Systematic Review Searching Strategies

Systematic Review Training

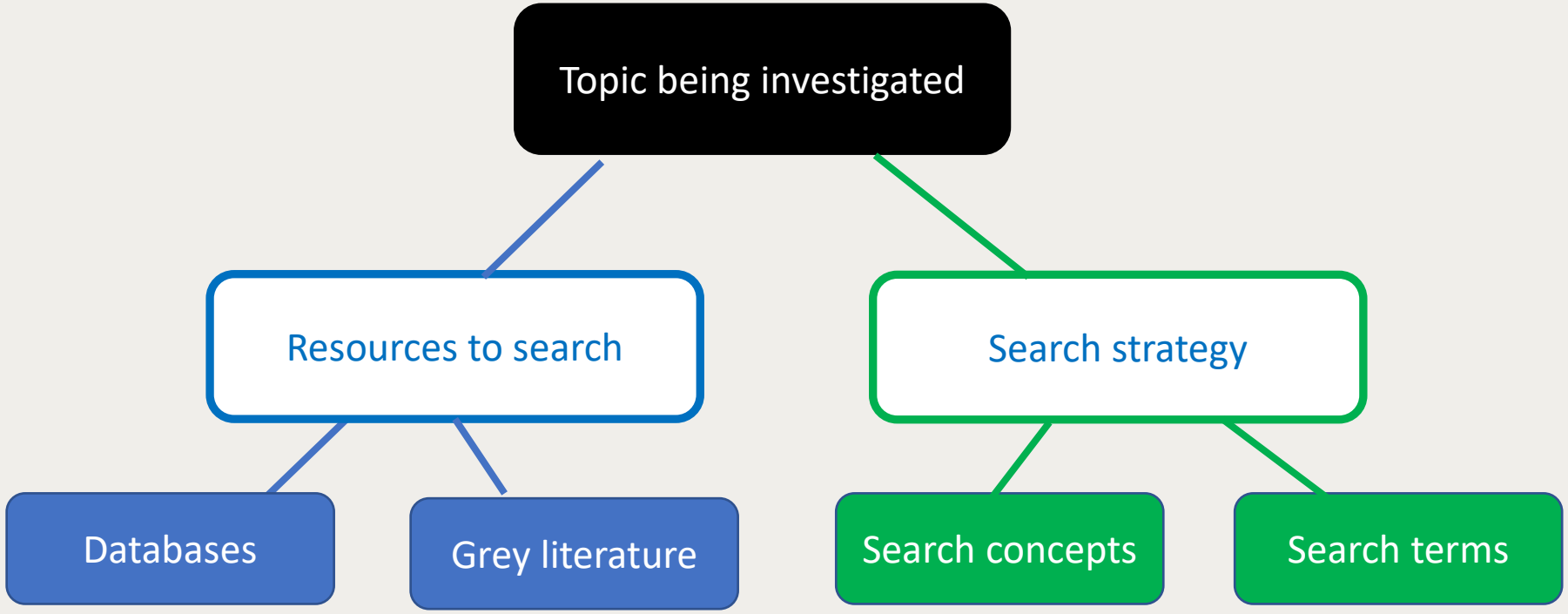
Center for Knowledge Management

VANDERBILT UNIVERSITY MEDICAL CENTER

Objectives:

- ✓ Discuss process used to create a comprehensive search strategy for a systematic review
- ✓ Describe tools to aid with identifying keywords to include in search strategies

Overview of process for comprehensive search strategy



Concept considerations

Research question should be formulated using

PICO	PICOS	SPIDER
Population	**P**opulation	**S**ample
Intervention	**I**ntervention	**P**henomenon of **I**nterest
Comparison	**C**omparison	**D**esign
Outcome	**O**utcome	**E**valuation
not applicable	**S**tudy type	**R**esearch type

Tawfitk GM, et al.

Key Question (KQ): How well does eGFR as estimated by the CKD-EPI, MDRD or AASK equations, with and without the race correction factor, predict measured GFR in Black adults across the full range of measured GFRs in the United States and internationally?

Black Adults undergoing glomerular filtration rate assessment via estimating equations

Kidney function assessment via the MDRD, CKD-EPI, or AASK eGFR equations with or without the inclusion of the race factor

Comparison of multiple estimated GFR equations and/or comparison of an estimated GFR equation to a measured GFR.

Type of eGFR test used

- eGFR as determined w/ race coefficient in Black adults
- eGFR as determined without the race coefficient in Black adults
- mGFR as measured in Black adults
- Bias, precision, and accuracy of eGFR
- Kappa agreements and correlations between eGFR values

Tawfik GM, Dila KAS, Mohamed MYF, Tam DNH, Kien ND, Ahmed AM, Huy NT. A step by step guide for conducting a systematic review and meta-analysis with simulation data. Trop Med Health. 2019 Aug 1;47:46. doi: 10.1186/s41182-019-0165-6. PMID: 31388330; PMCID: PMC6670166.

Bramer WM, de Jonge GB, Rethlefsen ML, Mast F, Kleijnen J. A systematic approach to searching: an efficient and complete method to develop literature searches. J Med Libr Assoc. 2018 Oct;106(4):531-541. doi: 10.5195/jmla.2018.283. Epub 2018 Oct 1. PMID: 30271302; PMCID: PMC6148622.

Umeukeje EM, Koonce TY, Kusnoor SV, Ulasi II, Kostelanetz S, Williams AM, Blasingame MN, Epelbaum MI, Giuse DA, Apple AN, Kaur K, González Peña T, Barry D, Eisenstein LG, Nutt CT, Giuse NB. Systematic review of international studies evaluating MDRD and CKD-EPI estimated glomerular filtration rate (eGFR) equations in Black adults. PLoS One. 2022 Oct 18;17(10):e0276252. doi: 10.1371/journal.pone.0276252. PMID: 36256652; PMCID: PMC9578594.

Concepts AND searching considerations

KQ: How well does eGFR as estimated by the CKD-EPI, MDRD or AASK equations, with and without the race correction factor, predict measured GFR in Black adults across the full range of measured GFRs in the United States and internationally?

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Search concepts

Ascertained during screening

Ascertained during screening and data extraction

Search	Topic	Strategy
#1	eGFR	("Glomerular Filtration Rate"[Mesh] OR "glomerular filtration rate"[tiab] OR "glomerular filtration rates"[tiab] OR GFR[tiab] OR kidney function[tiab] OR renal function[tiab] OR kidney function tests[mh:noexp]) ….
#2	Black adults	(African Continental Ancestry Group[mh] OR Ethnic Groups[mh] OR race[tiab] OR racial[tiab] OR Race Factors[mh] OR minority[tiab] OR minority health[mh] OR minority groups[mh] OR minorities[tiab] OR ethnicity[tiab] OR ethnic[tiab] OR ethnicities[tiab] OR racial[tiab] …….
#3		#1 AND #2

Further reading: Eriksen MB, Frandsen TF. The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: a systematic review. J Med Libr Assoc. 2018 Oct;106(4):420-431. doi: 10.5195/jmla.2018.345. Epub 2018 Oct 1. PMID: 30271283; PMCID: PMC6148624.

Searching considerations

- The higher the number of concepts included in the search, the small the retrieval will be because you are imposing stringent requirements on what gets retrieved
  - May miss relevant citations

- Select the ***base*** concepts for inclusion in the search strategy

- "Some … PICO elements are ***rarely seen in search strategies***"
  - Comparators
    - May be "do nothing"
    - May be already addressed in intervention
  - Outcomes
    - May be unknown
    - "May be implicit in the population (e.g., less of the disease)"

Searching considerations (cont.)

Sensitivity vs Precision

Sensitivity /Recall = "proportion of relevant studies retrieved"

Precision = "proportion of retrieved studies that are relevant"

- Fewer concepts will result in increased sensitivity
- The more specific the concepts the lower the retrieval

"Searches for systematic reviews aim to be ***as extensive as possible*** in order ***to ensure that as many of the relevant studies as possible are included in the review***. It is, however, necessary to strike a ***balance*** between striving for comprehensiveness and maintaining relevance when developing a search strategy."*

Outcomes are often not searched as a concept in systematic reviews

*Zhang L, Ajiferuke I, Sampson M. Optimizing search strategies to identify randomized controlled trials in MEDLINE. BMC Med Res Methodol. 2006 May 9;6:23. doi: 10.1186/1471-2288-6-23. PMID: 16684359; PMCID: PMC1488863.

Further reading: Lefebrve, Carol & Glanville, Julie. Chpt 4 Searching for and selecting studies in *Cochrane Handbook for Systematic Reviews of Interventions* version 6.3 (updated February 2022). Cochrane, 2022 https://training.cochrane.org/handbook/current/chapter-04

Searching recommendations from AHRQ and Cochrane

AHRQ*†

- Identify existing and in-process systematic reviews and meta-analyses (generally past 5-10 years is sufficient)
- ✓ MEDLINE, Cochrane Central Register of Controlled Trials, Embase, CINAHL, PsycINFO, WoS
- ✓ Grey literature including conference abstracts, unpublished trial data
- ✓ Controlled vocab and keywords
- ✓ ClinicalTrials.gov and existing clinical practice guidelines
- ✓ Aim for high sensitivity
- Look at all references for all included/key studies
- ✓ Limits such as age and language should not be used (Cochrane only limits language)
- Handsearching (more liberal than Cochrane)
- Do not *rely* on filters or hedges unless they are validated
- No consensus about searching on outcomes

Cochrane** (*remember Cochrane is about RCTs)*

- "identifying ***reports of studies*** is currently the most convenient approach to identifying the majority of studies and obtaining information about them and their results"
- ✓ Cochrane Central Register of Controlled Trials, MEDLINE, Embase
- ✓ Grey literature (e.g., dissertation abstracts)
- ✓ Free text and controlled vocab
- ✓ Trials registers – to obtain data from studies that are completed but never published (particularly important for topics for which few articles are published)
- ✓ "aim for high sensitivity [recall], which may result in relatively low precision."
- avoid using too many *different* search concepts
- ✓ avoid language restrictions
- handsearching review articles
- us[e] *appropriate* elements from PICO:
  health condition + intervention + study types
- Signature: NOT (animals [mh] NOT humans [mh])

*Relevo R. Effective Search Strategies for Systematic Reviews of Medical Tests. AHRQ Publication No. 12-EHC076-EF. Chapter 4 of Methods Guide for Medical CimJune 2012. https://effectivehealthcare.ahrq.gov/products/methods-guidance-tests-search/methods
†Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. January 2014. Chapters available at: www.effectivehealthcare.ahrq.gov.

**Lefebvre C, Glanville J, Briscoe S, Featherstone R, Littlewood A, Marshall C, Metzendorf M-I, Noel-Storr A, Paynter R, Rader T, Thomas J, Wieland LS. Chapter 4: Searching for and selecting studies. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.3 (updated February 2022). Cochrane, 2022. Available from www.training.cochrane.org/handbook.
https://training.cochrane.org/handbook/current/chapter-04

Search hedges

Also known as “clinical queries, hedges, optimal search filters, optimal search strategies, quality filters, search filters”*

Sources of search hedges:

- ❑ McMaster Univ Informatics: https://hiruweb.mcmaster.ca/hkr/hedges/medline/
- ❑ PubMed: https://pubmed.ncbi.nlm.nih.gov/help/#clinical-queries *very bottom of page:* clinical study categories (therapy, diagnosis, etiology, genetic, COVID-related)
- ❑ Canadian Agency for Drugs and Technologies in Health (CADTH): https://searchfilters.cadth.ca/

*Jenkins M. Evaluation of methodological search filters--a review. Health Info Libr J. 2004 Sep;21(3):148-63. doi: 10.1111/j.1471-1842.2004.00511.x. PMID: 15318913.

Expanding your list search terms

Quickly build your knowledgebase of the topic and the vocabulary:

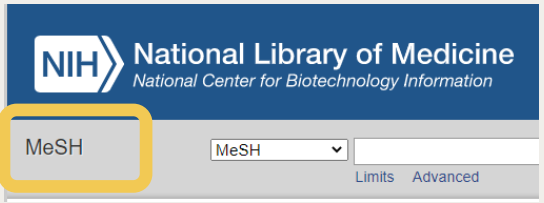
- UpToDate monograph (or other synthesized evidence resources)
- Quick and dirty search in PubMed
- Quick and dirty search in GoogleScholar
- Latest review articles
- Known key/representative articles on the topic
- Find other systematic reviews related to facets of your topic and check the searches used
- Plurals and alternative (British) spellings (may be entry terms in MeSH or Emtree)

MeSH*	Emtree**
Updated yearly	Updated 3 x / year
27,000 preferred terms	86,000 preferred terms
Does not include all Emtree terms	Includes all MeSH terms (some as synonyms)
~9250 preferred terms for drugs	Over 33,000 preferred terms for drugs
Terminology may be inverted Ex. Leukemia, Myeloid	Terminology is natural language style Ex. Myeloid Leukemia
Much more extensive history notes and notably includes nursing, veterinary medicine, dentistry	Focus on drugs, medical devices

*Elsevier. A Comparison of Emtree and MeSH
**Elsevier. Emtree: the deep indexing of Embase: https://www.elsevier.com/solutions/embase-biomedical-research/emtree

Dipyridamole

antiplatelet drug investigation for therapeutic effects against COVID-19



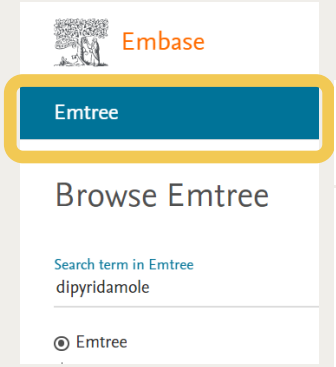
Tree Number(s): D03.383.742.175
MeSH Unique ID: D004176
Registry Number: 64ALC7F90C
Entry Terms:

- Dipyramidole
- Apo-Dipyridamole
- Apo Dipyridamole
- Cerebrovase
- Persantine
- Persantin
- Curantil
- Curantyl
- Kurantil
- Miosen
- Novo-Dipiradol
- Novo Dipiradol
- Antistenocardin
- Cléridium

Pharmacologic Action:

- Phosphodiesterase Inhibitors
- Platelet Aggregation Inhibitors
- Vasodilator Agents

All MeSH Categories
Chemicals and Drugs Category
Heterocyclic Compounds
Heterocyclic Compounds, 1-Ring
Pyrimidines
Dipyridamole
Aspirin, Dipyridamole Drug Combination



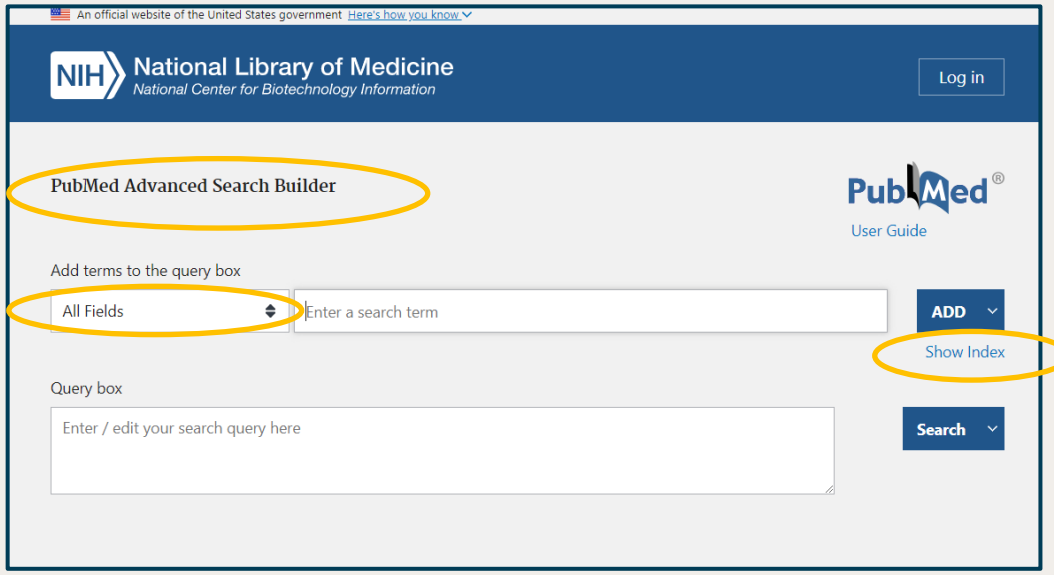
Synonyms (93)

'2, 2`, 2``, 2``` (4, 8 dipiperidiopyrimido [5, 4, d] pyrimidine 2, 6 diyldinitrilo) tetraethanol' OR '2, 2`, 2``, 2``` [(4, 8 diperidinopyrimido (5, 4 d) pyrimidine 2, 6 diyl) dinitrilo] tetraethanol' OR '2, 6 bis (diethanolamino) 4, 8 dipiperidinopyrimido (5, 4 d) pyrimidine' OR '2, 6 bis (diethanolamino) 4, 8 dipiperidinopyrimido [5, 4 d] pyrimidine' OR '2, 6 bis [bis (2 hydroxyethyl) amino] 4, 8 bis (1 piperidyl) 1, 3, 5, 7 tetraazanaphthalene' OR '2, 6 bis [bis (2 hydroxyethyl) amino] 4, 8 bis (1 piperidyl) pyrimido (5, 4 d) pyrimidine' OR 'adezan' OR 'agilease' OR 'agremol' OR 'anti-plate 75' OR 'antiplate' OR 'apo-dipyridamole fc' OR 'aponova' OR 'atlantin' OR 'atrombin' OR 'attia' OR 'cardoxin' OR 'cardoxin forte' OR 'chilcolan' OR 'cleridium' OR 'coronair' OR 'coronamole' OR 'corosan' OR 'cortab' OR 'curanthil' OR 'curantil' OR 'curantyl' OR 'dilcor' OR 'dipiridamol' OR 'dipiridamole' OR 'dipyradamole' OR 'dipyramidole' OR 'dipyridamide' OR 'dipyridamol' OR 'dipyridan' OR 'dipyridimole' OR 'dipyrimadole' OR 'dipyrimidole' OR 'dipyrol' OR 'dipyrridamole' OR 'dirinol' OR 'efosin' OR 'ethrine' OR 'germed' OR 'gulliostin' OR 'isephanine' OR 'iv persantine' OR 'jenapri pr' OR 'justpertin' OR 'kurantil' OR 'lodimol' OR 'microbanzol' OR 'miosen' OR 'natyl' OR 'nsc 515776' OR 'perazodin' OR 'peridamol' OR 'perkod' OR 'permiltin' OR 'persantin' OR 'persantin 100' OR 'persantin 75' OR 'persantin depot' OR 'persantin forte' OR 'persantin pl' OR 'persantin pl prolonguetas' OR 'persantin plus' OR 'persantin prolonguets' OR 'persantin retard' OR 'persantin retardkapseln' OR 'persantin sr' OR 'persantine' OR 'persantione' OR 'piroan' OR 'plato' OR 'posanin' OR 'prandiol' OR 'prespex' OR 'prexin' OR 'procardin' OR 'pyranistole' OR 'pyridantin' OR 'pytazen sr' OR 'ra 8' OR 'ridamol' OR 'rupenol' OR 'sandel' OR 'solantin' OR 'tovincocard' OR 'trolactin' OR 'trompersantin' OR 'vasokor' OR 'dipyridamole'

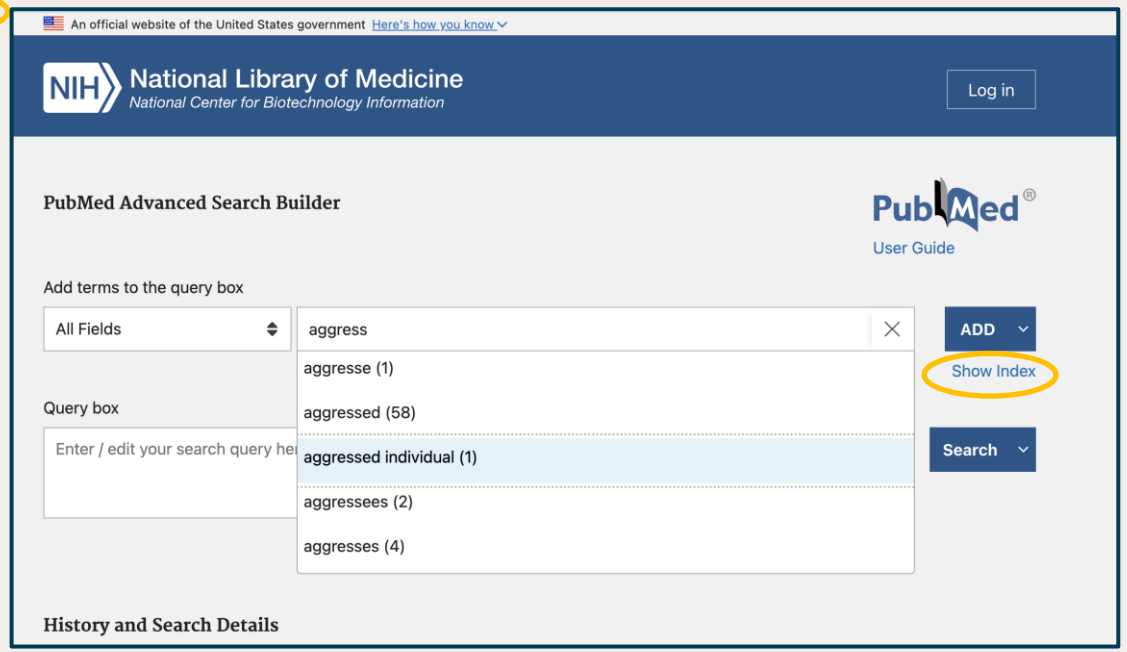
Screenshots captured Sept. 2023

Search	Topic	Strategy for PubMed
#1	eGFR	("Glomerular Filtration Rate"[Mesh] OR "glomerular filtration rate"[tiab] OR "glomerular filtration rates"[tiab] OR GFR[tiab] OR kidney function[tiab] OR renal function[tiab] OR kidney function tests[mh:noexp]) AND (estimated[tiab] OR estimate[tiab] OR estimates[tiab] OR calculation[tiab] OR calculated[tiab] OR calculate[tiab] OR algorithm*[tiab] OR equat*[tiab] OR formula*[tiab] OR correction*[tiab] OR adjustment*[tiab] OR eGFR[tiab] OR "Modification of Diet in Renal Disease"[tiab] OR MDRD[tiab] OR "Chronic Kidney Disease Epidemiology"[tiab] OR "Chronic Kidney Disease Epidemiological"[tiab] OR CKD-EPI[tiab] OR "African American Study of Kidney Disease"[tiab] OR AASK[tiab])
#2	Black adults 212 terms & phrases	(African Continental Ancestry Group[mh] OR Ethnic Groups[mh] OR race[tiab] OR racial[tiab] OR Race Factors[mh] OR minority[tiab] OR minority health[mh] OR minority groups[mh] OR minorities[tiab] OR ethnicity[tiab] OR ethnic[tiab] OR ethnicities[tiab] OR racial[tiab] OR Africa[mh] OR Africa*[tiab] OR Afro*[tiab] OR African American[tiab] OR African Americans[tiab] OR Black American[tiab] OR Black Americans[tiab] OR Black*[tiab] OR "racial and ethnic groups"[tiab] OR ethnic differences[tiab] OR non-white[tiab] OR non-Caucasian OR "race/ethnicity" [tiab] OR Multi-ethnic[tiab] OR African ancestry[tiab] OR Black participants[tiab] OR Black study participants[tiab] OR Black subjects[tiab] OR Black adults[tiab] OR Black men[tiab] OR Black women[tiab] OR Black individuals[tiab] OR diverse[tiab] OR "people of color"[tiab] OR "people of colour"[tiab] OR "persons of color"[tiab] OR "persons of colour"[tiab] OR POC[tiab] OR WOC[tiab] OR "women of color"[tiab] OR MOC[tiab] OR "men of color"[tiab] OR BIPOC[tiab] OR BAME[tiab] OR BME[tiab] OR "minority ethnic"[tiab] OR biracial[tiab] OR multiracial[tiab] OR Angola[tiab] OR Benin[tiab] OR Botswana[tiab] OR Burkina Faso[tiab] OR Burundi[tiab] OR Cameroon[tiab] OR Cape Verde[tiab] OR Central African Republic[tiab] OR Chad[tiab] OR Comoros[tiab] OR Congo Democratic Republic[tiab] OR Cote d'Ivoire[tiab] OR Ivory Coast[tiab] OR Djibouti[tiab] OR Equatorial Guinea[tiab] OR Eritrea[tiab] OR Ethiopia[tiab] OR Gabon[tiab] OR Gambia[tiab] OR Ghana[tiab] OR Guinea[tiab] OR Guinea Bissau[tiab] OR Kenya[tiab] OR Lesotho[tiab] OR Liberia[tiab] OR Madagascar[tiab] OR Malawi[tiab] OR Mali[tiab] OR Mauritania[tiab] OR Mauritius[tiab] OR Mozambique[tiab] OR Namibia[tiab] OR Niger[tiab] OR Nigeria[tiab] OR Rwanda[tiab] OR "Sao Tome and Principe"[tiab] OR Senegal[tiab] OR Seychelles[tiab] OR Sierra Leone[tiab] OR Somalia[tiab] OR South Africa[tiab] OR South Sudan[tiab] OR Sudan[tiab] OR Swaziland[tiab] OR Tanzania[tiab] OR Togo[tiab] OR Uganda[tiab] OR Zambia[tiab] OR Zimbabwe[tiab] OR sub-Saharan[tiab] OR Angolan[tiab] OR Beninese[tiab] OR Batswana[tiab] OR Motswana[tiab] OR Burkinabe[tiab] OR Burkinese[tiab] OR Burundian[tiab] OR Cameroonian[tiab] OR "Cape Verdean"[tiab] OR "Cabo Verdean"[tiab] OR "Central African"[tiab] OR Chadian[tiab] OR Comorian[tiab] OR Congolese[tiab] OR Ivorian[tiab] OR Dijiboutian[tiab] OR Equatoguinean[tiab] OR Eritrean[tiab] OR Ethiopian[tiab] OR Gabonian[tiab] OR Ghanaian[tiab] OR Guinean[tiab] OR Kenyan[tiab] OR Mosotho[tiab] OR Basotho[tiab] OR Lesothan[tiab] OR Lesothonian[tiab] OR Liberian[tiab] OR Malagasy[tiab] OR Malawian[tiab] OR Malian[tiab] OR Mauritanian[tiab] OR Mozambican[tiab] OR Namibian[tiab] OR Nigerian[tiab] OR Rwandan[tiab] OR Rwandese[tiab] OR Senegalese[tiab] OR Seychellois[tiab] OR Seychelloise[tiab] OR Seselwa[tiab] OR "Sierra Leonean"[tiab] OR Somali[tiab] OR "South African"[tiab] OR "South Sudanese"[tiab] OR Swati[tiab] OR Swazi[tiab] OR Tanzanian[tiab] OR Togolese[tiab] OR Ugandan[tiab] OR Zambian[tiab] OR Zimbabwan[tiab] OR Zimbo[tiab] OR West Indies[mh] OR "West Indies"[tiab] OR "Antigua and Barbuda"[tiab] OR Antiguan Barbudan[tiab] OR Bahamas[tiab] OR Bahamian[tiab] OR Barbados[tiab] OR Barbadian[tiab] OR "British Virgin Islands"[tiab] OR Virgin Islanders[tiab] OR Cuba[tiab] OR Cuban[tiab] OR Dominica[tiab] OR Dominican[tiab] OR Grenada[tiab] OR Grenadian[tiab] OR Guadeloupe[tiab] OR Guadeloupean[tiab] OR Martinique[tiab] OR Martinican[tiab] OR Puerto Rico[tiab] OR Puerto Rican[tiab] OR "Saint Kitts and Nevis"[tiab] OR Kittitian[tiab] OR Nevisian[tiab] OR Saint Lucia[tiab] OR Saint Lucian[tiab] OR "Saint Vincent and the Grenadines"[tiab] OR Saint Vincentian[tiab] OR "Trinidad and Tobago"[tiab] OR Trinidadian[tiab] OR Tobagonian[tiab] OR "United States Virgin Islands"[tiab] OR "US Virgin Islands"[tiab] OR Jamaica[tiab] OR Jamaican[tiab] OR Haiti[tiab] OR Haitian[tiab] OR Dominican Republic[tiab] OR United Kingdom[mh] OR United Kingdom[tiab] OR Great Britain[tiab] OR Brazil[mh] OR Brazil[tiab] OR Brazilian[tiab] OR Brasilian[tiab] OR Mexico[mh] OR Mexico[tiab] OR Mexican[tiab] OR Venezuela[mh] OR Venezuela[tiab] OR Venezuelan[tiab] OR Colombia[mh] OR Colombia[tiab] OR Colombian[tiab] OR Canada[mh] OR Canada[tiab] OR Canadian[tiab])

Expanding your list search terms



PubMed's Phrase Index can help you identify similar or related terms collocated in the browsable, alphabetic list of keyword phrases & terms

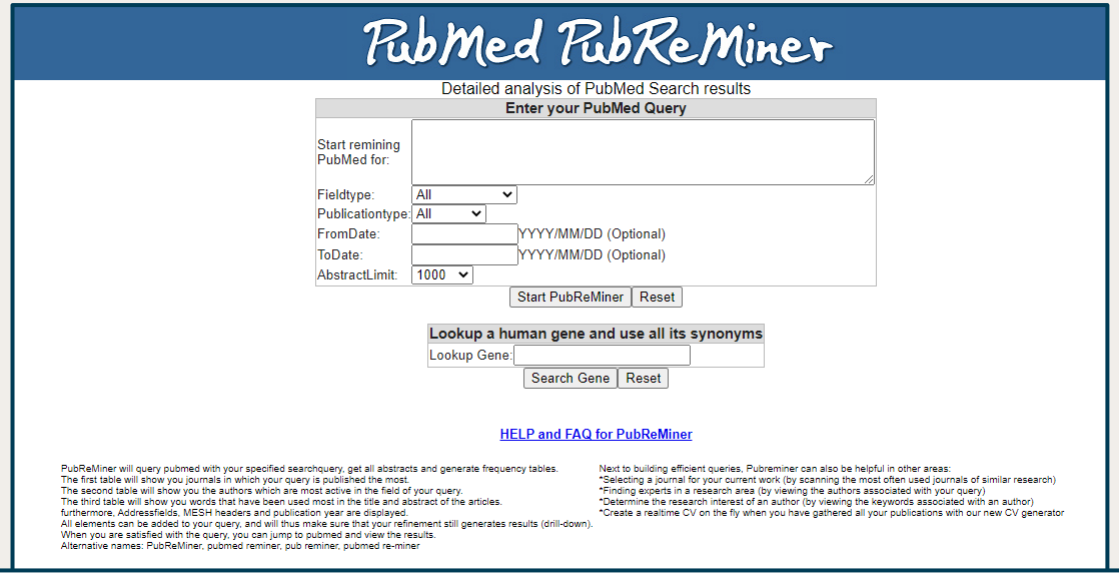


Search executed 9/14/23

Not all phrases appearing in PubMed will appear in the Phrase Index. For more information, see: https://pubmed.ncbi.nlm.nih.gov/help/#searching-for-a-phrase

Tools to help identify search terms: PubMed PubReMiner

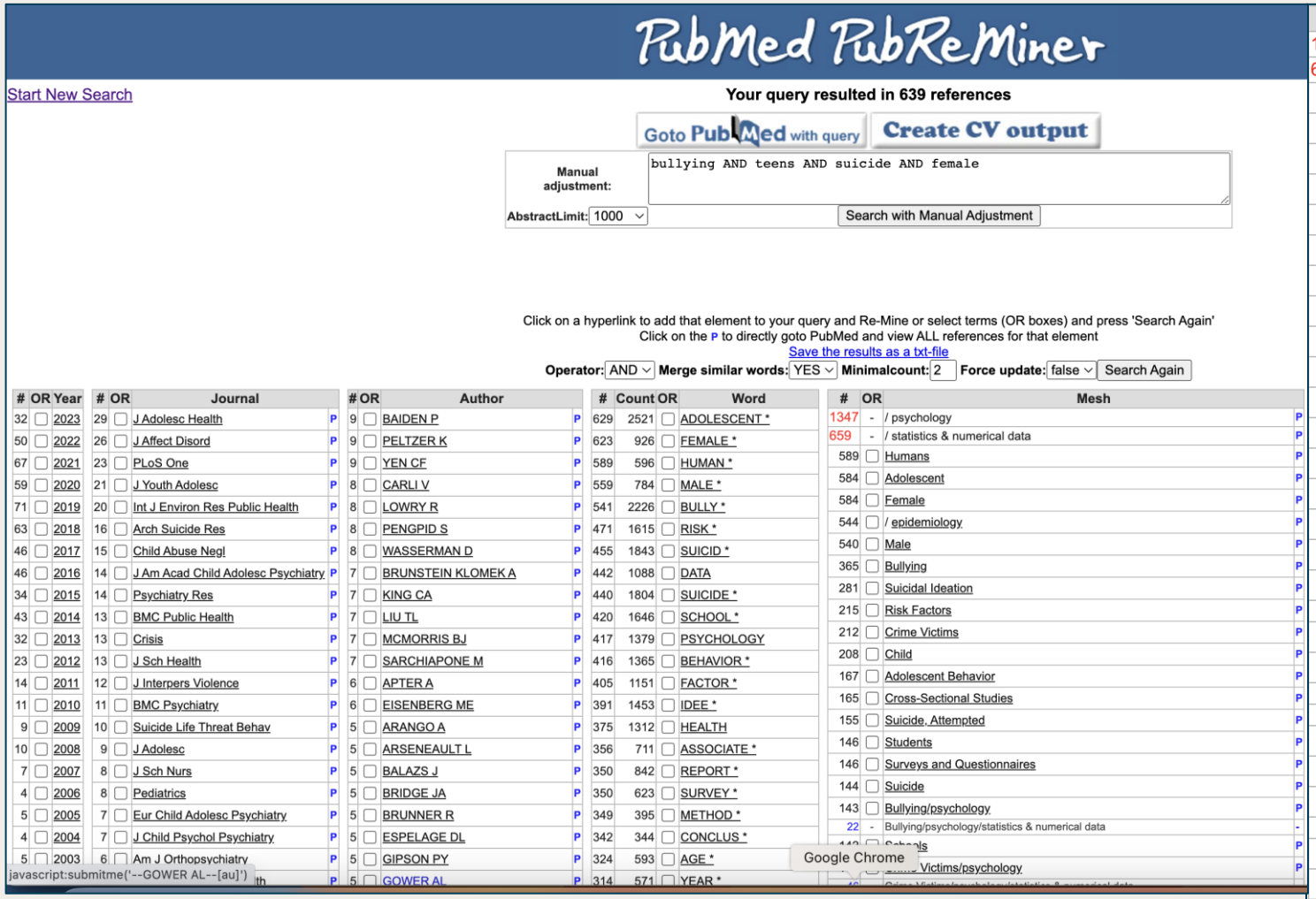
https://hgserver2.amc.nl/cgi-bin/miner/miner2.cgi



"PubReMiner will query PubMed with your specified search query, get all abstracts and generate frequency tables.
The first table will show you journals in which your query is published the most.
The second table will show you the authors which are most active in the field of your query.
The third table will show you words that have been used most in the title and abstract of the articles.
furthermore, Address fields, MESH headers and publication year are displayed.
All elements can be added to your query, and will thus make sure that your refinement still generates results (drill-down).
When you are satisfied with the query, you can jump to pubmed and view the results.
Alternative names: PubReMiner, PubMed reminer, pub reminer, PubMed re-miner"

Tools to help identify search terms: PubMed PubReMiner

https://hgserver2.amc.nl/cgi-bin/miner/miner2.cgi



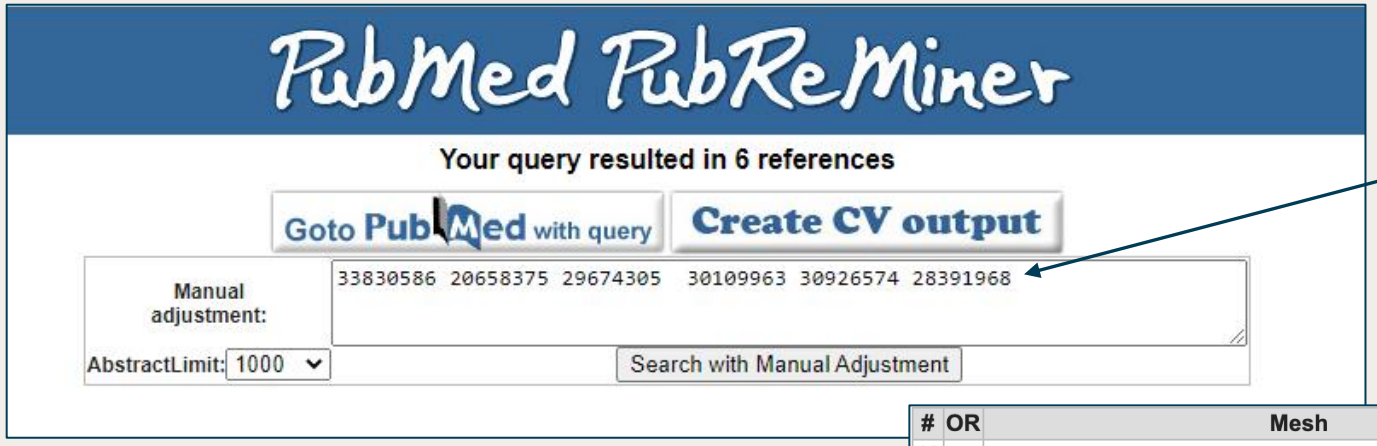
#	OR	Mesh	
1347	-	/ psychology	P
659	-	/ statistics & numerical data	P
589	☐	Humans	P
584	☐	Adolescent	P
584	☐	Female	P
544	☐	/ epidemiology	P
540	☐	Male	P
365	☐	Bullying	P
281	☐	Suicidal Ideation	P
215	☐	Risk Factors	P
212	☐	Crime Victims	P
208	☐	Child	P
167	☐	Adolescent Behavior	P
165	☐	Cross-Sectional Studies	P
155	☐	Suicide, Attempted	P
146	☐	Students	P
146	☐	Surveys and Questionnaires	P
144	☐	Suicide	P
143	☐	Bullying/psychology	P
22	-	Bullying/psychology/statistics & numerical data	-
142	☐	Schools	P
141	☐	Crime Victims/psychology	P
46	-	Crime Victims/psychology/statistics & numerical data	-
1	-	Crime Victims/psychology/rehabilitation	-
116	☐	Young Adult	P
113	☐	Prevalence	P
109	☐	Students/psychology	P
44	-	Students/psychology/statistics & numerical data	-
107	☐	Depression	P
103	☐	Adolescent Behavior/psychology	P
88	☐	Adult	P
87	☐	Self-Injurious Behavior	P
84	☐	/ prevention & control	P
75	☐	Peer Group	P
74	☐	Suicide, Attempted/psychology	P

Cyberbullying[mh]

Search executed 9/15/23

Tools to help identify search terms: PubMed PubReMiner

https://hgserver2.amc.nl/cgi-bin/miner/miner2.cgi



PubMed citations that I already know are appropriate

#	OR	Mesh	
13	-	/ statistics & numerical data	P
12	-	/ psychology	P
6	-	Humans	P
5	☐	Adolescent	P
5	☐	Female	P
5	☐	Male	P
4	☐	/ epidemiology	P
3	☐	Adolescent Behavior	P
3	☐	Bullying	P
3	☐	Crime Victims	P
3	☐	Prevalence	P
3	☐	Surveys and Questionnaires	P
2	☐	Adolescent Behavior/psychology	P
2	☐	Bullying/statistics & numerical data	P
2	☐	Child	P
2	☐	Crime Victims/psychology/statistics & numerical data	P
2	☐	Crime Victims/psychology	P
2	-	Crime Victims/psychology/statistics & numerical data	-
2	☐	Risk Factors	P
2	☐	Schools	P
2	☐	Students/psychology/statistics & numerical data	P
2	☐	Students/psychology	P
2	-	Students/psychology/statistics & numerical data	-
2	☐	Students	P
2	☐	Suicidal Ideation	P
2	☐	Suicide, Attempted	P
2	☐	Suicide	P
2	☐	/ therapy	P
1	☐	Adult	P
1	☐	Aggression/psychology	P
1	☐	Aggression	P
1	☐	Balloon Occlusion	P
1	☐	Bullying/psychology/statistics & numerical data	P
1	☐	Bullying/psychology	P
1	-	Bullying/psychology/statistics & numerical data	-
1	☐	Crime Victims/statistics & numerical data	P
1	☐	Cross-Sectional Studies	P
1	☐	Cyanoacrylates	P
1	☐	Cyberbullying/psychology	P
1	☐	Cyberbullying	P
1	☐	Developing Countries	P
1	☐	Electronic Mail/statistics & numerical data	P
1	☐	Electronic Mail	P

Search executed 9/15/23

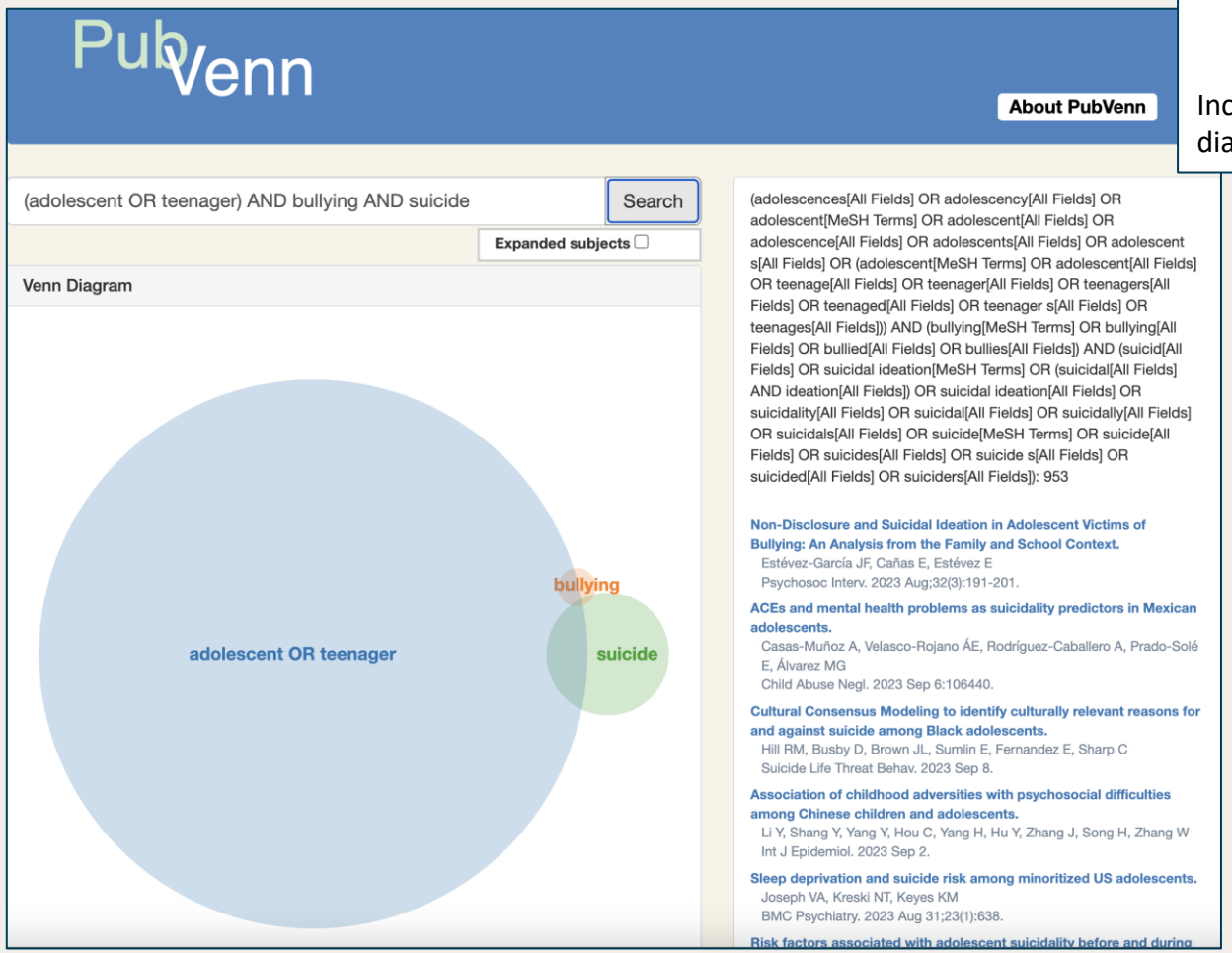
PubVenn

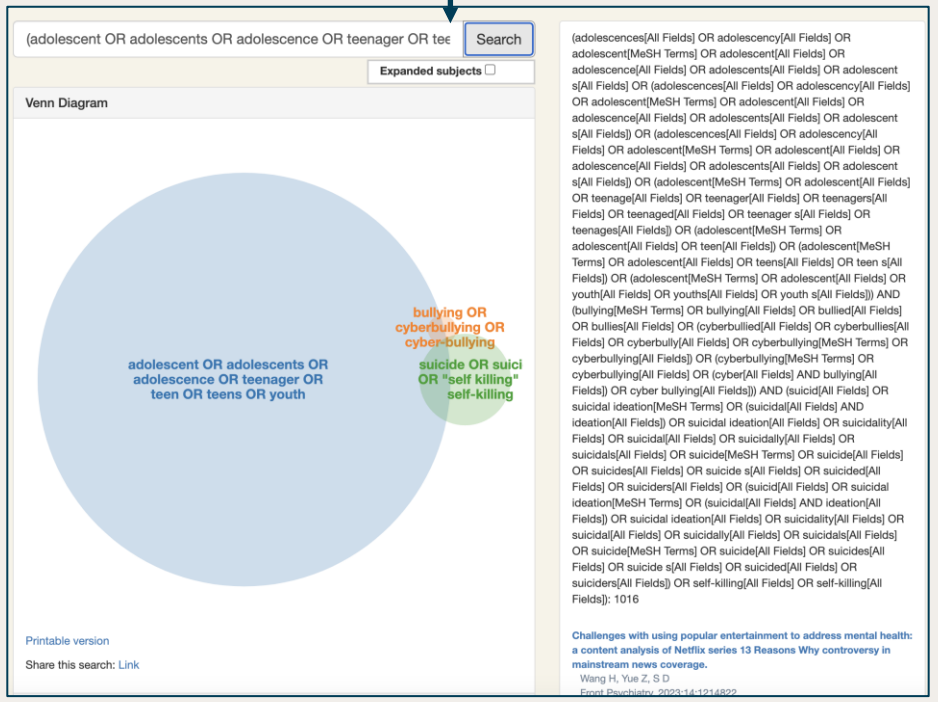
https://pubvenn.appspot.com/

Helps visualize searches to show relative size of retrieval for concepts
Performs translation of terms to MeSH + keywords
Developed by Ed Sperr and uses NCBI's Entrez Programming Utilities

Adding more synonyms: (adolescent OR adolescents OR adolescence OR teenager OR teen OR teens OR youth) AND (bullying OR cyberbullying OR cyber-bullying) AND (suicide OR suicidal OR "self killing" OR self-killing)

Increases retrieval from 953 to 1016 but doesn't change the proportions in the Venn diagram





Searches executed 9/15/23

PRISMA
TRANSPARENT REPORTING OF SYSTEMATIC REVIEWS AND META-ANALYSES

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Title
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	We reviewed the checklist and applied it for our abstract.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction [lines 66-105]
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction [lines 105-118]
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Eligibility criteria [lines 116-123] Data synthesis [lines 175-182]
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Search process [lines 125-130] S3 Tables and Text
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	S4 Tables
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Eligibility criteria [lines 116-123] Study screening and data extraction [lines 132-140] Data synthesis [lines 175-182]
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Study screening and data extraction [lines 132-140]

http://www.prisma-statement.org/documents/PRISMA_2020_checklist.pdf

S3 Tables and Text. Search Strategy and Processes Details

PubMed/MEDLINE Search Strategy

Search	Strategy
1	("Glomerular Filtration Rate"[Mesh] OR "glomerular filtration rate"[tiab] OR "glomerular filtration rates"[tiab] OR GFR[tiab] OR kidney function[tiab] OR renal function[tiab] OR kidney function tests[mh:noexp]) AND (estimated[tiab] OR estimate[tiab] OR estimates[tiab] OR calculation[tiab] OR calculated[tiab] OR calculate[tiab] OR algorithm*[tiab] OR equat*[tiab] OR formula*[tiab] OR correction*[tiab] OR adjustment*[tiab] OR eGFR[tiab] OR "Modification of Diet in Renal Disease"[tiab] OR MDRD[tiab] OR "Chronic Kidney Disease Epidemiology"[tiab] OR "Chronic Kidney Disease Epidemiological"[tiab] OR CKD-EPI[tiab] OR "African American Study of Kidney Disease"[tiab] OR AASK[tiab])
2	(African Continental Ancestry Group[mh] OR Ethnic Groups[mh] OR race[tiab] OR racial[tiab] OR Race Factors[mh] OR minority[tiab] OR minority health[mh] OR minority groups[mh] OR minorities[tiab] OR ethnicity[tiab] OR ethnic[tiab] OR ethnicities[tiab] OR racial[tiab] OR Africa[mh] OR Africa*[tiab] OR Afro*[tiab] OR African American[tiab] OR African Americans[tiab] OR Black American[tiab] OR Black Americans[tiab] OR Black*[tiab] OR "racial and ethnic groups"[tiab] OR ethnic differences[tiab] OR non-white[tiab] OR non-Caucasian OR "race/ethnicity" [tiab] OR Multi-ethnic[tiab] OR African ancestry[tiab] OR Black participants[tiab] OR Black study participants[tiab] OR Black subjects[tiab] OR Black adults[tiab] OR Black men[tiab] OR Black women[tiab] OR Black individuals[tiab] OR diverse[tiab] OR "people of color"[tiab] OR "people of colour"[tiab] OR "persons of color"[tiab] OR "persons of colour"[tiab] OR POC[tiab] OR WOC[tiab] OR "women of color"[tiab] OR MOC[tiab] OR "men of color"[tiab] OR BIPOC[tiab] OR BAME[tiab] OR BME[tiab] OR "minority ethnic"[tiab] OR biracial[tiab] OR multiracial[tiab] OR Angola[tiab] OR Benin[tiab] OR Botswana[tiab] OR Burkina Faso[tiab] OR Burundi[tiab] OR Cameroon[tiab] OR Cape Verde[tiab] OR Central African Republic[tiab] OR Chad[tiab] OR Comoros[tiab] OR Congo Democratic Republic[tiab] OR Cote d'Ivoire[tiab] OR Ivory Coast[tiab] OR Djibouti[tiab] OR Equatorial Guinea[tiab] OR Eritrea[tiab] OR Ethiopia[tiab] OR Gabon[tiab] OR Gambia[tiab] OR Ghana[tiab] OR Guinea[tiab] OR Guinea Bissau[tiab] OR Kenya[tiab] OR Lesotho[tiab] OR Liberia[tiab] OR Madagascar[tiab] OR Malawi[tiab] OR Mali[tiab] OR Mauritania[tiab] OR Mauritius[tiab] OR Mozambique[tiab] OR Namibia[tiab] OR Niger[tiab] OR Nigeria[tiab] OR Rwanda[tiab] OR "Sao Tome and Principe"[tiab] OR Senegal[tiab] OR Seychelles[tiab] OR Sierra Leone[tiab] OR Somalia[tiab] OR South Africa[tiab] OR South Sudan[tiab] OR Sudan[tiab] OR Swaziland[tiab] OR Tanzania[tiab] OR Togo[tiab] OR Uganda[tiab] OR Zambia[tiab] OR Zimbabwe[tiab] OR sub-Saharan[tiab] OR Angolan[tiab] OR Beninese[tiab] OR Batswana[tiab] OR Motswana[tiab] OR Burkinabe[tiab] OR Burkinese[tiab] OR Burundian[tiab] OR Cameroonian[tiab] OR "Cape Verdean"[tiab] OR "Cabo Verdean"[tiab] OR "Central African"[tiab] OR Chadian[tiab] OR Comorian[tiab] OR Congolese[tiab] OR Ivorian[tiab] OR Djiiboutian[tiab] OR Equatoguinean[tiab] OR Eritrean[tiab] OR Ethiopian[tiab] OR Gabonian[tiab] OR Ghanaian[tiab] OR Guinean[tiab] OR Kenyan[tiab] OR Mosotho[tiab] OR Basotho[tiab] OR Lesothan[tiab] OR Lesothonian[tiab] OR Liberian[tiab] OR Malagasy[tiab] OR Malawian[tiab] OR Malian[tiab] OR Mauritanian[tiab] OR Mozambican[tiab] OR Namibian[tiab] OR Nigerian[tiab] OR Rwandan[tiab] OR Rwandese[tiab] OR Senegalese[tiab] OR Seychellois[tiab] OR Seychelloise[tiab] OR Seselwa[tiab] OR "Sierra Leonean"[tiab] OR Somali[tiab] OR "South African"[tiab] OR "South Sudanese"[tiab] OR Swati[tiab] OR Swazi[tiab] OR Tanzanian[tiab] OR Togolese[tiab] OR Ugandan[tiab] OR Zambian[tiab] OR Zimbabwan[tiab] OR Zimbo[tiab] OR West Indies[mh] OR "West Indies"[tiab] OR "Antigua and Barbuda"[tiab] OR Antiguan Barbudan[tiab] OR Bahamas[tiab] OR Bahamian[tiab] OR Barbados[tiab] OR Barbadian[tiab] OR "British Virgin Islands"[tiab] OR Virgin Islanders[tiab] OR Cuba[tiab] OR Cuban[tiab] OR Dominica[tiab] OR Dominican[tiab] OR Grenada[tiab] OR Grenadian[tiab] OR Guadeloupe[tiab] OR Guadeloupean[tiab] OR Martinique[tiab] OR Martinican[tiab] OR Puerto Rico[tiab] OR Puerto Rican[tiab] OR "Saint Kitts and Nevis"[tiab] OR Kittitian[tiab] OR Nevisian[tiab] OR Saint Lucia[tiab] OR Saint Lucian[tiab] OR "Saint Vincent and the Grenadines"[tiab] OR Saint Vincentian[tiab] OR "Trinidad and Tobago"[tiab] OR Trinidadian[tiab] OR Tobagonian[tiab] OR "United States Virgin Islands"[tiab] OR "US Virgin Islands"[tiab] OR Jamaica[tiab] OR Jamaican[tiab] OR Haiti[tiab] OR Haitian[tiab] OR Dominican Republic[tiab] OR United Kingdom[mh] OR United Kingdom[tiab]
	OR Great Britain[tiab] OR Brazil[mh] OR Brazil[tiab] OR Brazilian[tiab] OR Brasilian[tiab] OR Mexico[mh] OR Mexico[tiab] OR Mexican[tiab] OR Venezuela[mh] OR Venezuela[tiab] OR Venezuelan[tiab] OR Colombia[mh] OR Colombia[tiab] OR Colombian[tiab] OR Canada[mh] OR Canada[tiab] OR Canadian[tiab])
3	#1 AND #2
4	#3 NOT (news[pt] OR historical article[pt])
5	#4 AND (English[la] OR French[la] OR Spanish[la] OR Portuguese[la])
6*	#5 AND (1999:2020[pdat])
7**	#5 AND (2020:2021[pdat] OR 2020:2021[edat] OR 2020:2021[crdt])

*Search strategy executed on October 23, 2020

**Search strategy re-executed on May 6, 2021

Abbreviations: [crdat]=Create Date; [edat]=Entry Date; [la]=Language; [MeSH]=Medical Subject Headings; [mh]=Medical Subject Headings; noexp=No Explosion; [pdat]=Publication Date; [pt]=Publication Type; [tiab]=Title/Abstract

PRISMA

TRANSPARENT REPORTING OF SYSTEMATIC REVIEWS AND META-ANALYSES

Searching Process Additional Details

The systematic review searched both peer-reviewed and grey literature. Search strategies applied use of controlled vocabulary, such as Medical Subject Headings (MeSH) and Emtree, as applicable, along with keywords. To enhance the population string, terms for sub-Saharan African countries and their populace were included based on a previous systematic review,[2] supplemented by keywords used to represent the Black populations within other countries. Selection of countries to include within the search was determined by demographic data per the CIA World Factbook,[3] known migration patterns of Black Africans, and input from team clinical experts. Of note, demonyms were required in order to capture relevant articles not referring specifically to Black participants in the abstract. Search statements were collaboratively constructed by medical information scientists through an iterative process and reviewed and refined by the systematic review team. To test search statement effectiveness, the team verified that key articles previously identified by study team clinical experts were retrieved via the search strategies.

The publication date was limited to 1999 or later for journal articles to coincide with the initial release of the Modification of Diet in Renal Disease (MDRD) formula[4], the earliest of the three estimated glomerular filtration rate (eGFR) equations evaluated for this systematic review. Language was limited to English, French, Spanish, or Portuguese, as the most common languages in the initial search results; sufficient members of the study team were fluent in these languages to conduct dual review. As the focus of the review was validation studies or other research studies comparing eGFR and mGFR, non-research publication types such as news and historical articles were excluded. No additional limits were applied. Deduplication processes were conducted using via PHP scripts run on CSV files.

During the abstract and/or full-text screening, the study team flagged articles for subsequent handsearching and reference checking. Information scientists manually reviewed all references cited in each flagged article and in all articles selected for final inclusion in the systematic review. When a relevant conference abstract was identified during screening process, manual searching was also conducted to identify any related full-length journal publications.

Database considerations

PubMed

- ☺ Indexes bioRxiv & medRxiv
- ☺ More than 35 million citations
- ☺ More than 35,637 journals indexed + PMC +selectively indexed
- ☺ Now with proximity searching! (See Technical Bulletin no. 449)

PubMed Overview

PubMed and MEDLINE: Additional Resources

Embase

- ☺ Includes all MEDLINE journals and ~3000 journals unique to Embase (including European journals) +8,100 currently in Medline
- ☺ Strong in drug/pharmacology, medical devices, and conference abstracts
  - ☺ (2.4 million not in PubMed)
- ☺ Indexes routes of drug administration
- ☺ 41 million records
- ☺ Emtree has 86,000 preferred terms and 400,000 synonyms
- ☹ Similar articles feature algorithm retrieves unmanageable numbers (thousands more than Pubmed for the same article)

Embase Indexing Guide 2021: a comprehensive guide to Embase indexing policy

https://www.elsevier.com/solutions/embase-biomedical-research/coverage-and-content

Elsevier. A Comparison of Emtree and MeSH

Web of Science/SCI

- Includes conference abstracts
- 61 million records
- 9,500 journals

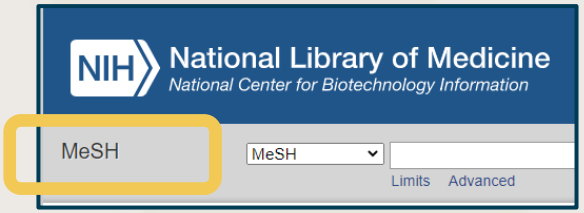
Web of Science Science Citation Index- Expanded

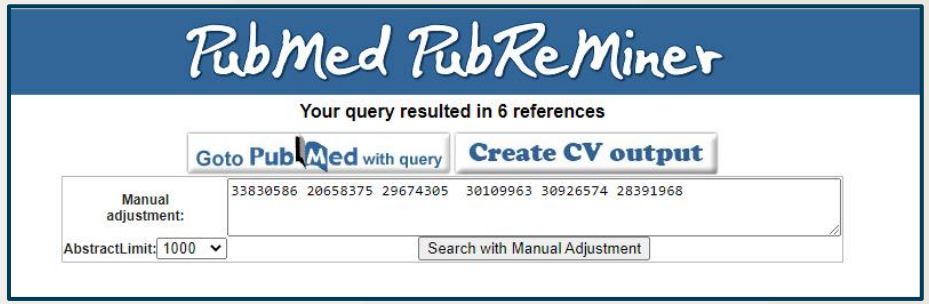
Module recap

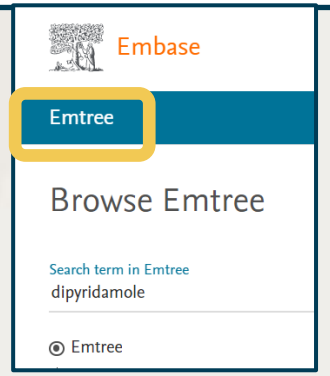
PICO	PICOS	SPIDER
Population	Population	Sample
Intervention	Intervention	Phenomenon of Interest
Comparison	Comparison	Design
Outcome	Outcome	Evaluation
not applicable	Study type	Research type

Quickly build your knowledgebase of the topic and the vocabulary:

- UpToDate monograph (or other synthesized evidence resources)
- Quick and dirty search in PubMed
- Quick and dirty search in GoogleScholar
- Latest review articles
- Known key/representative articles on the topic
- Find other systematic reviews related to facets of your topic and check the searches used
- Plurals and alternative (British) spellings (may be entry terms in MeSH or Emtree)







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