NIHR | Applied Research Collaboration South West Peninsula

Searching

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Thank you

PenARC

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@EvidSynthTeam

@UEMS_IS

Overview

- Some questions
- Evidence synthesis
- Database searching – how to build up your search
- Demonstration
- Practice
- Supplementary searching

Some questions

- Menti 59550637
- Have you been involved in an evidence synthesis project?
- If yes, did you undertake the searching?

Evidence Synthesis

- Systematic review
- Meta analysis
- Rapid review
- Qualitative evidence synthesis
- Scoping review
- Evidence gap map
- Mixed methods review
- Realist review
- Living review

Types of evidence synthesis

- Akl EA, Haddaway NR, Rada G, Lotfi T. Future of Evidence Ecosystem Series: Evidence synthesis 2.0: when systematic, scoping, rapid, living, and overviews of reviews come together. J Clin Epidemiol. 2020 Jul;123:162-165. doi: 10.1016/j.jclinepi.2020.01.025. Epub 2020 Mar 4. PMID: 32145364.
- Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. Health Info Libr J. 2009 Jun;26(2):91-108. doi: 10.1111/j.1471-1842.2009.00848.x. PMID: 19490148.
- Sutton A, Clowes M, Preston L, Booth A. Meeting the review family: exploring review types and associated information retrieval requirements. Health Info Libr J. 2019 Sep;36(3):202-222. doi: 10.1111/hir.12276. PMID: 31541534.

Question

Menti: 89229855

- What words do you associate with systematic reviews?

Systematic reviews

Cochrane:…attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a specific research question. Researchers conducting systematic reviews use explicit, systematic methods that are selected with a view aimed at minimizing bias, to produce more reliable findings to inform decision-making…

https://training.cochrane.org/handbook

Campbell: …summarizes the best available evidence on a specific question using transparent procedures to locate, evaluate, and integrate the findings of relevant research

https://onlinelibrary.wiley.com/page/journal/18911803/homepage/author-guidelines

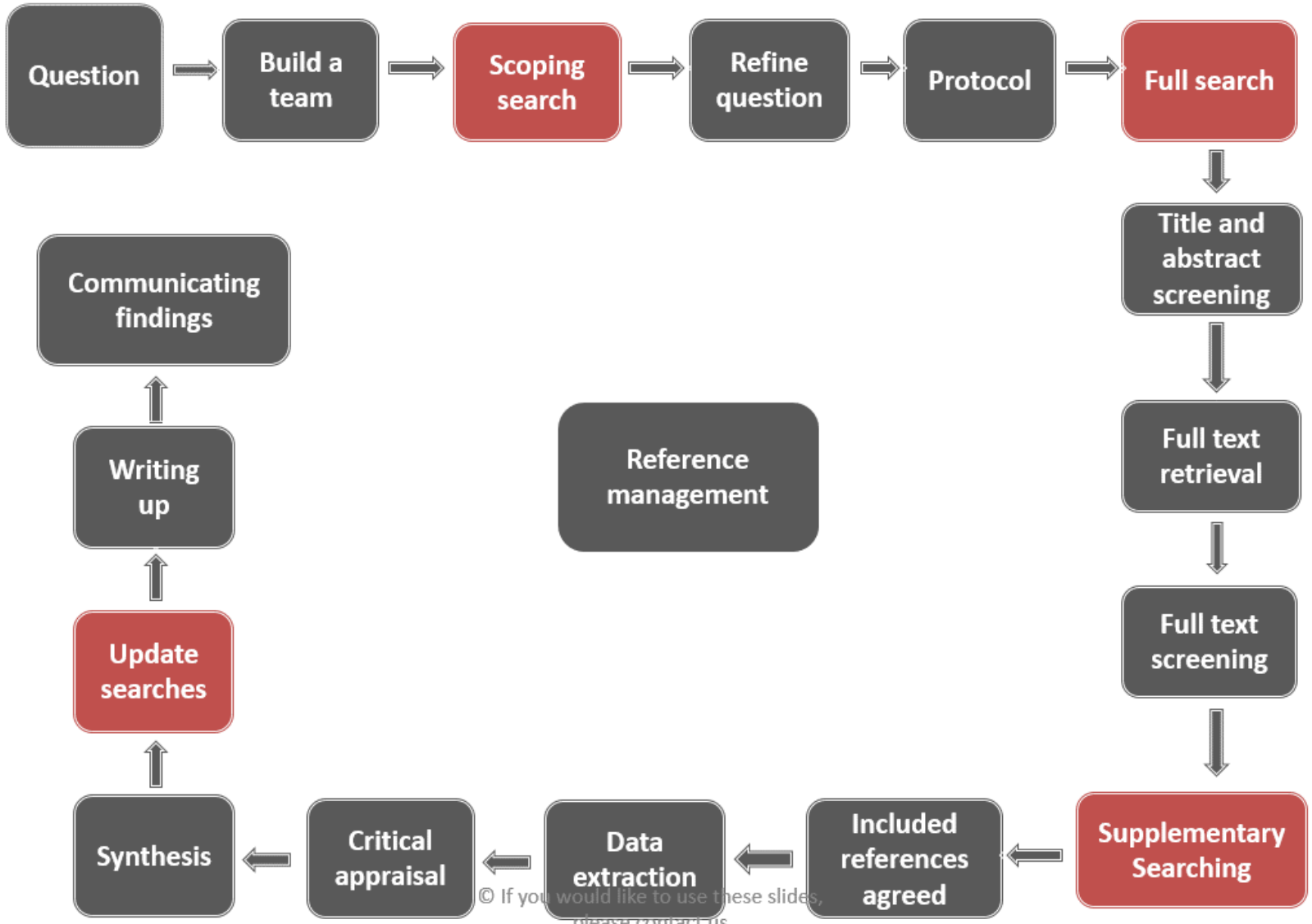
Environment Evidence:…a review of evidence relevant to a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyse data from the studies that are included within the review.

https://environmentalevidence.org/information-for-authors/

Related to searching

To achieve a rigorous evidence synthesis searches should be transparent and reproducible and minimise biases.

A key requirement of a review team engaged in evidence synthesis is to try to gather a maximum of the available relevant documented bibliographic evidence in articles and the studies reported therein. Biases (including those linked to the search itself) should be minimized and/or highlighted as they may affect the outputs of the synthesis (CEE)



Scoping searches: why?

- Has it been done before?
- Related work (background reading)
- Get an idea of the size of the evidence base
- Get an idea of search terms
- Key papers that should come up in your search
- Idea of search terms

Scoping searches: how

Type of information	Resource	Website
Protocols	Prospero	http://www.crd.york.ac.uk/PROSPERO/
Guidelines	TRIP database	http://www.tripdatabase.com/
	NICE evidence	http://www.evidence.nhs.uk/
Systematic reviews	CDSR	http://www.thecochranelibrary.com
	TRIP database	http://www.tripdatabase.com/
	Epistemonikos	https://www.epistemonikos.org/
Primary Research	Pubmed	http://www.ncbi.nlm.nih.gov/pubmed
	Medline	Requires subscription
	Web of Science	Requires subscription
	CAB abstracts	Requires subscription

Common problems with searching

- Don’t know where to start
- Too many resources
- Too many results
- Not enough results
- When do you stop

What is a good search?

- To find as much relevant information as possible
- To minimize the amount of irrelevant information

Before you search

Protocol – incl/excl criteria helpful

Search for any relevant systematic reviews

- Look at, and appraise, their search methods

Find key papers

- from scoping searches
- topic experts
- following leads

Question

- Menti 38169461

- Which resources have you used to find research/academic literature?

Publishers, Platforms and Databases

Publisher	Platform	Database
Wolters Kluwer	Ovid	CAB Abstracts Global Health Medline
Ebsco	EBSCOhost	Medline CINAHL GreenFILE
ProQuest	ProQuest	Medline BNI Sociology Collection (includes ASSIA) ASSIA
Clarivate	Web of Science	Science Citation Index Medline Conference Abstracts
CABI	CABI	CAB Abstracts Global Health

Database searching

- Free-text searching
  - Search for specific words or phrases in specific fields

- Controlled vocabulary searching
  - Thesaurus/subject terms (CAB thesaurus or MeSH)

Database searching: free text terms

What	Example
Synonyms	Dementia or Alzheimer's Disease
Abbreviations and acronyms	attention deficit hyperactivity disorder (ADHD)
Geographical variations	Paracetamol or acetaminophen
Variations in spelling	Paediatric or pediatric
Previous terminology	ADHD - ADD

Database searching: choosing search terms

Question:

What is the impact of robotic pets on the health and well-being of older adults?

Jam board for synonyms:

https://jamboard.google.com/d/1FPq93zYi7htT9GIYGtIZ2m8LapjPh4CXK9hfGj2YClk/edit?usp=sharing OR https://tinyurl.com/32t5aw6z

Population

Intervention

Comparator

Outcome

What is the impact of robotic pets on the health and well-being of older adults

Population

older people, older woman, elderly, aging

Intervention:

robotic animals, robotic pets, robopets, paro

Using PICO/Concepts

Concept 1 (Population)	Concept 2 (Intervention)
Older people	Robotic animals
Older woman	Robotic pets
Elderly	Robopets
Aging	Paro

OR

AND

What	Example
Synonyms	Dementia or Alzheimer’s Disease
Abbreviations and acronyms	attention deficit hyperactivity disorder (ADHD)
Geographical variations	Paracetamol or acetaminophen
Variations in spelling	Paediatric or pediatric
Previous terminology	ADHD – ADD
Phrase searching	“older person”
Truncation/wildcard	“older person*”

Using PICO/Concepts

Older people	Concept 2 (Intervention)
“Old* people*”	“Robotic animal*”
“Older woman*”	“Robotic pet*”
Elderly	Robopet*
Aging	Paro

OR

AND

Search terms

What	Example
Synonyms	Dementia or Alzheimer's Disease
Abbreviations and acronyms	attention deficit hyperactivity disorder (ADHD)
Geographical variations	Paracetamol or acetaminophen
Variations in spelling	Paediatric or pediatric
Previous terminology	ADHD – ADD
Phrase searching	"nursing homes"
Truncation/wildcard	Care home*
Proximity searching	Adjx, NEAR/x, Nx
Field codes	Title, abstract, keywords

Using PICO/Concepts

Concept 1 (Population)	Concept 2 (Intervention)
Older adj2 people*	Robotic adj2 animal*
“Older woman*”	Robotic adj1 pet*
Elderly	Robopet*
Aging	Paro

OR

AND

Demo and work alongside

- Global Health via Ovid
  - free text
  - Controlled vocabulary
  - Downloading results
  - Saving search strategy

- Username: exetertrain
- Password: training

PAUSE: any questions?

Self searching

Q - What are the effects of animal therapy on the health and wellbeing of older people

Two additional free text terms for population

Three free text terms for intervention

At least one using proximity (adj)

At least one thesaurus term for intervention

Crowley-Robinson, P., Fenwick, D. C. & Blackshaw, J. K.. (1996). A long-term study of elderly people in nursing homes with visiting and resident dogs. Applied Animal Behaviour Science, 47, 137-148

Rodrigo-Claverol, M., Malla-Clua, B., Marquilles-Bonet, C., Sol, J., Jove-Naval, J., Sole-Pujol, M., et al. (2020). Animal-assisted therapy improves communication and mobility among institutionalized people with cognitive impairment. International Journal of Environmental Research and Public Health, 17,

Additional papers

Goleman, M., Drozd, L., Karpinski, M. & Czyzowski, P.. (2012). Cat therapy as an alternative form of animal-assisted therapy. Medycyna Weterynaryjna, 68(12), 732-735.

Jain, B., Hafford-Letchfield, T., Ellmers, T., Chandra, C., Billings, B., Teacher, R., et al. (2020). Dog-assisted interventions in care homes: a qualitative exploration of the nature, meaning and impact of interactions for older people. Health and Social Care in the Community, 29, 1450-1460

Google forms

- How many hits did you get?
- Did you use any controlled vocabulary terms? If so, please give an example
- Did your search find the first two references?
- Did your search find the second two references?

Sample search strategy

1 (cat or cats).ti,ab. (27250)
2 (dog or dogs).ti,ab. (38441)
3 canine*.ti,ab. (12071)
4 (bird or birds).ti,ab. (19257)
5 (fish or fishes).ti,ab. (58066)
6 (animal adj2 therap*).ti,ab. (303)
7 (companion adj2 pet*).ti,ab. (30)
8 (companion adj2 animal*).ti,ab. (1878)
9 (resident adj2 dog*).ti,ab. (33)
10 (animal adj2 assist*).ti,ab. (313)
11 pets/ or domestic animals/ (32024)
12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 (160869)

13 (Old* adj2 (people* or person* or adult*or resident*)).ti,ab. (11098)
14 elder*.ti,ab. (48565)
15 geriatric*.ti,ab. (6053)
16 senior*.ti,ab. (7322)
17 (nursing adj2 home*).ti,ab. (4425)
18 (care adj2 home*).ti,ab. (3382)
19 nursing homes/ (3686)
20 elderly/ (62749)
21 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 (93734)
22 12 and 21 (2074)

PAUSE: any questions?

Search filters

- May filter out relevant studies
- May perform inconsistently across subject areas
- Precision for a standalone filter likely to be low. Relevant records may be lost for no substantial reduction in the number needed to read

- ISSG filters

https://sites.google.com/a/york.ac.uk/issg-search-filters-resource/home

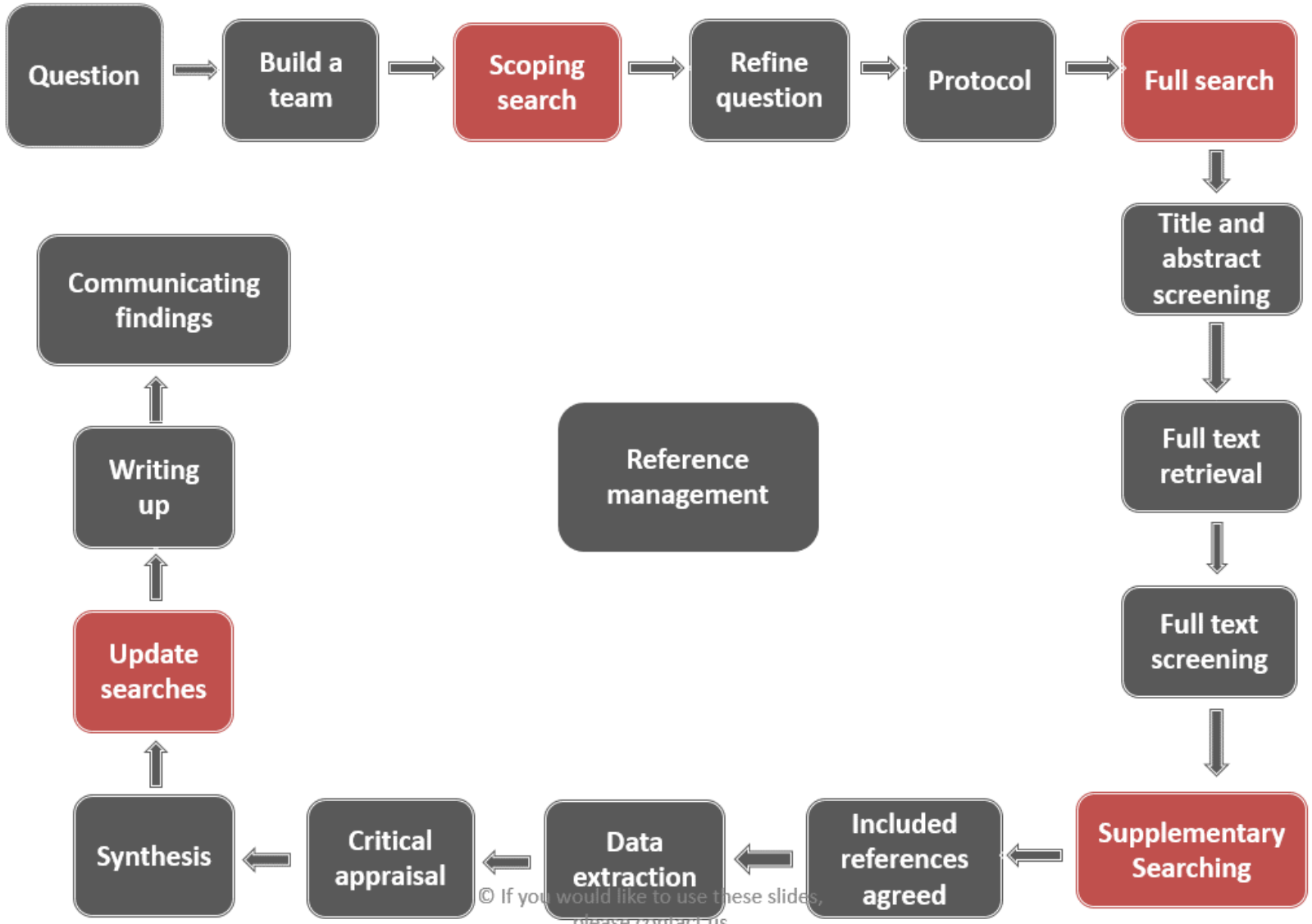
Cochrane RCT filter

1 randomized controlled trial.pt.
2 controlled clinical trial.pt
3 randomized.ab.
4 placebo.ab
5 drug therapy.fs
6 randomly.ab
7 trial.ab
8 groups.ab
9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10 exp animals/ not humans.sh
11 9 not 10

Full search

- Choose a database
- **Use your key references to validate your strategy**
- **Use relevant search strings from other SRs**
- **Give yourself time**
- Use free text searching with field codes
- If using controlled vocabulary terms be specific
- Play around with adjacency numbers eg adj1, adj2, adj3 etc
- Use the NOT Boolean term
- Keep checking your results
- Agree it with the project team

PAUSE: any Questions?



Supplementary searching: why?

- Not all journals are indexed in databases
- Papers might not be indexed accurately
- Your search strategy may not have found them
- Can find more recently published papers
- Good for unpublished (grey) literature
- Good evidence to support doing this

Supplementary searching: what

- Forward citation chasing
- Backwards citation chasing
- Hand searching of journals
- Trial registries
- Web searching
- Key author searching
- Contacting organisations
- Contacting authors

(https://evidsynthteam.wordpress.com/2018/07/12/supplementary-searching-eahil-2018/)

Grey Literature: what is it?

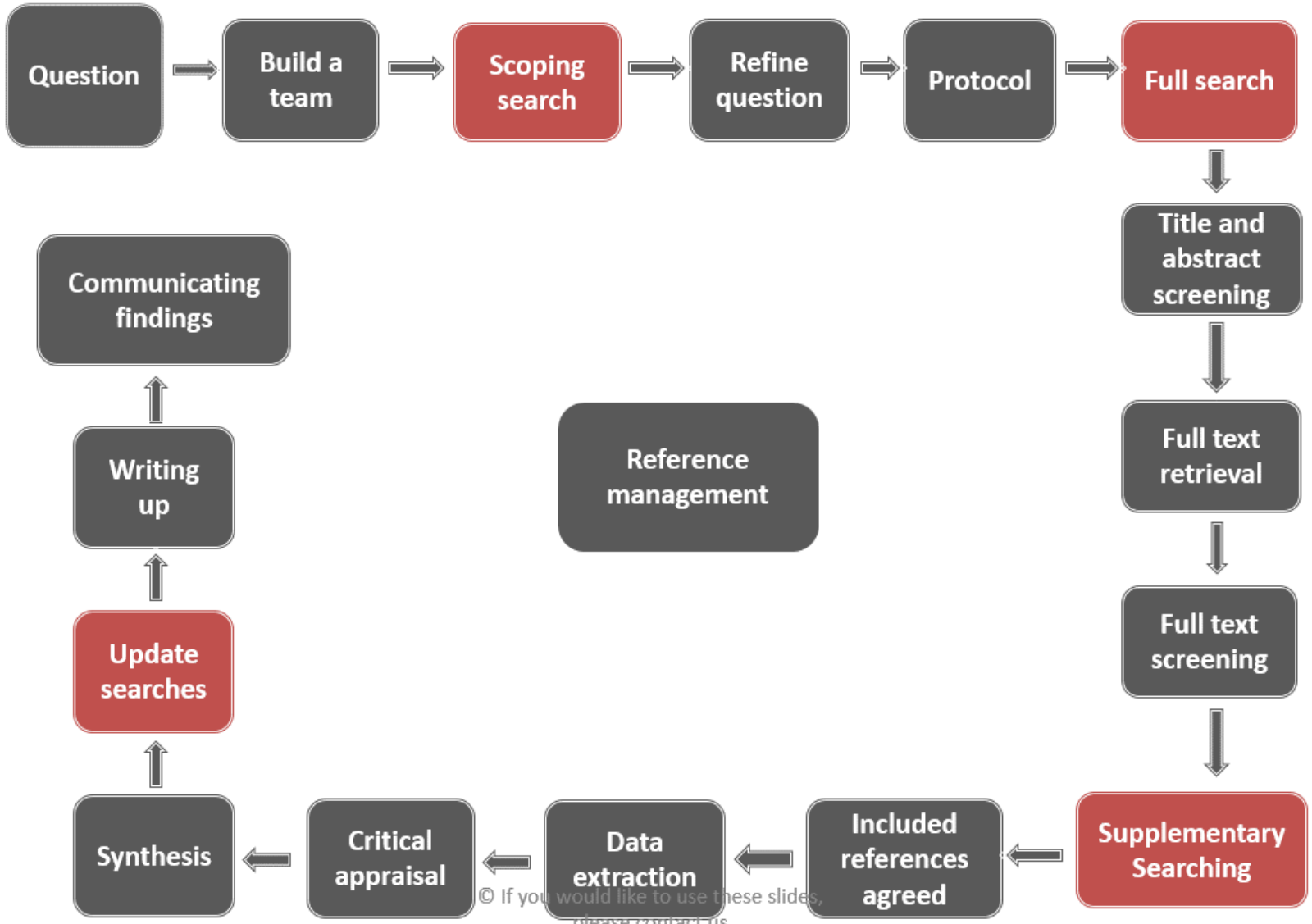
Grey literature: a body of materials that cannot be found easily through conventional channels such as publishers, "but which is frequently original and usually recent" Debachere, M. C. (1995). "Problems in obtaining grey literature". *IFLA Journal* **21** (2): 94–98

- Conference proceedings
- Reports
- Theses

Grey literature: where to find it

- Databases
  - CAB Abstracts, SPP, WoS, PQDT
- Catalogues
  - British Library: EThOS, Zetoc, Explore
- Electronic repositories
- Networks
  - Grey Literature Network Service
  - Chain Network
- Organisations' websites
- Supplementary searching techniques

PAUSE: any questions?



Update searches

- Why:
  - More recent publications

- How:
  - Re run searches
  - Deduplicate against original searches
  - More recent publications

Search methods: protocol

The following electronic databases will be searched: AMED, CINAHL (via EBSCOhost), Embase, MEDLINE, PsycINFO (via Ovid), the Cochrane Database of Systematic Reviews (via Cochrane), Science Citation Index (via Web of Science), PQDT, Environment Complete and ASSIA (via ProQuest).

Relevant grey literature will be searched for through: EThOS (British Library), OpenGrey , and the Conference Proceedings Citation Index from Web of Knowledge.

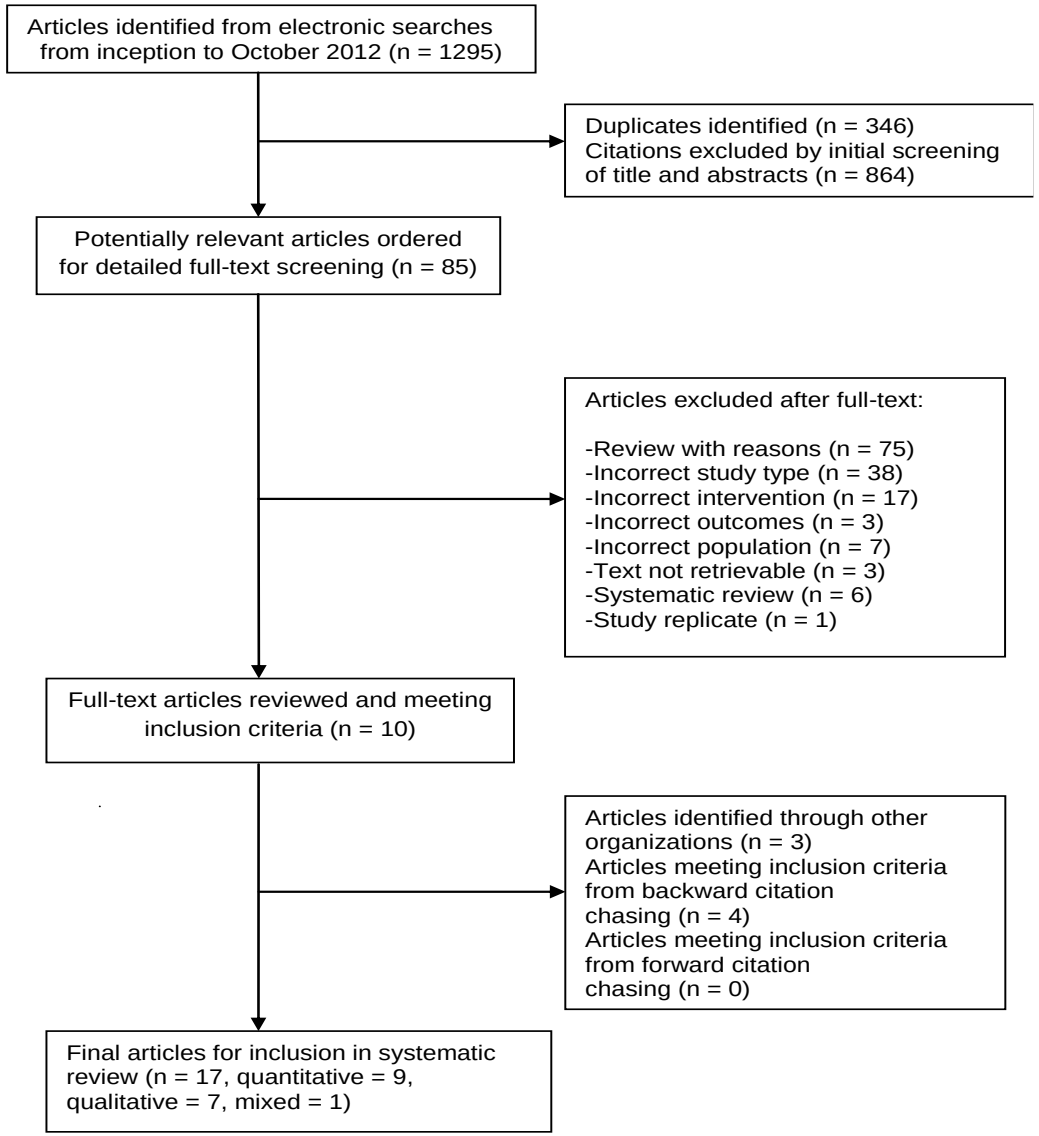
Forwards and backwards citation searching will undertaken in Scopus using the final included articles.

Organisations websites will also be searched including WHO, US EPA and Defra.

Search methods: systematic review

We searched 14 bibliographic databases: Medline, Embase, PsycINFO, Social Policy and Practice (SPP), HMIC (via OvidSP), CINAHL Complete (via EBSCOhost), BNI, PQDT, ASSIA (via ProQuest), Social Sciences Citation Index, Conference Proceedings Citation Index – Science and Social Sciences and Humanities (Web of Science, Clarivate Analytics) and the Cochrane Library (CDSR and CENTRAL) in February 2018 from inception. The search consisted of both free text and controlled vocabulary (e.g. MeSH) terms. The Medline search strategy is shown in Supplementary File 1. We carried out forwards and backwards citation chasing of the included papers using both SCOPUS and Web of Science. The search metrics are shown in Supplementary File 2. We also searched 12 websites and Nexis News in June 2018; details are listed in Supplementary File 3. In December 2018 we carried out a further database search in Medline, PsycINFO and CINAHL limited to the names of the specific UK programmes identified. *(Hunt, Harriet, et al. ""They've walked the walk": A systematic review of quantitative and qualitative evidence for parent-to-parent support for parents of babies in neonatal care." Journal of Neonatal Nursing 25.4 (2019): 166-176.)*

Dementia gardens: PRISMA flow diagram



Search Summary Table

Parent-to-parent support interventions for parents of babies cared for in a neonatal unit-systematic review of qualitative and quantitative evidence.

Included references	Format	Database searches (*date run: June 2017. Date re-run: Jan 2019*)													Supplementary searches				
		ASSIA	*BNI*	*CINAHL*	*Cochrane*	*EED*	*Embase*	*BL Explore*	*HMIC*	*Medline*	*PQDT*	*PsycINFO*	*SPP*	*WoS*	*fcs*	*bcs*	*hs*	*wss*	*org*
Ardal 2011	jnl						x			x		n							
Livermore 1980	jnl						n			n		x							
Macdonell	jnl			x						x		x							
Merewood 2006	jnl				x		x			x		n							
Minde 1980	jnl				x		x			x		n							
Morris 2008	ths			x			n			n		x							
Niela-Vilen 2016	jnl			x			n			x		x		x					
Oza-Frank 2014	jnl						z			z		n			x	x			
Preyde 2001	jnl						n			n		n				x			
Preyde 2003	jnl			x	x		x			x		x		x					
Preyde 2007	jnl	x					x		x	x		x	x	x					
Roman 1988	ths						n			n		x							
Roman 1995	jnl			x			x			x		x		x					
Rossman 2011	jnl						z			z		n			x	x			
Rossman 2012	jnl	x					y			x		x							
No. included refs		2	0	5	3	0	6	0	1	9	0	9	1	4	2	3			
No. unique refs		0	0	0	0	0	0	0	0	0	0	3	0	0	2	3			
Total no. refs downloaded		563	85	771	374	156	1887	19	50	1753	90	1082	14	587	35	734			
No. refs screened		439	75	589	109	154	485	19	32	1747	83	549	0	182					
Sensitivity		13.33	0.00	33.33	20.00	0.00	40.00	0.00	6.67	60.00	0.00	60.00	6.67	26.67					
Precision		0.36	0.00	0.65	0.80	0.00	0.32	0.00	2.00	0.51	0.00	0.83	7.14	0.68					

No. database searches carried out =	13																		
Total no. refs found from searching =	7431										Overall sensitivity	80							
No. refs screened at Ti&Ab =	4593										Overall precision	0.26							
No. refs screened at FT=	118										NNR	383							
No. of included refs from searching =	12										NNR FT	10							
Total no. of included refs =	15										NNS	39							

Codes	**Format codes**	**Other codes**	**Supplementary search codes**
x = found from the search	jnl = journal	NNR = number needed to read. 1/overall precision	fcs = forwards citation search
y = in the database and found from the search strategy when re-run	ths = PhD thesis	NNR FT = number needed to read at FT to find one included reference	bcs = backwards citation search
n = not in the database		NNS = number needed to screen to find one reference to indude for FT screening	hs = hand search
z = in the database but not found using the search strategy		FT = full text	wss = web site search
(red) = those databases where the searches were re-run			org = from contacting organisations

Critique a search strategy

Physical activity monitoring	Study design
pam AND monitor*	“randomly”
physic* AND activit* AND monitor*	“randomized controlled trial”
“activity monitoring device”	“controlled clinical trial”
“fitness tracker*”	“cross-over trial”
“quantified movement”	“cross over trial”
“movement counter*”	“randomized”
“jawbone”	“clinical trial”
“vivoactive”	
“tomtom”	
“xiaomi mi band”	
“accelerometer-based tracker*”	
“moov now”	
“misfit ray”	
“nokia go”	
“activity monitor*”	
fitbit	
pedometer*	
“step monitor*”	
“physical activity monitor*”	
“Step counter*”	
actigraph	
Gt3x	
wGT3X-BT	
GT9X	
axivity	
acceleromet*	

Guidance and help

- Guidance on systematic reviews:
  - Cochrane, Campbell, CEE, JBI, Library libguides

- PRESS – Peer Review of Electronic Search Strategies
  - https://www.cadth.ca/sites/default/files/pdf/CP0015_PRESS_Update_Report_2016.pdf
- PRISMA – Preferred Reporting Items for Systematic Reviews
  - http://www.prisma-statement.org/
- ROSES – Reporting Standards for Systematic Evidence Syntheses
  - https://environmentalevidence.org/roses/
- PRISMA-S - for reporting your searches
  - http://www.prisma-statement.org/Extensions/Searching
- Platforms and hosts have instructional videos

Further reading/research

- Research:

SuRe: **Summarized Research in Information Retrieval**

https://sites.google.com/york.ac.uk/sureinfo/home

- Publications

Heath A, Levay P, Tuvey D. Literature searching methods or guidance and their application to public health topics: A narrative review. Health Info Libr J. 2021

Cooper C, Booth A, Varley-Campbell J, Britten N, Garside R. Defining the process to literature searching in systematic reviews: a literature review of guidance and supporting studies. BMC Med Res Methodol. 2018 Aug 14;18(1):85

…a few of my favourite things

- SR Toolbox: http://systematicreviewtools.com/

- CitationChaser: https://estech.shinyapps.io/citationchaser/
- Rayyan: https://www.rayyan.ai/ *For screening*
- EPPI Reviewer: https://eppi.ioe.ac.uk/CMS/Default.aspx?alias=eppi.ioe.ac.uk/cms/er4& *For screening and creating maps*
- EviAtlas: https://estech.shinyapps.io/eviatlas/ *For creating maps and graphs*
- SR accelerator: https://sr-accelerator.com/#/
  - Polyglot *For transcribing your search from one platform to another*
  - De-duplication

Thank you

@EvidSynthTeam

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