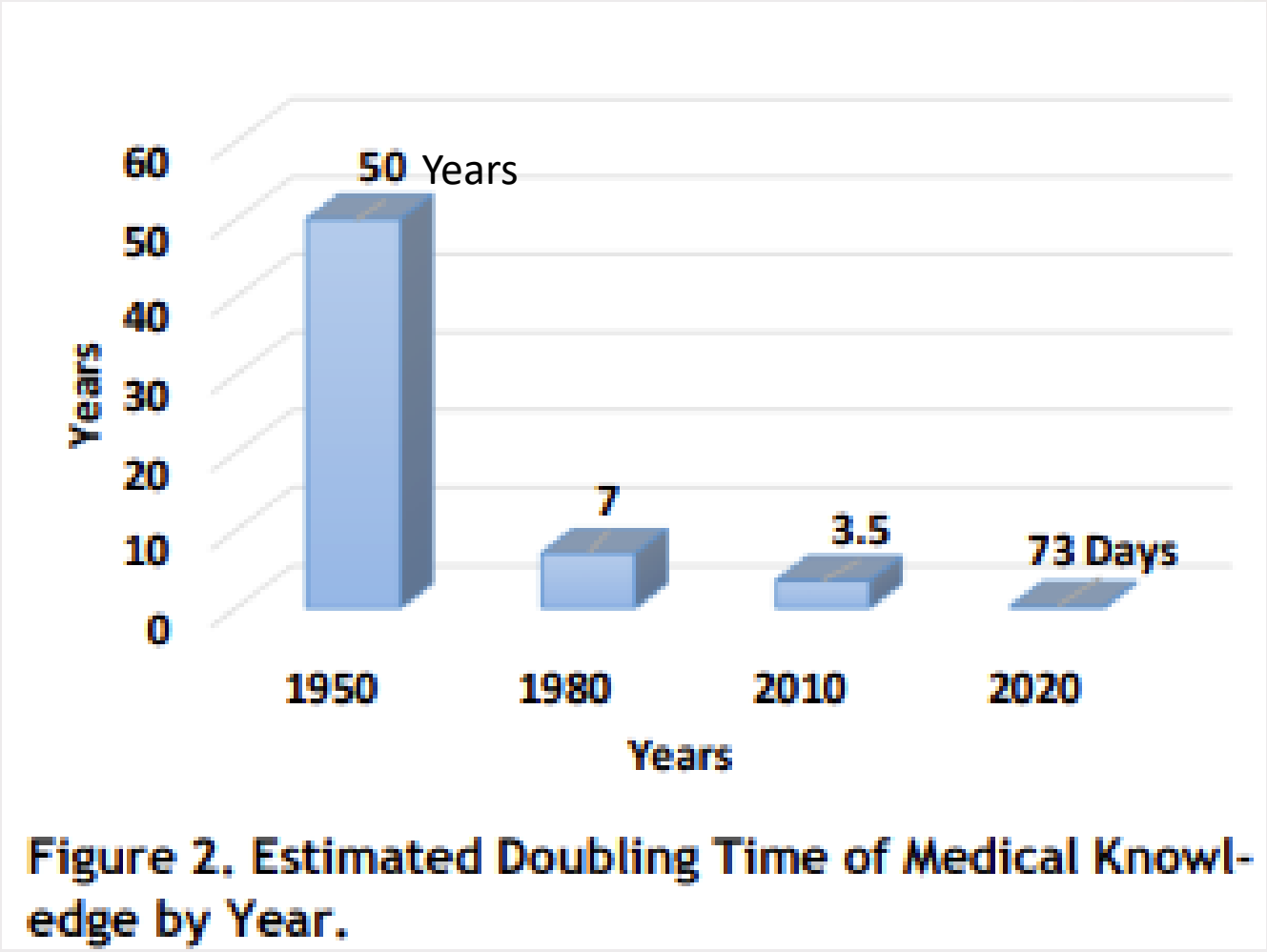


Figure 2. Estimated Doubling Time of Medical Knowledge by Year.

Kahn MJ, Sachs BP. Crises and turnaround management: lessons learned from recovery of New Orleans and Tulane University following Hurricane Katrina. Rambam Maimonides medical journal. 2018 Oct 4;9(4):e0031.

چرا مطالعات ثانویه انجام می شود؟

- انفجار اطلاعات
- مطالعات تکراری و غیر ضروری
- مطالعات اولیه ضعیف (سوگیری- حجم نمونه کم)
- تناقض نتایج مطالعات
- کمبود زمان و امکانات
- تهیه گایدلاینها بر اساس شواهد معتبر
- شناسایی نیازها و الویت های پژوهشی

DOI: 10.1111/j.1471-1842.2009.00848.x

Review Article

A typology of reviews: an analysis of 14 review types and associated methodologies

Maria J. Grant* & Andrew Booth†, *Salford Centre for Nursing, Midwifery and Collaborative Research (SCNMCR), University of Salford, Salford, UK, †School of Health and Related Research (ScHARR), University of Sheffield, Sheffield, UK

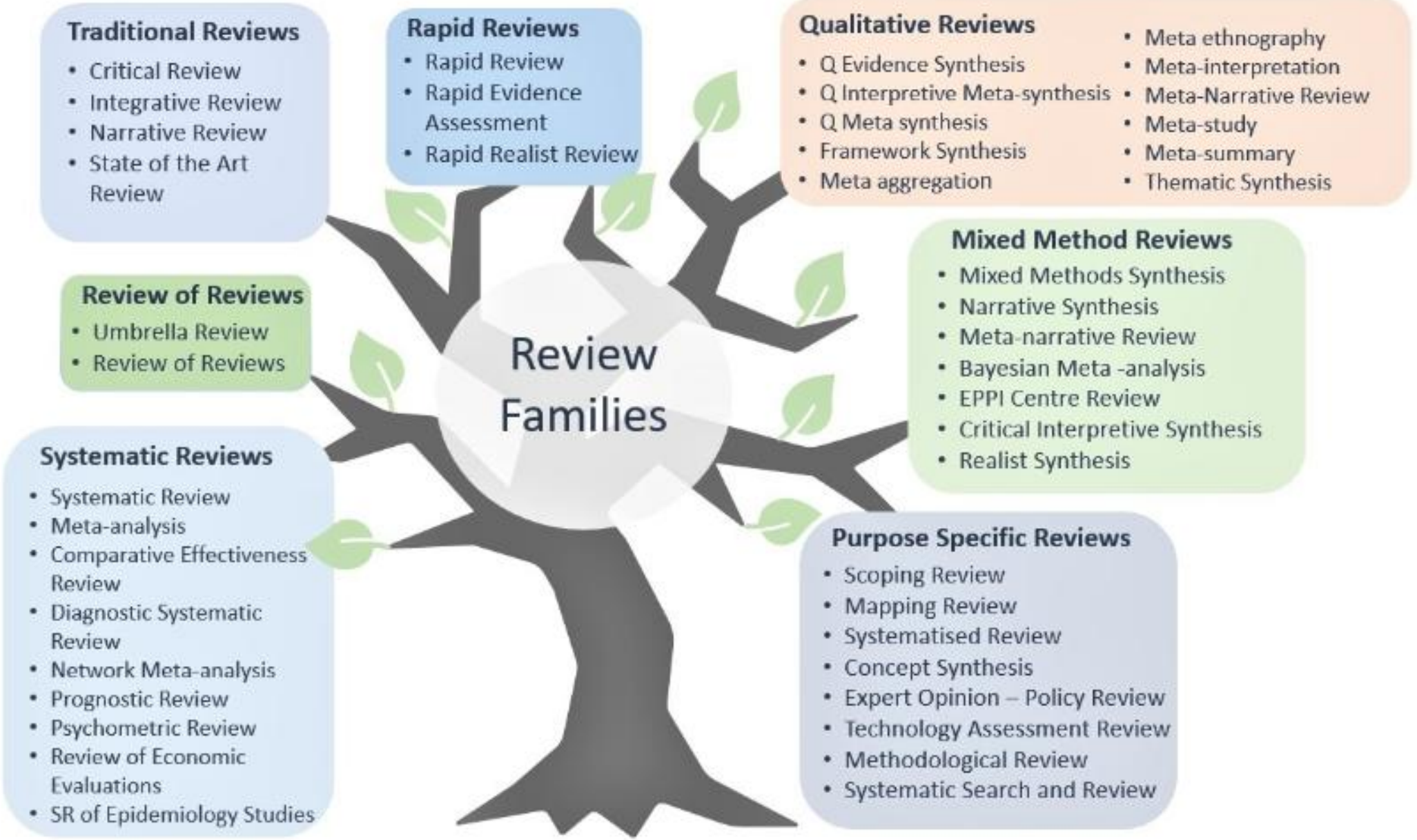
Abstract

Background and objectives: The expansion of evidence-based practice across sectors has lead to an increasing variety of review types. However, the diversity of terminology used means that the full potential of these review types may be lost amongst a confusion of indistinct and misapplied terms. The objective of this study is to provide descriptive insight into the most common types of reviews, with illustrative examples from health and health information domains.

Methods: Following scoping searches, an examination was made of the vocabulary associated with the literature of review and synthesis (literary warrant). A simple analytical framework—Search, AppraisaL, Synthesis and Analysis (SALSA)—was used to examine the main review types.

Results: Fourteen review types and associated methodologies were analysed against the SALSA framework, illustrating the inputs and processes of each review type. A description of the key characteristics is given, together with perceived strengths and weaknesses. A limited number of review types are currently utilized within the health information domain.

Conclusions: Few review types possess prescribed and explicit methodologies and many fall short of being mutually exclusive. Notwithstanding such limitations, this typology provides a valuable reference point for those commissioning, con-



Graphic and guide based on on the work of Sutton et al., (2019) on 'Review Families'.

انواع مطالعات مروری

- **SYSTEMATIC Review**
- Realist review
- Narrative review
- Scoping review
- State of the art
- Critical review
- Rapid review
- Umbrella review
- Integrative review
- Meta-ethnography

Systematic review

- مرور سیستماتیک
- مرور ساختاریافته
- مرور ساختارمند
- مرور نظام مند
- مرور نظام یافته
- مرور ساختاردار

مرور نظام مند

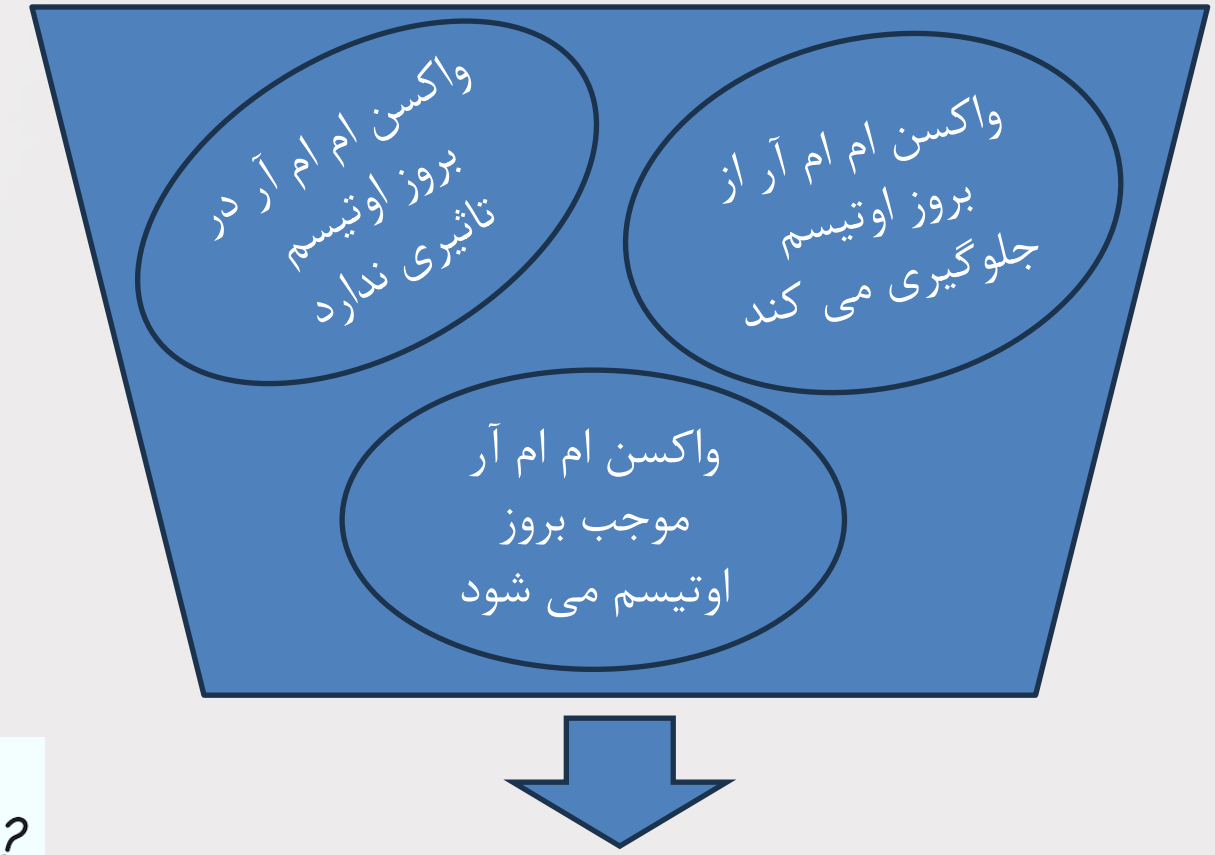
- نوعی مطالعه مروری ثانویه با **روشی معین، شفاف و ساختارمند** (تکرار پذیر بودن) است که با ***تمرکز بر سوال مشخص*** و خاص سعی در گردآوری و تحلیل تمامی مطالعات مرتبط اولیه (شواهد) را دارد (جامعیت).
- مرور نظام مند کاری تیمی است و در آن سوگیری به حداقل می رسد.

Systematic Review (SR)

- SRs are a way of **synthesizing scientific evidence** to answer a particular research question in a way that is **transparent** and **reproducible**, while seeking to include all published evidence on the topic and appraising the quality of this evidence. The main objective of the SR approach is to **reduce the risk for bias** and to increase transparency at every stage of the review process by relying on **explicit, systematic methods** to reduce bias in the selection and inclusion of studies, to appraise the quality of the included studies, and to summarise them objectively (Liberati et al., 2009, Petticrew, 2001).

چرا مرور نظام مند؟

- ارتباط واکسن MMR و بروز اوتیسم در کودکان



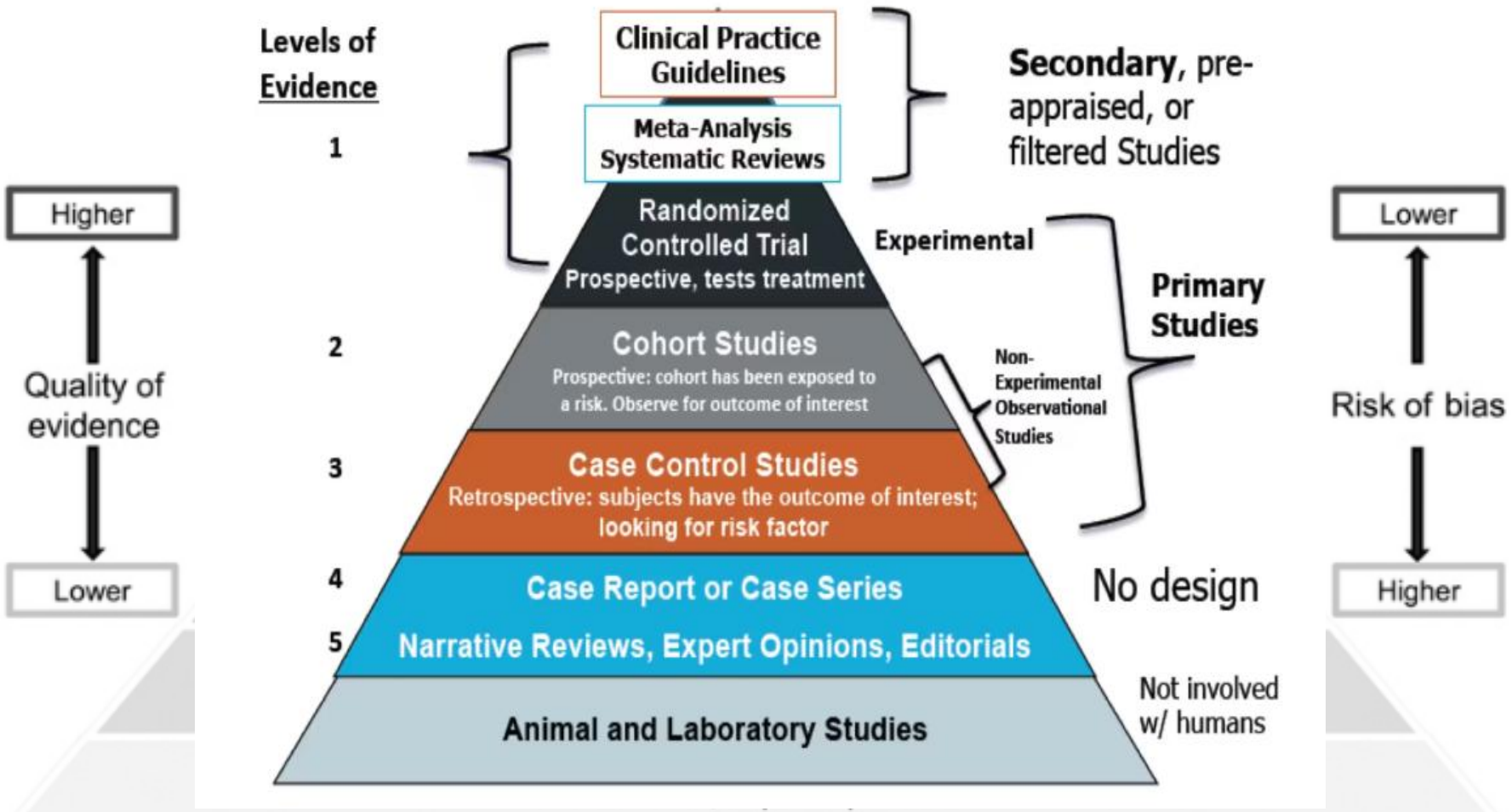
بلاخره آیا واکسن ام ام آر در بروز اوتیسم تاثیری دارد یا خیر؟؟

چرا مرور نظام مند؟

- برخورداری نتایج ارایه شده از دقت بالاتر
- جامعیت و در نتیجه تعمیم پذیری بیشتری نتایج نسبت به مطالعات اولیه
- امکان کشف علل و ریشه های اختلاف نظر و انجام تحلیل مناسب بر روی آنها
- جایگاه مناسبی برای یافتن نقصان شواهد در زمینه مسأله مورد
- جایگاه مناسبی برای مقایسه مطالعات اولیه با یکدیگر و آشکار ساختن ایرادات روش شناختی که روایی مطالعات را مخدوش می کند

بنابراین نتایج این مطالعات قابلیت بکارگیری در تصمیم گیری را دارند در صورتی که مطالعات اولیه معمولا فاقد این ویژگی هستند.

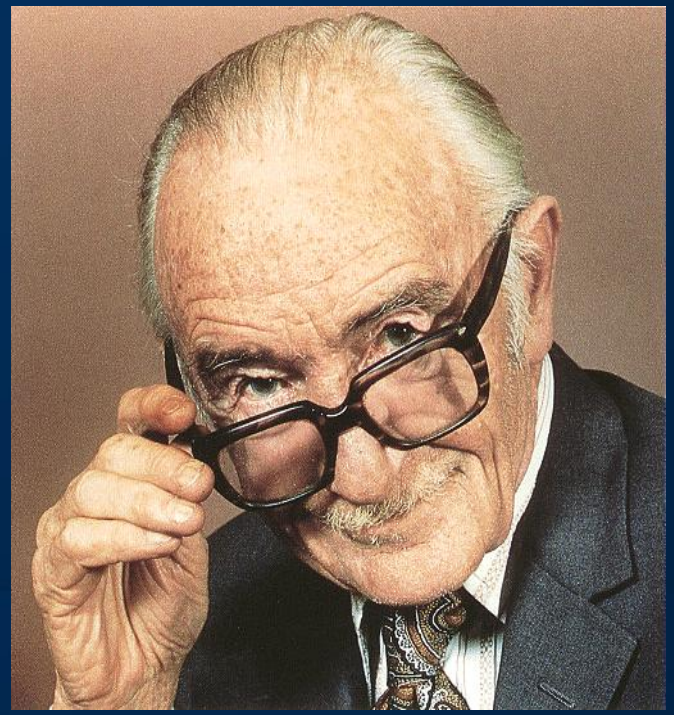
هرم شواهد



Yetley EA,et al. Options for basing Dietary Reference Intakes (DRIs) on chronic disease endpoints: report from a joint US-/Canadian-sponsored working group. The American journal of clinical nutrition. 2017 Jan 1;105(1):249S-85S.

Archie Cochrane

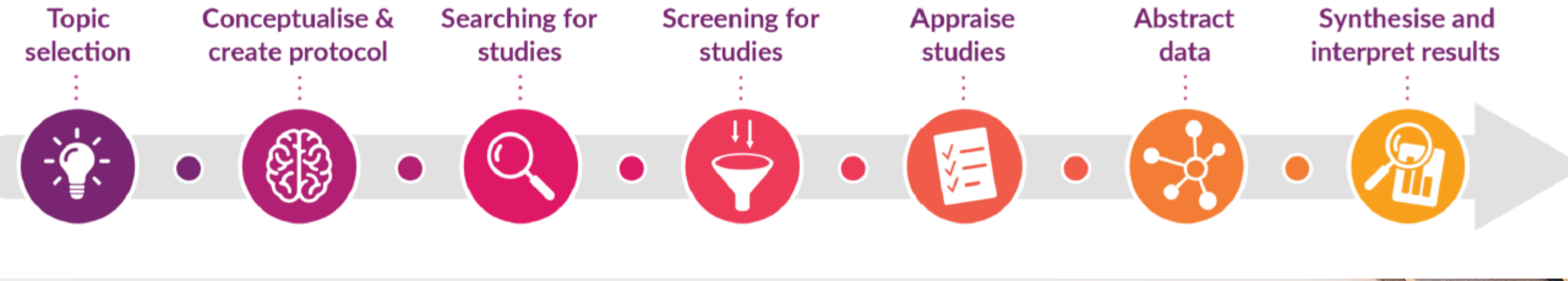
1909-1988



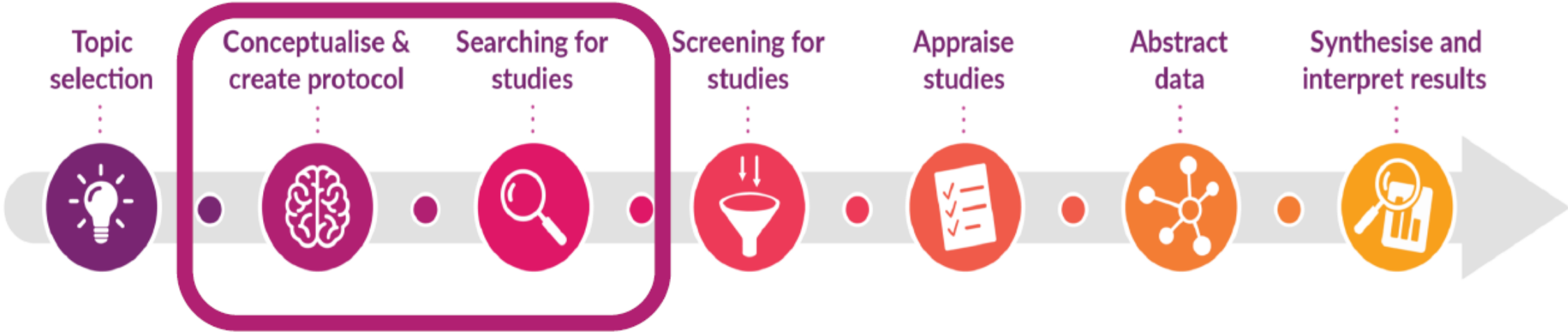
"It is surely a great criticism of our profession that we have not organised a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomised controlled trials."

مراحل انجام مرور نظام مند

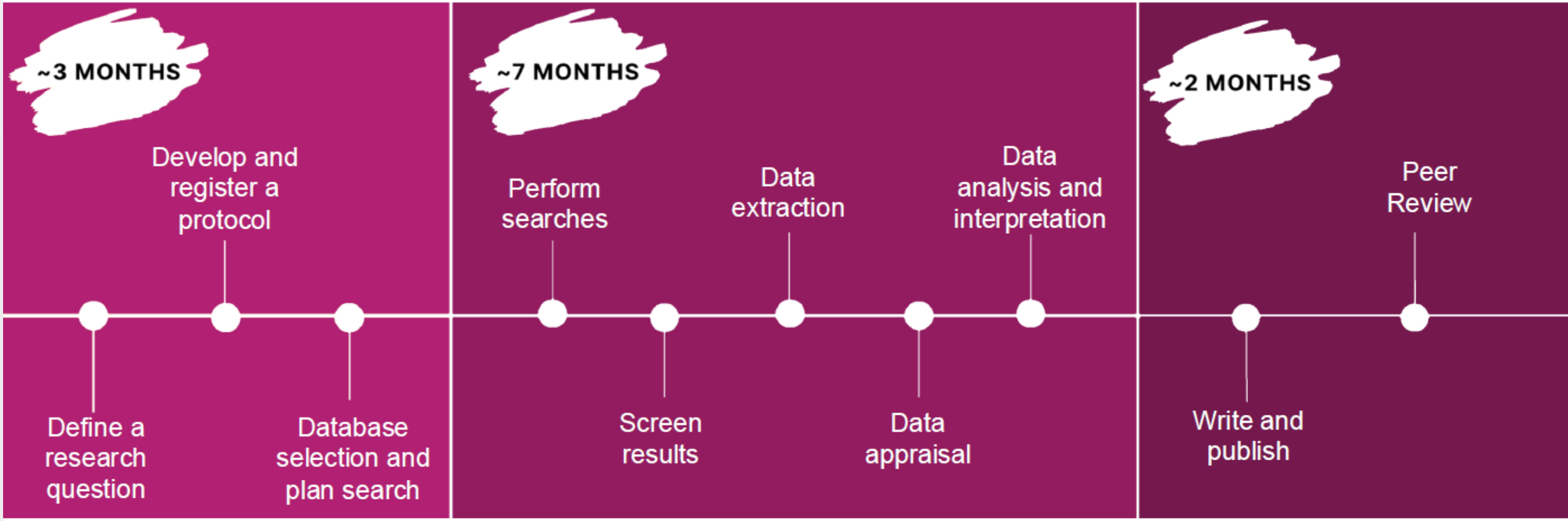
1. طراحی و فرموله کردن سوال پژوهش
2. تدوین پروتکل انجام مطالعه
3. جستجو و یافتن مطالعات مرتبط (شواهد)
4. ارزیابی کیفیت مطالعات
5. استخراج نتایج از مطالعات و خلاصه کردن شواهد
6. تحلیل داده ها
7. تفسیر نتایج


Topic selection
Conceptualise & create protocol
Searching for studies
Screening for studies
Appraise studies
Abstract data
Synthesise and interpret results

Steps in a systematic review



Systematic Review Timeline



طراحی و فرموله کردن سوال پژوهش

- موضوع مهم بوده و مورد توجه متخصصین و پژوهشگران باشد.
- در متون علمی و متخصصین اختلاف نظر وجود داشته باشد.
- پژوهش کافی در مورد آن صورت گرفته باشد.
- نتیجه آن از نظر تخصصی و اجرایی مهم و قابل توجه باشد.
- پژوهشگر در مورد موضوع تخصص و آگاهی داشته باشد.

ویژگی های سوال پژوهش

- سوال باید روشن، مشخص و واضح باشد. (مبهم نبودن سوال)
- سوال باید خاص باشد. (عام وگسترده نباشد)
- حدود و ثغور سوال با توجه به موضوع باید مناسب باشد.

The research question should be ***clear*** and ***focused*** - **not too vague, too specific or too broad**.

Developing a research question

Research topic

Broad area
of research

Research question

Answerable

Focused

Specific

New

انواع تکنیک های اجرای مرور نظام مند

- PICO
- PECO
- SPIDER
- SPICE
- ECLIPSE
- PEO
- PECOT
- PECODR
- 4 Ws (What- Where- When-Who or to Whom)

اجزای سوال پژوهش

- **P** **P**articipants or **P**atients?
- **I** **I**nterventions?
- **C** **C**omparisons?
- **O** **O**utcomes?

PICO

PICO - to search for quantitative review questions

P	I	C	O
Patient, Population	**Intervention (or Exposure)**	**Comparison (or Control)** if appropriate	**Outcome**
Most important characteristics of patient (e.g. age, disease/condition, gender)	Main intervention (e.g. drug treatment, diagnostic/screening test)	Main alternative (e.g. placebo, standard therapy, no treatment, gold standard)	What you are trying to accomplish, measure, improve, affect (e.g. reduced mortality or morbidity, improved memory)

SPIDER

SPIDER - to search for *qualitative* and mixed methods research studies

S	PI	D	E	R
Sample	Phenomenon of Interest	Design	Evaluation	Research type

SPICE

SPICE - to search for *qualitative* evidence

S	P	I	C	E
Setting (where?)	Perspecitve (for whom?)	Intervention (what?)	Comparison (compared with what?)	Evaluation (with what result?)

ECLIPSE

ECLIPSE - to search for *health policy/management* information

E	C	L	I	P	Se
Expectation (improvement or information or innovation)	Client group (at whom the service is aimed)	Location (where is the service located?)	Impact (outcomes)	Professionals (who is involved in providing/improving the service)	Service (for which service are you looking for information)

مثال

مقایسه تاثیر دو داروی پروپرانول و متوپرولول در کاهش درد میگرنی

- P = افراد مبتلا به میگرن
- I = پروپرانول
- C = متوپرولول
- O= کاهش درد میگرنی

Related Evidences

بازیابی شواهد

- جستجو در منابع و پایگاه های اطلاعاتی
- آشنایی با انواع منابع اطلاعاتی چاپی و الکترونیکی
- شناسایی پایگاه های اطلاعاتی متناسب با حوزه
- شناخت کلید واژه های مناسب
- تدوین استراتژی جستجو

گام های یافتن مطالعات مرتبط

۱ -انتخاب پایگاه اطلاعاتی
۲ -تعیین کلید واژه های اصلی
۳- تعیین کلیدواژه های مترادف
۴ - ترکیب مفاهیم و طراحی استراتژی جستجو
۵ -تعیین محدودیت ها و فیلتر های مورد نیاز
۶- انجام جستجو
۷-بازیابی و ارزیابی نتایج (در صورت نیاز بازبینی و تکرار جستجو)
۸ -استخراج مطالعات

انواع منابع اطلاعاتی

- منابع چاپی و الکترونیکی (جستجوی دستی و ماشینی)
- پایگاه های اطلاعاتی واستنادی
- منابع خاکستری Grey Lit.

Database Searching

پایگاه های اطلاعاتی

- ✓ PubMed
- ✓ Embase
- ✓ WoS
- ✓ Scopus
- ✓ Biological Abstracts
- ✓ CINAHL
- ✓ Psychinfo
- ✓ ….

منابع اطلاعاتی

Bibliographic databases

- National and regional databases
- Subject-specific
- Citation databases
- Grey literature databases
- Dissertations and theses databases

Ongoing studies and unpublished data sources: further considerations

- Trials registers and trials results registers
- Regulatory agency sources and clinical study reports

Journals and other non-bibliographic database sources

- Hand searching
- Full text journals available electronically
- Conference abstracts and proceedings
- Reviews, guidelines and reference lists as sources of studies
- General web searching (including search engines/Google Scholar, etc.)

بانکهای اطلاعاتی تخصصی موضوعی

AMED (allied and complementary medicine),

CINAHL (nursing and allied health) and

APA PsycInfo (psychology and psychiatry)

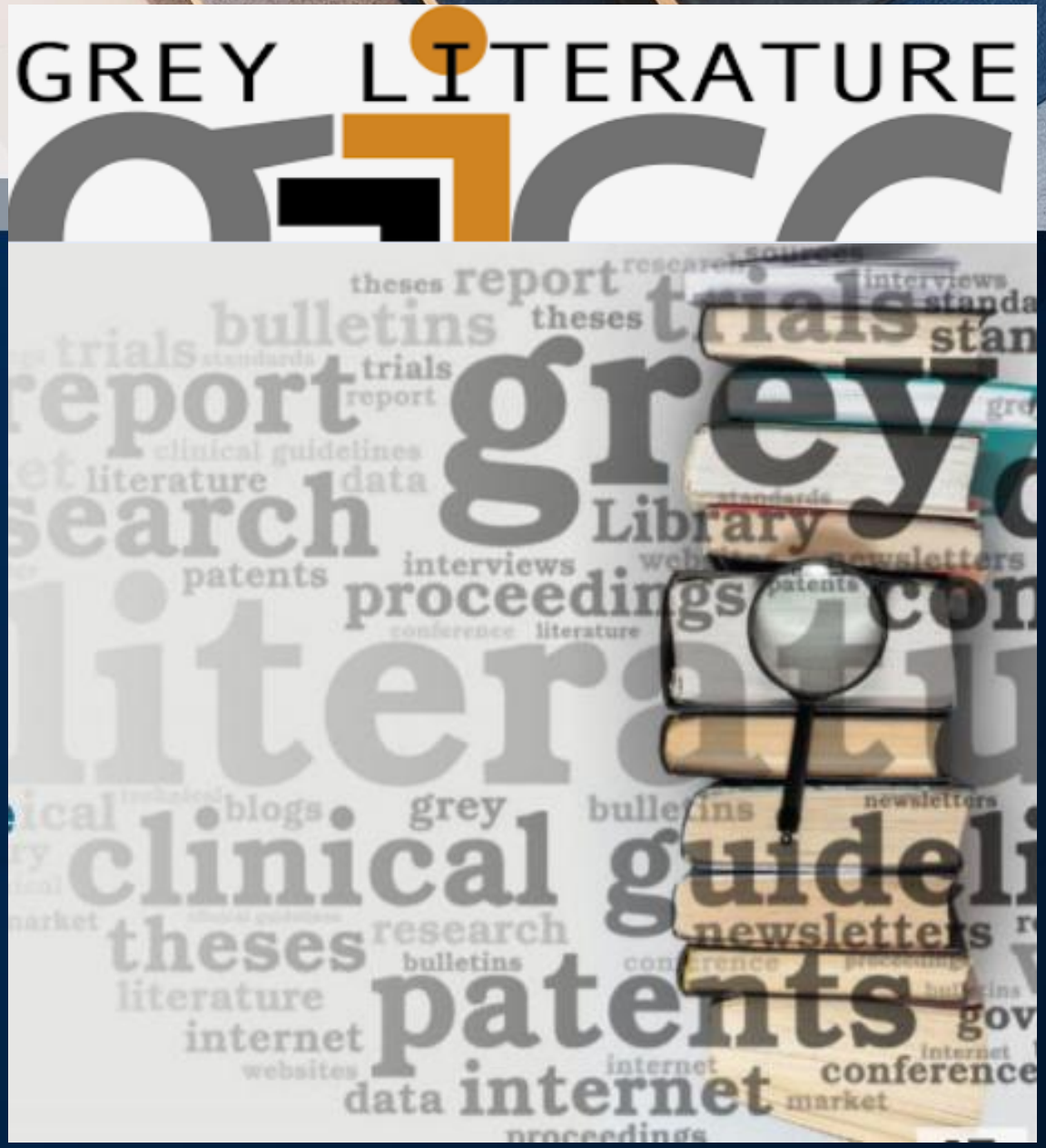
بانکهای اطلاعاتی تخصصی موضوعی

Example: for a review of exercise therapy for cancer patients, searching CancerLit, CINAHL, and APA PsycInfo, SPORTDiscus

Example: in an obesity review, Health Management Information Consortium (HMIC) database-MEDLINE-CINAHL

Example: in a food science systematic review-AGRICOLA and FSTA -Academic Science Premier (ASP), CAB Direct

Grey Literature



منابع خاکستری

- Canada’s Drug Agency (CDA-AMC), previously known as CADTH (https://greymatters.cadth.ca/), publishes a resource entitled ‘Grey Matters: a tool for searching health-related grey literature’, https://greymatters.cadth.ca/

- The Health-Related Grey Literature guide (http://www.greylitguides.com/health-related-grey-lit/) is a source of health-related grey literature, organized geographically. It is part of Grey Literature Guides, a directory of research guides, online courses and webinars. The website provides links to a selection of existing English language educational and training resources devoted to grey literature worldwide. It is maintained by GreyNet's Grey Literature Education and Training Committee and revised annually.

منابع خاکستری

- The Health Management Information Consortium (HMIC) Database (https://www.kingsfund.org.uk/consultancy-support/library-services; https://www.wolterskluwer.com/en/solutions/ovid/hmic-database-99) good source of grey literature on topics such as health and community care management, organizational development, inequalities in health, user involvement, and race and health

- The US National Technical Information Service (NTIS) (https://www.ntis.gov) provides access to the results of both US and non-US government-sponsored research and can provide the full text of the technical report for most of the results retrieved. NTIS is free of charge on the internet and goes back to 1964. For access to technical reports see the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/; for access to the NTIS Bibliographic Database, log in is required.

منابع خاکستری

- OpenGrey was a multidisciplinary European grey literature database, covering science, technology, biomedical science, economics, social science and humanities. Each record had an English title and/or English keywords. Some records included an English abstract (starting in 1997). The database included technical or research reports, doctoral dissertations, conference presentations, official publications, and other types of grey literature. Information was also provided regarding how to access the documents included in the database. Access to this database via Inist-CNRS ceased in November 2020, but a searchable archived version is available from the Data Archiving and Networked Services (DANS) Easy system (https://ssh.datastations.nl/dataset.xhtml?persistentId=doi:10.17026/dans-xtf-47w5).

- APA PsycExtra (http://www.apa.org/pubs/databases/psycextra/) is a companion database to APA PsycInfo in psychology, behavioural science and health. It includes references from newsletters, magazines, newspapers, technical and annual reports, government reports and consumer brochures. APA PsycExtra is different from APA PsycInfo (https://www.apa.org/pubs/databases/psycinfo/index) in its format, because it includes abstracts and citations plus full text for a major portion of the records. There is no coverage overlap between APA PsycExtra and APA PsycInfo.

منابع خاکستری : رساله ها و پایان نامه ها

- Open Access Theses and Dissertations (OATD) (https://oatd.org/)
- ProQuest Dissertations and Theses Global (PQDT)
- Australian dissertations and theses are searchable via the National Library of Australia's Trove service (http://trove.nla.gov.au/)
- The LILACS database includes some dissertations and theses from Latin American and Caribbean countries (http://lilacs.bvsalud.org/en/)
- The US-based Center for Research Libraries (CRL) is an international consortium of university, college, and independent research libraries (http://catalog.crl.edu/search~S4)

منابع خاکستری : رساله ها و پایان نامه ها

- DART-Europe is a partnership of several research libraries and library consortia which provides global access to European research dissertations and theses via a portal. A list of institutions, national libraries and consortia who contribute to the portal can be found here: (https://www.dart-europe.org/)

- The Networked Digital Library of Theses and Dissertations (NDLTD) is an international organization dedicated to promoting the adoption, creation, use, dissemination, and preservation of electronic dissertations and theses (http://search.ndltd.org/).

- Swedish University Dissertations / Dissertations.se offers dissertations and theses in English, about half of which are available to download (http://www.dissertations.se/)

- Theses Canada provides access to the National Library of Canada's records of PhD and Master's dissertations and theses from Canadian universities (https://library-archives.canada.ca/eng/services/services-libraries/theses/Pages/theses-canada.aspx).

Ongoing studies and unpublished data sources

- **Trials registers and trials results registers**
  - **ClinicalTrials.gov**
  - **The World Health Organization International Clinical Trials Registry Platform search portal (ICTRP)**
- **Regulatory agency sources and clinical study reports**
  - **The EU Clinical Trials Register (EU CTR)**
  - **The European Clinical Trials Information Service/the EU Clinical Trials database**
  - https://euclinicaltrials.eu/search-for-clinical-trials/?lang=en
  - **Drugs@FDA and medical device information from the FDA**
- **Clinical study reports**
  - (https://clinicaldata.ema.europa.eu/web/cdp/background).
  - https://register.ema.europa.eu/identityiq/login.jsf
  - https://clinicaldata.ema.europa.eu/web/cdp/search

Search strategy

تدوین استراتژی جستجو

- استخراج کلیدواژه های مرتبط ومترادفات از متون و اصطلاحنامه های تخصصی (Finding synonyms and related terms- alternate terms **variant spellings**)- Thesaurus (MeSH-EmTree)

Author keywords from articles on your topic

- ترکیب کلیدواژه ها با عملگرها (AND-OR- NOT)
- استفاده از تکنیک ها برای بازیابی اثربخش

Finding keywords using your PICO

Research question: Do dietary interventions such as intermittent fasting reduce the risk of heart attack in adults?

P	Patient Population	**Adults**	Middle aged
I	Intervention or Exposure	**Intermittent Fasting**	Calorie restriction Time restricted feeding Fasting Diet Nutrition
C	Comparison	**Conventional Treatment Options**	Usual care
O	Outcome measures	**Reduced risk of heart attack**	Heart attack Myocardial infarction Cardiovascular stroke Reduction Prevention Risk

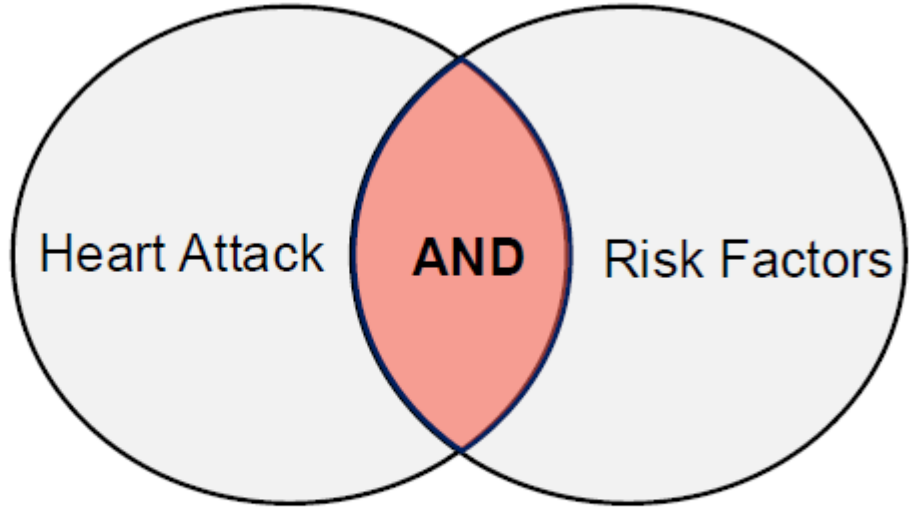
Turning your keywords into a concept map

	Concept 1: Adult	Concept 2: Intermittent Fasting	Concept 3: Heart Attack	Concept 4: Risk
Keywords	Adult	Intermittent Fasting	Heart Attack	Risk
Synonyms				
Subject Headings (e.g. MESH)				

Boolean Operators

AND

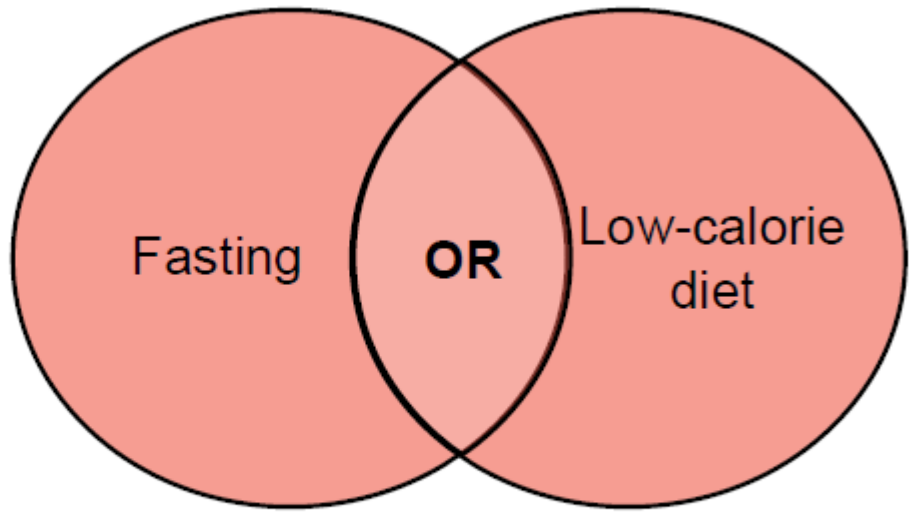
- Includes **both** search terms
- Many databases use AND by default
- **Narrows** your search



E.g. *heart attack* **AND** *risk factors* returns documents containing **both** terms.

OR

- Includes **either** search term
- **Broadens** your search



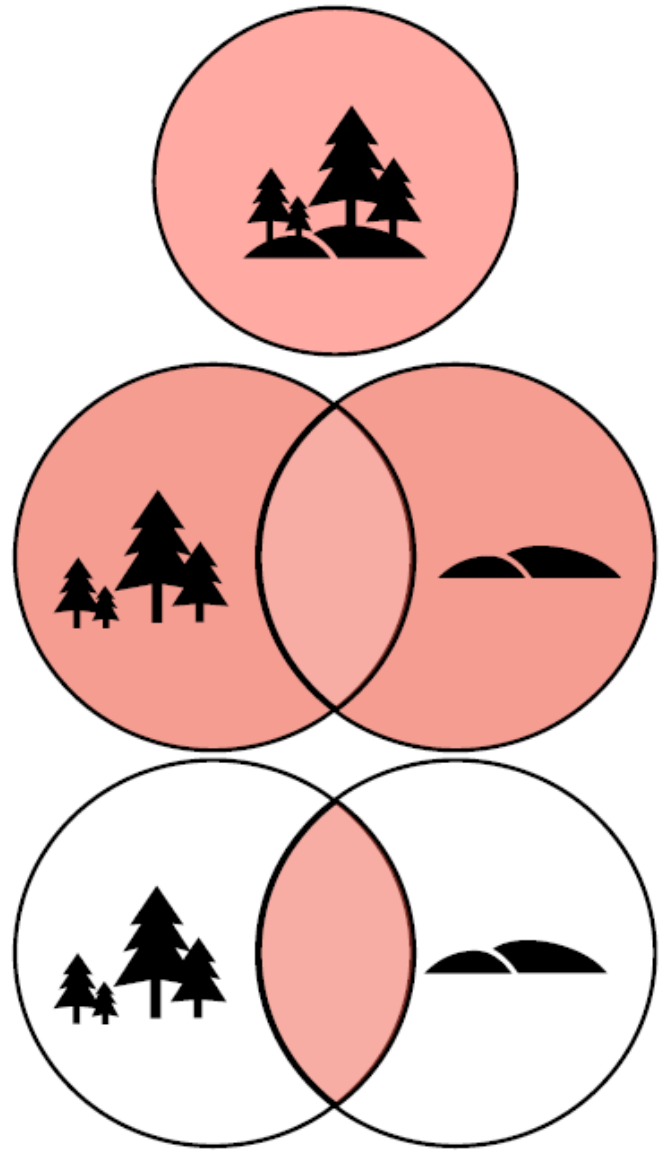
E.g. *fasting* **OR** *low-calorie diet* returns documents containing **either** term.

Combine your concept map with AND/OR

	Concept 1:	Concept 2:	Concept 3:	Concept 4:
		AND	AND	AND
Synonyms	Adult OR Aged OR Middle-aged	Intermittent Fasting OR Time restricted eating OR Calorie restriction OR Fasting OR Meal Skipping OR Diet OR Nutrition OR Low-calorie diet	Heart Attack OR Myocardial infarction OR Cardiovascular stroke	Risk OR Reduction OR Reduce OR Prevention OR Risk factors
	OR			
Subject Headings (e.g. MESH)	Adult	Intermittent Fasting OR Caloric Restriction	Myocardial Infarction	-

Phrase Searching

"quotation marks"
around a keyword phrase keeps words together in the order specified



"forest soil"
41

forest soil
386

forest AND soil
386

Truncation *

Using a truncation symbol like * expands a keyword to include all possible variations of a word.

- Child* = child, children, childhood

analysis	**12 176**
analys*	**13 320**
analyz*	**486**
analy*	**16 162**

analysis, analyse, analyze, analyses, analyzes, analyst, analysed, analyzed, analyser, analyzer, analysers, analyzers

ana*	**19 097**

Wildcards

Replace one character to allow for variations within a word.

Behavio?r

behavior, behaviour

Wom?n

women, woman

Combine with a truncation (*) to get more variations.

Organi?ation*

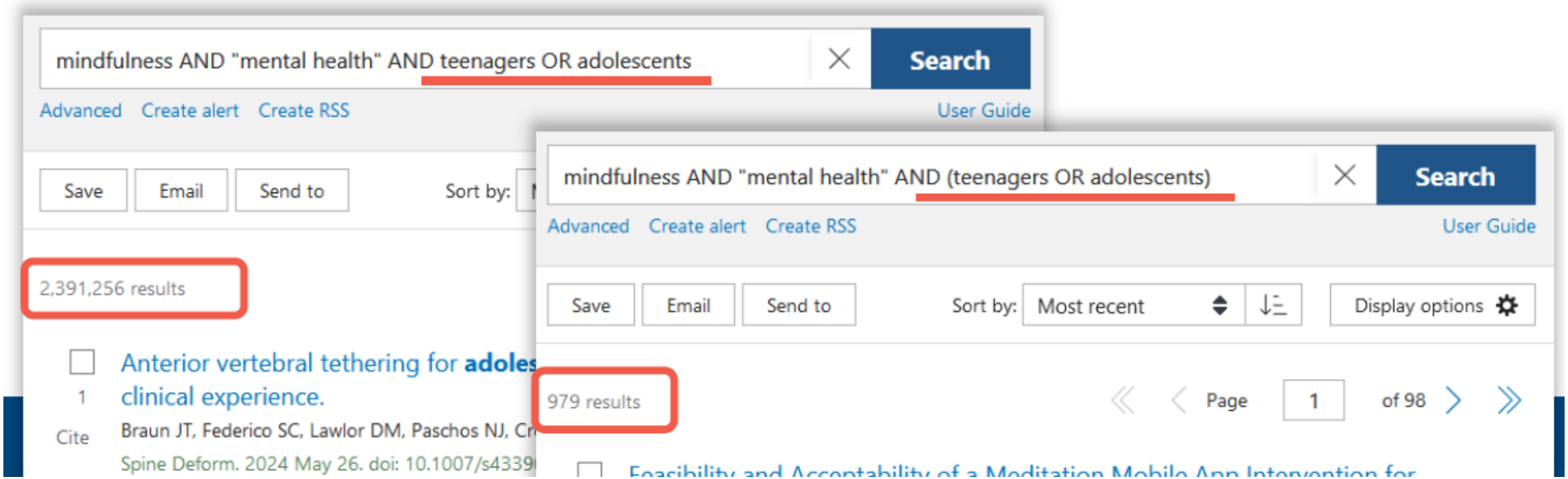
organisation, organization, organisational, organizational

Nesting

( )

Nesting (using brackets) groups keywords together

(paracetamol OR acetaminophen)



Proximity Searching

ADJ/n **NEAR/n** **W/n**

Operator specify how close together (n) two words appear in texts.

liver adj3 cancer

returns results where *liver* and *cancer* are no more than 3 words apart
(liver cancer, cancer of the liver)

# ▲	Searches	Results
1	((hepat* or liver) adj4 (cancer or tumo?r* or neoplasm*)).mp.	241872
2	((hepat* or liver) and (cancer or tumo?r* or neoplasm*)).mp.	413295

((hepat* OR liver) adj4 (cancer OR tumo?r* OR neoplasm*))

Combine with **nesting** to include synonyms

Database variations for Proximity Searching

Database	Proximity operators	
Embase.com	**NEAR/**n	**NEXT/**n
Embase (Ovid)	**ADJ**n	
Medline (Ovid)	**ADJ**n	
Cochrane Library	**NEAR/**n	**NEXT/**n
Web of Science	**NEAR/**n	
Scopus	**W/**n	**PRE/**n

Update your concept map

	Concept 1:	Concept 2:	Concept 3:	Concept 4:
		AND	AND	AND
Synonyms	Adult* OR Aged OR "Middle?aged"	"Intermittent Fast*" OR "Time restricted eat*" OR "Calori* restrict*" OR Fasting OR "Meal Skip*" OR Diet* OR Nutrition* OR "Low?calorie diet*"	"Heart Attack*" OR "Myocardial infarction*" OR "Cardiovascular stroke*"	Risk* OR Reduc* OR Prevent* OR "Risk factor*"
	OR			
Subject Headings (e.g. MESH)	Adult	Intermittent Fasting OR Caloric Restriction	Myocardial Infarction	-

Turn your concept map into a search string

(adult* OR aged OR "middle?aged")
AND
("intermittent fast*" OR "time restricted eat*" OR "calori* restrict*" OR fasting OR "meal skip*" OR diet* OR nutrition* OR "low?calorie diet*")
AND
("heart attack*" OR "myocardial infarction*" OR "cardiovascular stroke*")
AND
(risk* OR reduc* OR prevent* OR "risk factor*")

Text mining, machine learning and artificial intelligence for term selection and strategy building

- PubMed PubReMiner (https://hgserver2.amc.nl/cgi-bin/miner/miner2.cgi) identification of terms, synonyms and abbreviations to test out in strategies.
- Review Toolbox (http://systematicreviewtools.com/.

Translating search strategies across databases

- **ChatGPT**
- Ask ChatGPT using this prompt, "Convert this search into terms appropriate for the [name] database." Further reading:
  Wang, S., Scells, H., Koopman, B., & Zuccon, G. (2023). Can ChatGPT write a good boolean query for systematic review literature search?. arXiv preprint arXiv:2302.03495.
- **LitSonar**
- Use the Help section for further guidance on how to use this tool (https://litsonar.com/help). Capable of searching eight different databases simultaneously
- **Polyglot**
- Use the Polyglot tool to translate search strings from PubMed across multiple databases. Access the tool's tutorial for more information (https://sr-accelerator.com/#/help/polyglot).
- **MEDLINE Transpose**
- Use this tool to translate your MEDLINE (PubMed) search to MEDLINE (Ovid) format or vice versa.

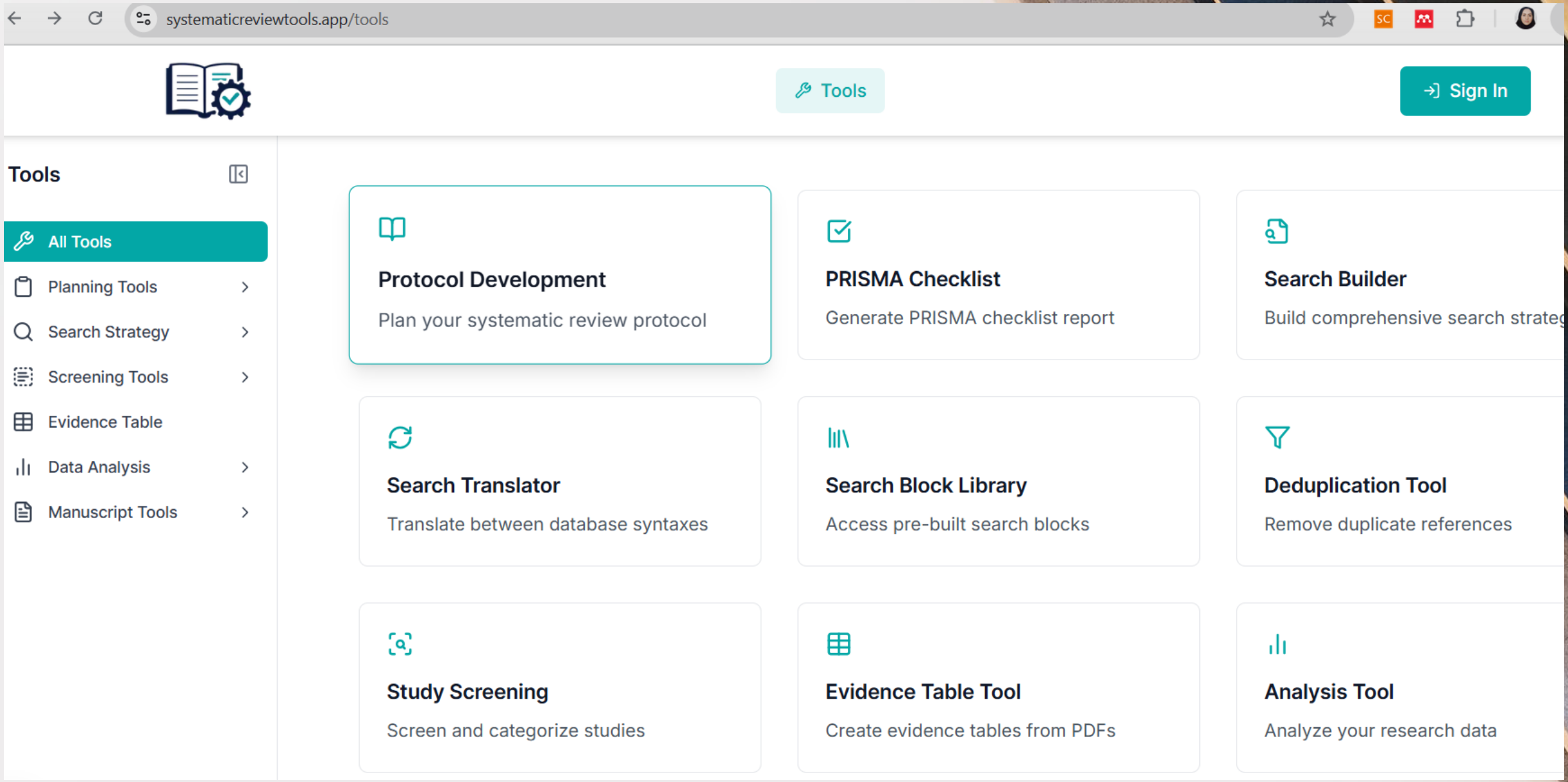
- https://www.2dsearch.com/

- **Database Syntax Guide**
- Guide to translating syntax for multiple databases. From Cochrane.

Screening Results

Two or more independent reviewers use the **inclusion and exclusion criteria** (established in the **protocol**) to select the relevant studies.
A third reviewer can mediate any disagreements.

There are also tools available to help assist you with the screening process:


systematicreviewtools.app/tools
Tools
Sign In
Tools
All Tools
Planning Tools
Search Strategy
Screening Tools
Evidence Table
Data Analysis
Manuscript Tools
Protocol Development
Plan your systematic review protocol
PRISMA Checklist
Generate PRISMA checklist report
Search Builder
Search Translator
Translate between database syntaxes
Search Block Library
Access pre-built search blocks
Deduplication Tool
Remove duplicate references
Study Screening
Screen and categorize studies
Evidence Table Tool
Create evidence tables from PDFs
Analysis Tool
Analyze your research data