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# How to conduct a literature review

<https://bit.ly/2024-07-12-lit-review>

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# Hello

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# Learning outcomes

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- Recognize (as a reader) different types of literature reviews
- Choose (as a writer) an appropriate type of literature review
- Estimate how long an evidence synthesis project might take
- Outline the introduction of a paper
- Choose bibliographic databases appropriate for your project based on scope, features, and price
- Translate an information need into a “concept table”
- Use Boolean operators and database syntax to retrieve relevant documents
- Evaluate search results and iterate to improve sensitivity or specificity
- Export search results and manage them in Zotero
- Deal with paywalls
- Find more papers via “snowballing”
- Access additional free resources:
  - JBI Critical Appraisal tools
  - Equator Network database of reporting guidelines
  - Campbell Collaboration training on systematic reviews

# Learning outcomes

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1

- Recognize (as a reader) different types of literature reviews
- Choose (as a writer) an appropriate type of literature review
- Estimate how long an evidence synthesis project might take
- Outline the introduction of a paper

2

- Choose bibliographic databases appropriate for your project based on scope, features, and price

- Translate an information need into a “concept table”
- Use Boolean operators and database syntax to retrieve relevant documents
- Evaluate search results and iterate to improve sensitivity or specificity

3

- Export search results and manage them in Zotero
- Deal with paywalls
- Find more papers via “snowballing”

4

- Access additional free resources:
  - JBI Critical Appraisal tools
  - Equator Network database of reporting guidelines
  - Campbell Collaboration training on systematic reviews

5

# Expectations

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You all bring different knowledge, experience, and perspectives. So, please share your comments, questions, and suggestions.

- You can ask questions live during the presentation
- You can put questions in this document during the presentation, and we'll discuss at the end:  
<https://bit.ly/2024-07-12-lit-review-questions>

# Part 1: planning

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- Recognize (as a reader) different types of literature reviews
- Choose (as a writer) an appropriate type of literature review
- Estimate how long an evidence synthesis project might take
- Outline the introduction of a paper

“Let’s write a  
lit review”  
can mean a  
lot of  
different  
things!

- Standalone document, or the introduction to a larger document?
- How long?
- How rigorous?
- Comprehensive or selective?
- How transparent / reproducible?
- Goal?
- Audience?
- How thoughtful? Did the author just collate existing findings, or did they analyze/evaluate them?

# Let's start with three types

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Lit review in the introduction section

- Help your readers prepare to understand your work
- Persuade your readers that you know what you're talking about

Narrative lit review

- A very well-supported commentary essay
- Often useful for readers starting to explore the topic

Evidence synthesis lit reviews

- Many types, depending on the nature of the research question: systematic, scoping, rapid, integrative, realist....

# If you're interested in evidence synthesis:



Amog, K., Pham, B., Courvoisier, M., Mak, M., Booth, A., Godfrey, C., Hwee, J., Straus, S. E., & Tricco, A. C. (2022). The Web-based “Right Review” tool asks reviewers simple questions to suggest methods from 41 Knowledge Synthesis methods. *Journal of Clinical Epidemiology*, 50895-4356(22)00065-8. <https://doi.org/10.1016/j.jclinepi.2022.03.004>

Campbell, F., Tricco, A. C., Munn, Z., Pollock, D., Saran, A., Sutton, A., White, H., & Khalil, H. (2023). Mapping reviews, scoping reviews, and evidence and gap maps (EGMs): The same but different—the “Big Picture” review family. *Systematic Reviews*, 12(1), 45. <https://doi.org/10.1186/s13643-023-02178-5>

Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, 26(2), 91–108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>

Greenhalgh, T., Thorne, S., & Malterud, K. (2018). Time to challenge the spurious hierarchy of systematic over narrative reviews? *European Journal of Clinical Investigation*, 48(6). <https://doi.org/10.1111/eci.12931>

JBIMES Manual for Evidence Synthesis—JBIMES Manual for Evidence Synthesis—JBIMES GLOBAL WIKI. (n.d.). Retrieved May 5, 2021, from <https://doi.org/10.46658/JBIMES-20-01>

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(1), 143. <https://doi.org/10.1186/s12874-018-0611-x>

Page, M. J., Moher, D., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... McKenzie, J. E. (2021). PRISMA 2020 explanation and elaboration: Updated guidance and exemplars for reporting systematic reviews. *BMJ*, 372, n160. <https://doi.org/10.1136/bmj.n160>

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

# Evidence synthesis caveats

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- Lots of journals publish bad ES papers. Even “good journals”!  
So, don’t write an ES paper by emulating a published ES paper. Instead, plan your project based on ES methods guidelines and reporting guidelines.
- ES projects take *so much time*.  
<https://predicter.github.io/>  
<https://bit.ly/screeningworkload>
- Always write a protocol (even if you don’t plan to publish or register it). It’s great for project management.

# Introduction section lit reviews

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An exercise to do on your own (later)

1. Find a paper you like -- maybe a paper you wish you'd written, or a paper by your mentor, or a paper that cites one of your papers
2. Read the introduction section carefully. Probably, each paragraph introduces a different aspect of the topic. Make a list of the different aspects. Are any important aspects missing?
3. Within each paragraph, how many citations are given? Are they mentioned? Analyzed? Critiqued? Are any citations that you would expect missing? Think about some newly published papers on that topic; where would you add them?

# Some typical paragraph topics in an intro lit review

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How important is this problem? How many people does it affect?  
How severely does it affect them? How much money does it cost?

What populations are affected by this problem? Is there a health equity issue?

What datasets/instruments/methods have other scholars used to study this problem?

What is known about the problem in this specific location/setting?

What theoretical frameworks have been used to analyze the problem?

# Questions

You can ask questions live, or you can put questions into our shared document for us to discuss at the end:

<https://bit.ly/2024-07-12-lit-review-questions>

# Part 2: databases

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- Choose bibliographic databases appropriate for your project based on scope, features, and price

# Factors to consider when choosing DBs

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## Scope

Disciplinary focus  
Geographic focus  
Document types  
Date coverage  
(inception and update  
schedule)

## Features

Export of structured  
citations  
Citation networks  
Full text searching  
Subject indexing  
Multilingual searching

## Price and paywalls

Does your institution  
subscribe?  
Access via a professional  
society membership, or in  
return for peer review service?  
Georgia is a Research4Life  
Group B country; many  
institutions are already  
registered.  
Some great resources are free!

# Some of my favorite free databases

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[PubMed](#) -- biomedical journal articles; inclusion depends on journal/funder

[Lens](#) -- great visualizations of results sets

[OpenAlex](#) -- sort by citation *percentile*

[EuropePMC](#) -- great coverage of preprints

[NIEHS Climate Change and Human Health Literature Portal](#)

[Global Index Medicus](#) -- but for recent papers, you may need to search the regional component databases separately. There's an [excellent external guide](#)

[LILACS](#) -- health information from Latin America and the Caribbean

[Google Scholar](#) -- relies heavily on relevance ranking

[Harvard Kennedy School Think Tank Search](#) -- for grey lit

# Part 3: searching

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- Translate an information need into a “concept table”
- Use Boolean operators and database syntax to retrieve relevant documents
- Evaluate search results and iterate to improve sensitivity or specificity

# Concept table

---

Substance use disorder  
Substance use OR  
opioid use OR illicit  
drugs OR addiction OR  
PWUD OR PWID OR....

Medication-assisted  
treatment  
Medication-assisted  
treatment OR  
medication-assisted  
therapy OR  
buprenorphine OR  
suboxone OR....

Telemedicine  
Telemedicine OR  
telehealth OR virtual  
OR mhealth OR  
M-health....

Synonyms? (Sometimes older, pejorative terminology)

Acronyms?

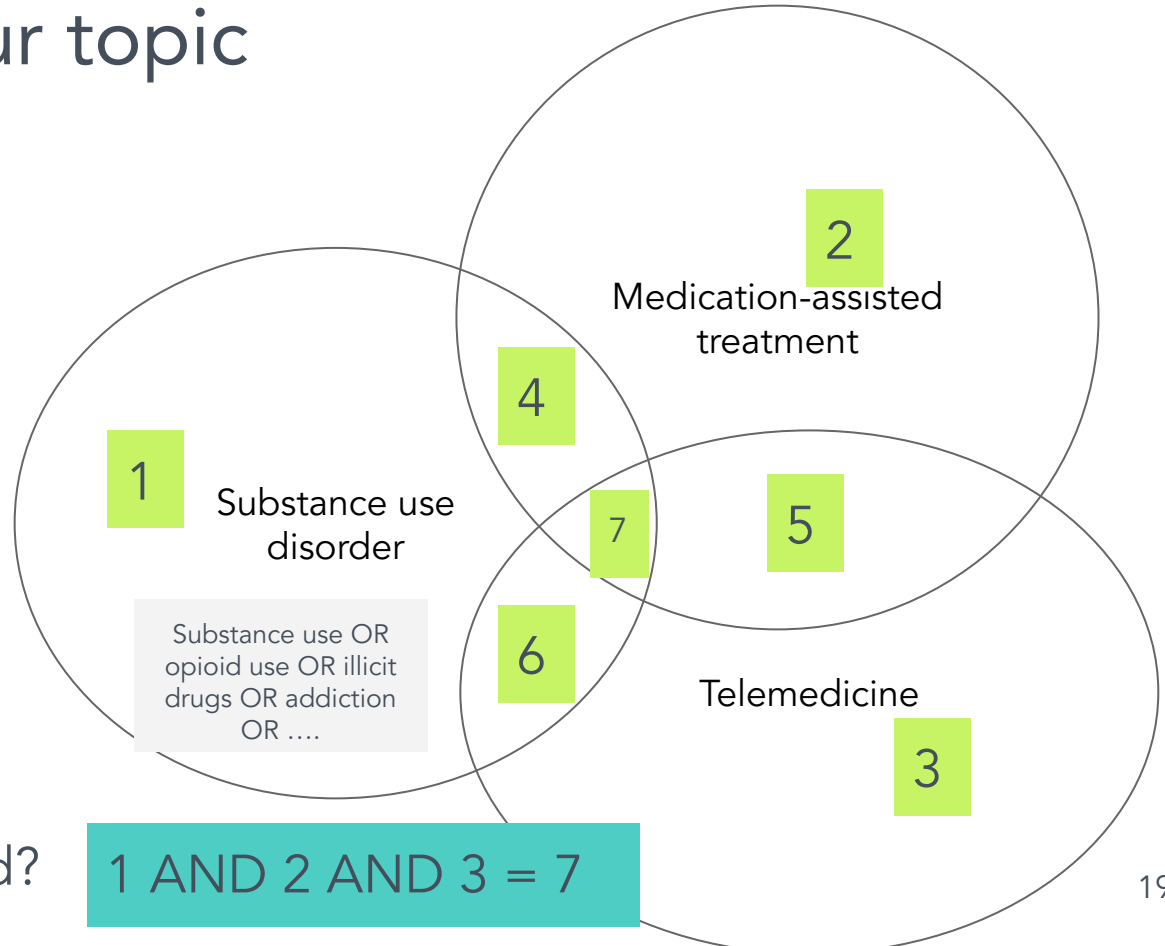
Different levels of granularity?

# Read documents that address *all* the aspects of your topic

*This* Venn diagram has three concepts, but your query might have more or fewer concepts.

Each *concept* is operationalized by multiple *terms* connected by OR.

Which set will you read?



# What if set 7 is too big?

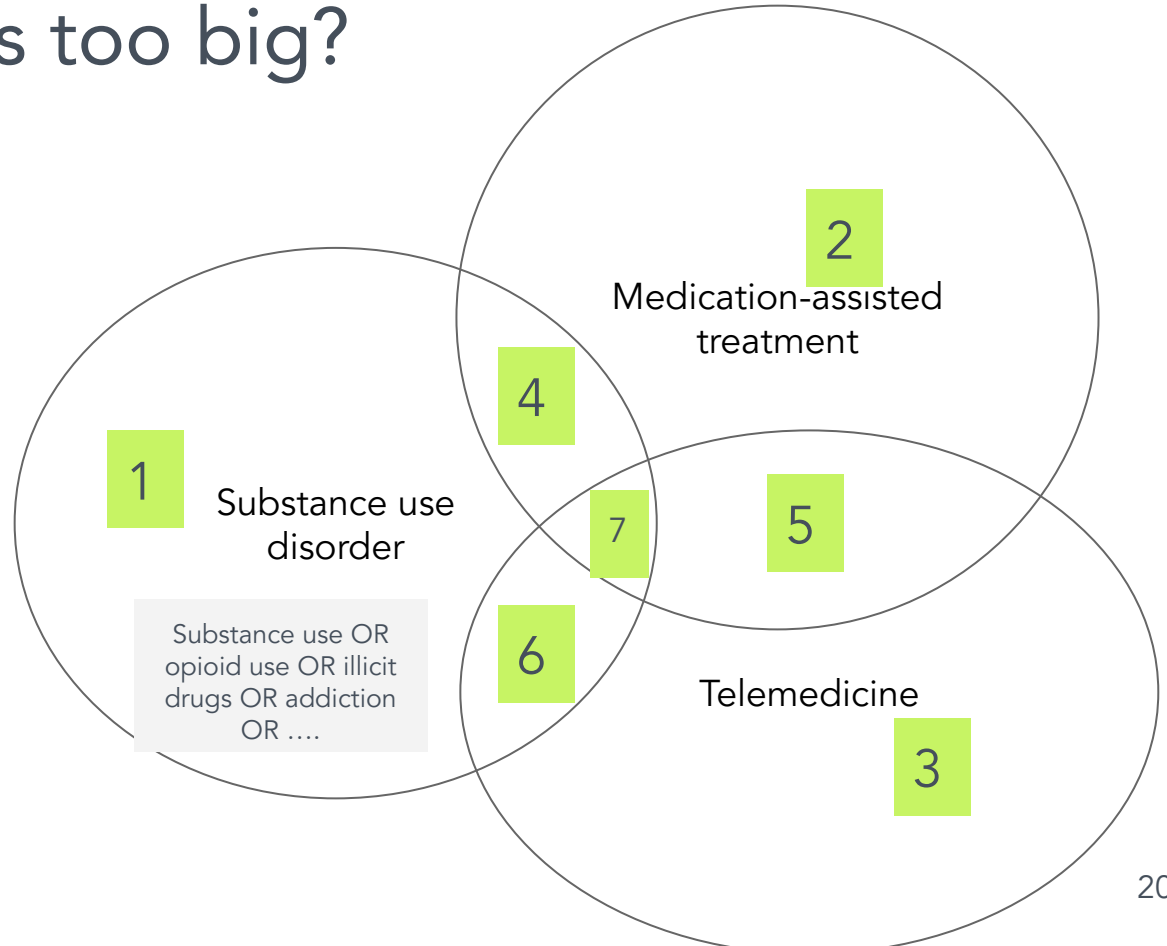
You could filter set 7: just show me reviews, just show me papers by authors based in country X, just show me papers from the last five years.

You could change sets 1, 2, or 3 to be smaller and more specific, by looking for those words *only* in the title, not the abstract.

You could change sets 1, 2, or 3 to be narrower: e.g., not SUD in general, but OUD in particular.

You could add another circle to your Venn diagram: these three concepts PLUS qualitative methods.

You could look at sets 1, 2, and 3 and consider removing some of the OR statements.



# What if set 7 is too small?

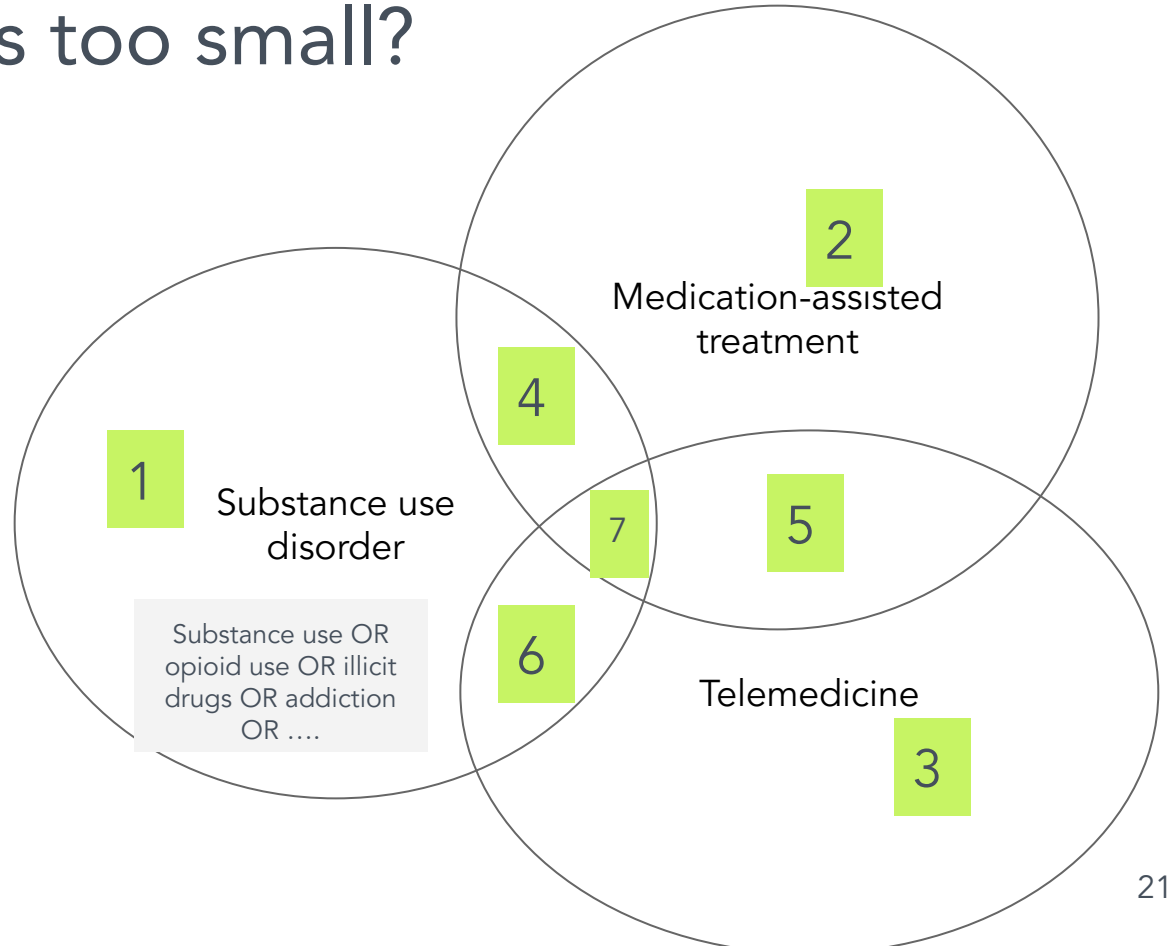
You could change sets 1, 2, or 3 to be larger and more sensitive, by adding additional words to the query.

You could skip one of the circles in your Venn diagram; look at sets 4, 5, or 6 in addition to set 7.

You could start with the papers in set 7 and use snowballing techniques to find more papers (and more search terms).

You could switch to a bibliographic database that is bigger, includes different journals, or allows full text searching.

You could change sets 1, 2, or 3 to be larger and less specific, by looking for those words in the full text as well as the title/abstract.

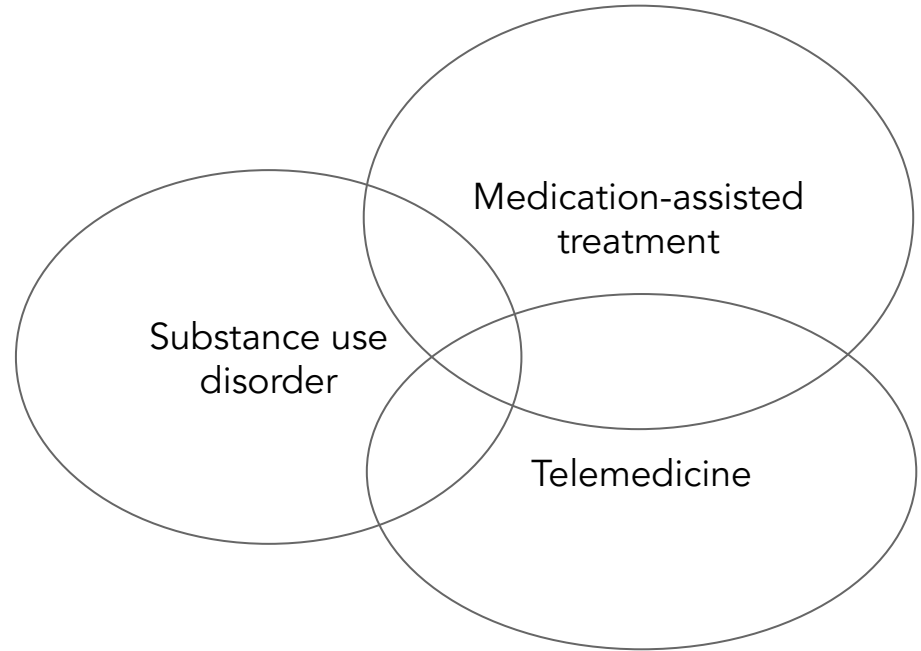


# Boolean operators

Connect words about the same concept with OR.

Connect different concepts with AND.

Use parentheses or line references to control the order of operations.



Show works where:

1

fulltext

includes

("substance use" OR "opioid use" OR PWUD) AND ("medication-assisted treatment" OR MAT OR buprenorphine) AND (telehealth OR telemedicine)

# Database syntax tips

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Usually, put phrases into “quotation marks.”

Some databases automatically “stem” search terms to search for plural forms and related words. In databases that don’t, you might want to truncate terms with an asterisk: treatment\*

PubMed’s “automated term mapping” feature can work really well, or poorly; look at Advanced → History → Search Details to check.

Think about which fields you want to search. Usually I search title/abstract/keywords; sometimes I search full text; sometimes I just search in the article title.

PubMed’s [All Fields] search = all the fields in a PubMed record, including author institution and journal name; it doesn’t mean full text of the article.

Should you filter for free full text  
in bibliographic databases?

# In PubMed: maybe....

PubMed's Free Full Text filter relies on two data sources:

- Publishers telling the National Library of Medicine about free full text availability
- NIH public access policy compliance

A paper might be free to read via other means, but PubMed will never know.

So the PubMed free full text filter is reliable, but not comprehensive.

The image displays two side-by-side screenshots of the PubMed search interface for the query "indoor air quality".

**Left Screenshot:** Shows 6,218 results. A blue overlay indicates that filters are applied: "Free full text". The "Free full text" checkbox is checked. The first result is "Identifying risk factors for COPD and adult-onset asthma: an umbrella review." by Holtjer JCS, Bloemasma LD, Bejers RJHGG, Cornelissen MEB, Hilvering B, Houweling L, Vermeulen RCH, Downward GS, Maitland-Van der Zee AH; P4O2 consortium. The article is published in Eur Respir Rev. 2023 May 3;32(168):230009. doi: 10.1183/16000617.0009-2023. PMID: 37137510. The article is marked as a "Free article" and a "Review".

**Right Screenshot:** Shows 20,126 results. The "Free full text" checkbox is unchecked. The first result is the same as in the left screenshot. The second result is "Dual-roles of carbon black to accelerate phosphorus recovery as vivianite." by Liang D, Li X, Wang S, Wang X, Dong L, Li N. The article is published in Sci Total Environ. 2023 May 1;163850. doi: 10.1016/j.scitotenv.2023.163850. Online ahead of print. PMID: 37137372.

# In Lens: maybe :)

The Lens open access filter uses data from PubMed Central, Unpaywall, DOAJ, and other sources.

This is more comprehensive info about OA status than PubMed's free full text filter. But it's not 100% comprehensive either.

The screenshot shows the Lens Scholar Search Results page for the query "indoor air quality". The page displays 25,956 Scholarly Works. The left sidebar contains a "FILTERS" panel with various criteria such as Date Range, Flags, Author, Institution, and Open Access. The Open Access filter is expanded, showing options like Gold (10,364), Green (7,298), Unknown (3,970), Hybrid (5,083), and Bronze (1,241). The main content area shows search results for "Scholar Search Results". The first result is "INDOOR AIR QUALITY IN THE SCHOOLS AND STUDENTS PERFORMANCE" by Ingrid Šenitková and Petra Bednářová. The second result is "Outdoor-indoor air pollution in urban environment: challenges and opportunity" by Dennis Y C Leung. The page also includes options for "Show Query Details", "Edit Search", and "Search Patents".

The screenshot shows the Lens Scholar Search Results page for the query "indoor air quality". The page displays 42,885 Scholarly Works. The left sidebar contains a "FILTERS" panel with various criteria such as Date Range, Flags, Author, Institution, and Open Access. The Open Access filter is expanded, showing options like Gold (10,364), Green (7,298), Unknown (3,970), Hybrid (5,083), and Bronze (1,241). The main content area shows search results for "Scholar Search Results". The first result is "A Study on the Improvement of Indoor Air Quality System in Public Facilities in Seoul - After the revision of the Indoor Air Quality C 2015 -" by Seong-ho Choi, Hyeon-Jun Moon, and Min-kyung Kim. The second result is "Analysis on the influence of air-condition system to the air quality indoors" by Han Ru-bin. The page also includes options for "Show Query Details", "Edit Search", and "Search Patents".

# Part 4: you found some articles -- what next?

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- Export search results and manage them in Zotero
- Deal with article paywalls
- Find more papers via “snowballing”

# Stay organized with a citation manager

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I use [Zotero](#) (free software) to organize articles and documents that I've read or intend to read.

Zotero can often get the PDF for me automatically.

I also use Zotero to insert formatted citations into manuscripts, and also my CV.

## Setup

- Download Zotero on your computer and install it
- Add the Zotero extension (aka plugin, connector, bookmarklet) to all your browsers
- Create an account for syncing and sharing
- Get the Zotero iPad app
- Add Zotero to Microsoft Word and Google Docs
- Start adding records to your Zotero library
- Organize them in groups or with tags
- Questions? Ask in the Zotero Forum

# Three ways to add records to your Zotero library

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- Click the Zotero extension to add the webpage you are on to your library
- Export .ris files of database search results and import to Zotero -- great for batches of search results
- Drag PDFs into your Zotero library and Zotero will probably be able to find the article metadata for you

Bonus: if your collaborator uses Zotero, they can share a Zotero group with you.

# Snowballing

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This paper is interesting... so what about other papers

- By the same author (senior author, first author)
- In the same theme issue
- Using the same datasets or instrument or theoretical framework
- Related to the same grant
- That were cited in this paper
- That cite this paper
- That are cited by another paper that also cites this paper
- About the same topic
- About the same topic, but slightly tweaked

How will you access the articles  
you want to read?

# Easy situations

1. Maybe it's free to read on the publisher's website.  
Great!
2. Maybe it's paywalled on the publisher's website, but it's free in PubMed Central. PubMed, Lens, and Google Scholar all have obvious PMC links for these.
3. Maybe it's paywalled on the publisher website, but it's free in an institutional repository of an author, or a preprint server, or another random website. Life is too short to search random websites one by one, so use browser plugins like [Unpaywall](#), the [Open Access Button](#), and the [Google Scholar Button](#).

# Harder situation: paywalled on the publisher website, and not available for free anywhere else.

4. Does your employer have HINARI/Research4Life access? Can they register and get access?
5. Ask your library to get the article through Interlibrary Loan.
6. You can contact the author. Usually people are delighted that readers are interested. You may have to look for the author's current affiliation + contact info.
7. You could give up and read something else – maybe some papers that cite and discuss the hard-to-find paper, or papers recommended by the “similar” tool in Google Scholar or PubMed.
8. Some readers use the pirate website Sci Hub – read more at <https://www.science.org/doi/10.1126/science.352.6285.508>

# Part 5: more resources

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JBI Critical Appraisal Tools

<https://jbi.global/critical-appraisal-tools>

Worksheets to evaluate 15 study designs. Each one has a checklist and detailed explanations.

Equator Network database of reporting guidelines:

<https://www.equator-network.org/>

PAHO-Equator Network course: Enhance the visibility and value of your research for health with reporting guidelines:

<https://campus.paho.org/en/course/researchreportingguidelines>

Campbell Collaboration systematic reviews and meta-analysis training

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

Free (for now) online course

# Ask Yourself:

From the Cite Black Women Statement:

What does my perspective add to what we know? Who has contributed to what I know and what I do not know? And who am I in conversation with—or who should I be in conversation with—to carry this knowledge forward?

Smith, C. A., Williams, E. L., Wadud, I. A., & Pirtle, W. N. L. (2021). Cite Black Women: A Critical Praxis (A Statement). *Feminist Anthropology*. <https://doi.org/10.1002/fea2.12040>

# Q&A

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We'll discuss your questions -- live and from <https://bit.ly/2024-07-12-lit-review-questions>

# Thanks for your attention

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Please take [this quick survey](#)



*Scan me*

From here on, it's  
extra slides that  
might be useful if  
some  
frequently-asked  
questions arise

# Free bibliographic databases

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For biomedical journals: PubMed

You can search titles, abstract, and subject headings.

For all disciplines, more types of documents, some full text searching:

Google Scholar -- great when the relevance ranking algorithm puts what you want on the first page....

[Lens](#) -- lexical search, nice visualizations of results sets, lots of filters

[OpenAlex](#) -- excellent graphic design and topic filters

# PubMed's special feature: subject indexing

> [J Clin Ethics](#). 2020 Winter;31(4):303-317.

## Developing a Triage Protocol for the COVID-19 Pandemic: Allocating Scarce Medical Resources in a Public Health Emergency

Benjamin Tolchin <sup>1</sup>, Stephen R Latham <sup>2</sup>, Lori Bruce <sup>3</sup>, Lauren E Ferrante <sup>4</sup>, Katherine Kraschel <sup>5</sup>, Karen Jubanyik <sup>6</sup>, Sarah C Hull <sup>7</sup>, Jennifer L Herbst <sup>8</sup>, Jennifer Kapo <sup>9</sup>, Ernest D Moritz <sup>10</sup>, John Hughes <sup>11</sup>, Mark D Siegel <sup>12</sup>, Mark R Mercurio <sup>13</sup>

Affiliations + expand

PMID: 32991327

### Abstract

The coronavirus disease-2019 (COVID-19) has caused shortages of life-sustaining medical resources, and future waves of the virus may cause further scarcity. The Yale New Haven Health System developed a triage protocol to allocate scarce medical resources during the COVID-19 pandemic, with the primary goal of saving the most lives possible, and a secondary goal of making triage assessments and decisions consistent, transparent, and fair. We outline the process of developing the triage protocol, summarize the protocol itself, and discuss the major ethical challenges encountered, along with our answers to these challenges. These challenges include (1) the role of age and chronic comorbidities; (2) evaluating children and pregnant patients; (3) racial, ethnic, and socioeconomic disparities in health; (4) prioritization of healthcare workers; and (5) balancing clinical judgment versus protocolized assessments. We conclude with a review of the limitations of our protocol and the lessons learned. We hope that a robust public discussion of such protocols and the ethical challenges that they raise will result in the fairest possible processes, less need for triage, and more lives saved during future waves of the COVID-19 pandemic and similar public health emergencies.

## MeSH terms

- > [Betacoronavirus](#)
- > [COVID-19](#)
- > [Child](#)
- > [Coronavirus Infections](#)
- > [Emergencies](#)
- > [Female](#)
- > [Health Care Rationing / ethics\\*](#)
- > [Health Resources / supply & distribution\\*](#)
- > [Humans](#)
- > [Pandemics / ethics\\*](#)
- > [Pneumonia, Viral](#)
- > [Pregnancy](#)
- > [Public Health](#)
- > [SARS-CoV-2](#)
- > [Triage / ethics\\*](#)

Most articles in PubMed have subject indexing terms describing the contents of the articles.

You can use subject headings to make your searches more sensitive or more specific.

Headings can have subheadings (like /ethics or /supply & distribution).

The subject headings are arranged in [a hierarchical ontology](#):

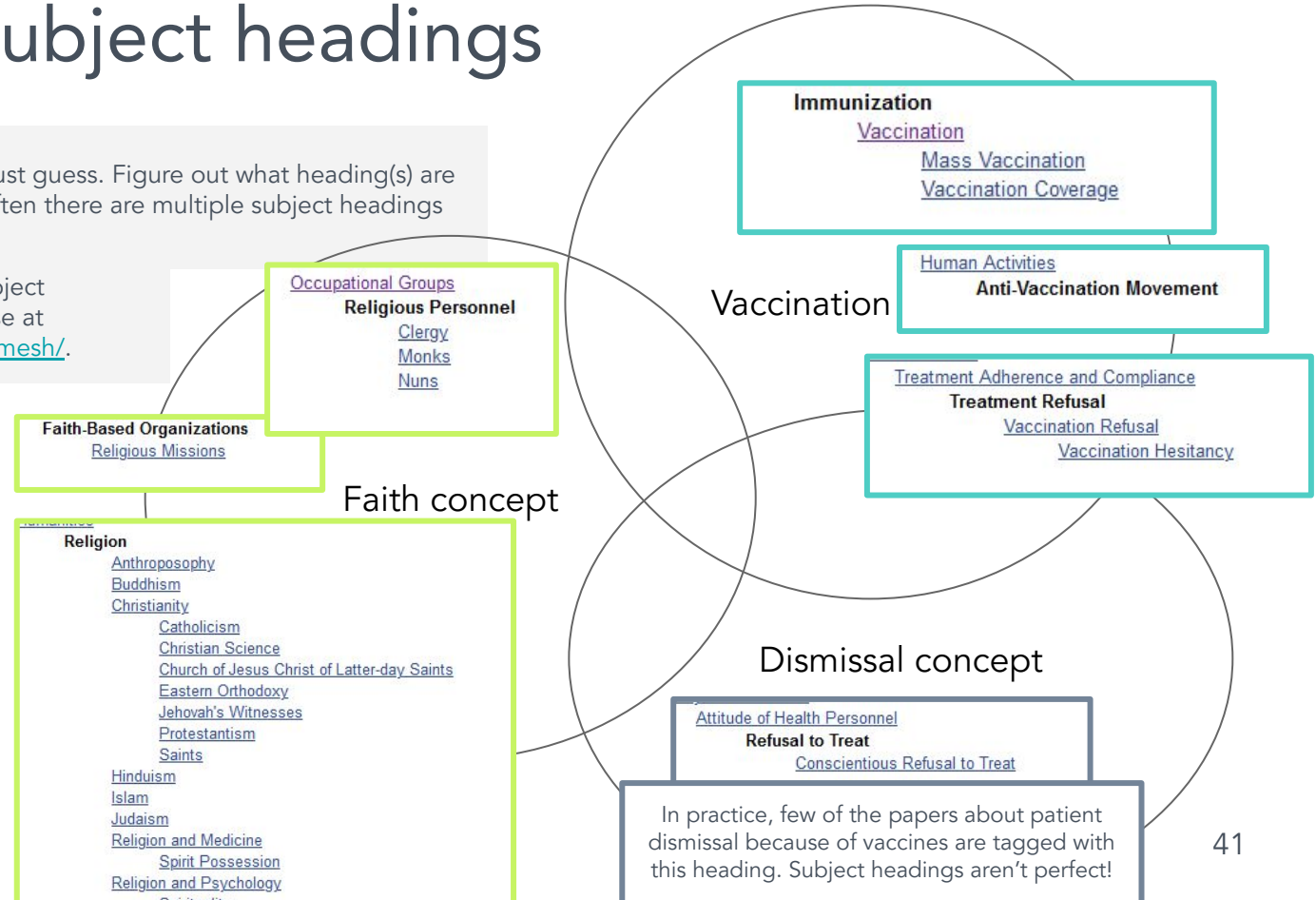
[All MeSH Categories](#)  
[Phenomena and Processes Category](#)  
[Reproductive and Urinary Physiological Phenomena](#)  
[Reproductive Physiological Phenomena](#)  
[Reproduction](#)  
**Pregnancy**  
[Gravidity](#)  
[Labor, Obstetric](#)  
[Cervical Ripening](#)  
[Labor Onset +](#)  
[Labor Presentation +](#)  
[Trial of Labor](#)  
[Uterine Contraction](#)  
[Maternal-Fetal Exchange](#)  
[Parity](#)  
[Parturition](#)  
[Birth Setting +](#)  
[Natural Childbirth](#)  
[Term Birth](#)  
[Placenta](#)  
[Pregnancy in Adolescence](#)  
[Pregnancy Maintenance](#)

# PubMed subject headings

With subject headings, don't just guess. Figure out what heading(s) are a good fit for your concept. Often there are multiple subject headings that you'll want to use.

You can search for relevant subject headings in the MeSH database at <https://www.ncbi.nlm.nih.gov/mesh/>.

You can also check the indexing of articles you already know about -- scroll all the way to the bottom of the PubMed article page to find them.



# PubMed's default: ATM

Automated Term Mapping happens in PubMed when you enter a query with no quotation marks and no field tags.

It adds some alternative word forms and some subject headings to your query.

Sometimes it works great; sometimes it doesn't work well.

You can see the ATM in the PubMed history, on the Advanced Search page.

How well does PubMed ATM interpret this query?



faith AND vaccination AND dismissal



[Advanced](#) [Create alert](#) [Create RSS](#)

History and Search Details Download Delete

Search	Actions	Details	Query	Results	Time
#22	...	▼	<p>Search: <b>faith AND vaccination AND dismissal</b></p> <p>("faith"[All Fields] OR "faithful"[All Fields] OR "faithfulness"[All Fields] OR "faiths"[All Fields]) AND ("vaccin"[Supplementary Concept] OR "vaccin"[All Fields] OR "vaccination"[MeSH Terms] OR "vaccination"[All Fields] OR "vaccinable"[All Fields] OR "vaccinal"[All Fields] OR "vaccinate"[All Fields] OR "vaccinated"[All Fields] OR "vaccinates"[All Fields] OR "vaccinating"[All Fields] OR "vaccinations"[All Fields] OR "vaccination s"[All Fields] OR "vaccinator"[All Fields] OR "vaccinators"[All Fields] OR "vaccine s"[All Fields] OR "vaccined"[All Fields] OR "vaccines"[MeSH Terms] OR "vaccines"[All Fields] OR "vaccine"[All Fields] OR "vaccins"[All Fields]) AND ("dismiss"[All Fields] OR "dismissals"[All Fields] OR "dismissed"[All Fields] OR "dismisses"[All Fields] OR "dismissing"[All Fields] OR "dismissive"[All Fields] OR "employment"[MeSH Terms] OR "employment"[All Fields] OR "dismissal"[All Fields])</p> <p><b>Translations</b></p> <p><b>faith:</b> "faith"[All Fields] OR "faithful"[All Fields] OR "faithfulness"[All Fields] OR "faiths"[All Fields]</p> <p><b>vaccination:</b> "vaccin"[Supplementary Concept] OR "vaccin"[All Fields] OR "vaccination"[MeSH Terms] OR "vaccination"[All Fields] OR "vaccinable"[All Fields] OR "vaccinal"[All Fields] OR "vaccinate"[All Fields] OR "vaccinated"[All Fields] OR "vaccinates"[All Fields] OR "vaccinating"[All Fields] OR "vaccinations"[All Fields] OR "vaccination s"[All Fields] OR "vaccinator"[All Fields] OR "vaccinators"[All Fields] OR "vaccine s"[All Fields] OR "vaccined"[All Fields] OR "vaccines"[MeSH Terms] OR "vaccines"[All Fields] OR "vaccine"[All Fields] OR "vaccins"[All Fields]</p> <p><b>dismissal:</b> "dismiss"[All Fields] OR "dismissals"[All Fields] OR "dismissed"[All Fields] OR "dismisses"[All Fields] OR "dismissing"[All Fields] OR "dismissive"[All Fields] OR "employment"[MeSH Terms] OR "employment"[All Fields] OR "dismissal"[All Fields]</p>	5	13:15:00

# PubMed's default: ATM

OK, how does PubMed interpret the query if we use all the terms from our concept table?

Search	Actions	Details	Query	Results
#23	...	 	Search: <b>(faith OR doctrine OR religious beliefs OR prayer) AND (vaccines OR public health OR herd immunity OR anti-vaxxers) AND (physicians OR health care OR denial of care OR provider behavior)</b>	19,481
<b>Translations</b>				
<b>faith:</b> "faith"[All Fields] OR "faithful"[All Fields] OR "faithfulness"[All Fields] OR "faiths"[All Fields]				
<b>doctrine:</b> "doctrinal"[All Fields] OR "doctrine"[All Fields] OR "doctrines"[All Fields] OR "doctrines's"[All Fields] OR "doctrines"[All Fields]				
<b>religious beliefs:</b> "religion"[MeSH Terms] OR "religion"[All Fields] OR ("religious"[All Fields] AND "beliefs"[All Fields]) OR "religious beliefs"[All Fields]				
<b>prayer:</b> "prayerful"[All Fields] OR "religion"[MeSH Terms] OR "religion"[All Fields] OR "prayer"[All Fields] OR "prayers"[All Fields]				
<b>vaccines:</b> "vaccin"[Supplementary Concept] OR "vaccin"[All Fields] OR "vaccination"[MeSH Terms] OR "vaccination"[All Fields] OR "vaccinable"[All Fields] OR "vaccinal"[All Fields] OR "vaccinate"[All Fields] OR "vaccinated"[All Fields] OR "vaccinates"[All Fields] OR "vaccinating"[All Fields] OR "vaccinations"[All Fields] OR "vaccination's"[All Fields] OR "vaccinator"[All Fields] OR "vaccinators"[All Fields] OR "vaccine's"[All Fields] OR "vaccined"[All Fields] OR "vaccines"[MeSH Terms] OR "vaccines"[All Fields] OR "vaccine"[All Fields] OR "vaccins"[All Fields]				
<b>public health:</b> "public health"[MeSH Terms] OR ("public"[All Fields] AND "health"[All Fields]) OR "public health"[All Fields]				
<b>herd immunity:</b> "immunity, herd"[MeSH Terms] OR ("immunity"[All Fields] AND "herd"[All Fields]) OR "herd immunity"[All Fields] OR ("herd"[All Fields] AND "immunity"[All Fields])				
<b>physicians:</b> "physician's"[All Fields] OR "physicians"[MeSH Terms] OR "physicians"[All Fields] OR "physician"[All Fields] OR "physicians's"[All Fields]				
<b>health care:</b> "delivery of health care"[MeSH Terms] OR ("delivery"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "delivery of health care"[All Fields] OR ("health"[All Fields] AND "care"[All Fields]) OR "health care"[All Fields]				
<b>denial:</b> "denial, psychological"[MeSH Terms] OR ("denial"[All Fields] AND "psychological"[All Fields]) OR "psychological denial"[All Fields] OR "denial"[All Fields] OR "denials"[All Fields]				
<b>provider:</b> "provide"[All Fields] OR "provided"[All Fields] OR "provider"[All Fields] OR "provider's"[All Fields] OR "providers"[All Fields] OR "provides"[All Fields] OR "providing"[All Fields]				
<b>behavior:</b> "behavior"[MeSH Terms] OR "behavior"[All Fields] OR "behavioral"[All Fields] OR "behavioural"[All Fields] OR "behavior's"[All Fields] OR "behaviorally"[All Fields] OR "behaviour"[All Fields] OR "behaviourally"[All Fields] OR "behaviours"[All Fields] OR "behaviors"[All Fields] OR "pattern"[All Fields] OR "pattern's"[All Fields] OR "patterability"[All Fields] OR "patterable"[All Fields] OR "patterned"[All Fields] OR "patterning"[All Fields] OR "patterings"[All Fields] OR "patterns"[All Fields]				
<b>Warnings</b>				
(faith OR doctrine OR religious beliefs OR prayer) AND (vaccines OR public health OR herd immunity OR anti-vaxxers) AND (physicians OR health care OR denial of care OR provider behavior)				
<b>Stop word:</b> of				

# When ATM doesn't work well in PubMed, you can tweak it or do it yourself

Search	Actions	Details	Query	Results
#30	...	>	Search: <b>#26 AND #27 AND #28</b>	8
#28	...	>	Search: <b>dismiss*[tw] OR refusal to treat[mh]</b>	12,424
#27	...	>	Search: <b>vaccine*[tw] OR vaccinat*[tw] OR unvaccinat*[tw] OR vaccination[mh] OR anti-vaccination movement[mh] OR vaccination refusal[mh]</b>	493,755
#26	...	>	Search: <b>#24 OR #25</b>	133,545
#25	...	>	Search: <b>religion[mh] OR religious personnel[mh] OR religious missions[mh]</b>	69,069
#24	...	>	Search: <b>faith*[tw] OR religio*[tw] OR spiritual*[tw] OR prayer*[tw] OR doctrin*[tw]</b>	115,268

## PubMed syntax tips

Asterisk = truncate = I don't care how the word ends as long as it starts like this

[field tag] comes after each word or phrase to tell PubMed which "index" to check for that term

[tw] = textword, including title, abstract, author keywords, subject heading words

[mh] = MeSH term and all the narrower MeSH terms on that "branch"

More syntax tips, not shown in the screenshot:

If you want to search for a phrase that PubMed doesn't recognize as a phrase, put it in quotation marks

If you want to use AND and OR in the same line, use parentheses to control the order of operations

# OpenAlex tips

You won't use subject headings like you might in PubMed. Instead, you like browse OpenAlex "topics."

If you search Google-style, use the relevance ranking and filters to find the best results.

Or, you can use parentheses and Boolean operators to control exactly what gets retrieved. In this style of searching, put quotation marks around a multi-word phrase, even if the words are connected by a hyphen.

The screenshot displays the OpenAlex search interface. At the top, there is a search bar with the text "Search OpenAlex" and a search icon. To the right of the search bar are links for "Log in" and "Sign up". Below the search bar, the search criteria are shown: "vaccine AND religion" (in quotes), "Year" set to "2022-2024", and "Work" set to "from Global South". The main content area is titled "Works" and shows a list of search results. The first result is "The Health Belief Model Applied to COVID-19 Vaccine Hesitancy: A Systematic Review" by Yam B. Limbu, Rajesh K. Gautam, et al., published in 2022, with 114 citations. The second result is "Inequality in the distribution of Covid-19 vaccine: a systematic review" by Mohsen Bayati, Rayehe Noroozi, et al., published in 2022, with 91 citations. The third result is "COVID-19 vaccine acceptance and hesitancy among healthcare workers in South Africa" by Charles Shey Wiysonge, Samuel Muabe Akóbwebe, et al., published in 2022, with 54 citations. The fourth result is "Factors influencing COVID-19 vaccine uptake among adults in Nigeria" by Halimat Adedotun Adenola, Oluwusola A. Oluwabake, et al., published in 2022, with 44 citations. On the right side of the interface, there are several filter panels: "Stats" showing 2,698 results and a bar chart; "open access" showing 99.1% (2,675 works); "topic" with a list of topics and their counts; and "institution" with a list of institutions and their counts. The "type" filter is also visible at the bottom right.

# Lens tips

You can use parentheses and Boolean operators to control exactly what gets retrieved; put quotation marks around a multi-word phrase, even if the words are connected by a hyphen.

You can filter your results in the visualizations.

Make sure you are searching Lens *Scholar* instead of Lens *Patents*.

The screenshot displays the Lens Scholar interface for a search query: "vaccine AND religion". The search results are filtered to show 868 Scholarly Works published between 2022 and 2024. The interface includes a sidebar with filters, a top navigation bar, and two main visualization panels.

**Search Results Summary:**


Scholarly Works	Works Cited by Patents	Citing Patents	Patent Citations	Works Cited by Scholarly	Scholarly Citations
868	0	0	0	441	3,200

**Top Field of Study (by Document Count):**

Field of Study	Count
Medicine	666
Political science	405
Sociology	463
Disease	363
Pathology	351
Coronavirus disease 2019 (COVID-19)	355
Infected disease (medical specialty)	354
Public health	194
Environmental health	255
Psychology	276
Virology	192
Internal medicine	246
Philosophy	243
Vaccination	282
Nursing	228
Law	349
Immunology	201
Demography	208
Family medicine	191

**Top Document Type (by Document Count):**

Document Type	Count
Journal Article	~800
Book Chapter	~100
Other	~100
Report	~50
Letter	~50
Preprint	~50
Conference Proceedings Article	~50
Abstract	~50
Journal Issue	~50
Book	~50
Discussion	~50
Editorial	~50
Review	~50



If you really want to learn about searching for evidence synthesis, start here:

<https://docs.google.com/presentation/d/14L26F2bEcKmFAWmPZIHbKkfBtmC76jL4/edit#slide=id.p1>