Revisiting the need for a literature search narrative: a brief methodological note.

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The abstract: 'In this method note, we question if the primary search strategy in a systematic review should be accompanied by a search narrative. A search narrative could offer a conceptual and contextual report on the search strategy, which we suggest might benefit the peer review of literature searches and increase engagement with, and discussion of, the literature search strategy from review stakeholders, topic experts and lay users of research. Search narratives would also increase the transparency of decision-making in literature searching.'

Background

High quality literature searching is an important component of any systematic review (1, 2). Failure to create and report an accurate search strategy can compromise the identification of studies, thereby limiting and potentially biasing the evidence-base of a systematic review (3-7). This runs the risk of unravelling confidence in the review and its findings (8).

Conduct and reporting guidelines, such as MECIR (9), PRISMA (10), AMSTAR (11) and MOOSE (12), and handbooks, such as those produced by Cochrane and CRD, set out which elements of the literature search process should be reported in systematic reviews (13, 14). Checklists to support peer-review of literature search strategies, such as PRESS (15), and validation methods such as 'Inquisitio validus Index Medicus' (16), have also been developed. Peer-review of literature searching is encouraged as a mechanism to identify errors in search syntax (e.g. spelling), omissions in search coverage, or limitations in search approach.

The implementation of peer-review of literature search strategies remains low. In a recent systematic review of metrics or methods used to evaluate literature search effectiveness, we found that only 52% of studies reported peer-review of their searches for their reference standard literature search (8), a finding similar to a study by Patrick et al (17).

The barriers to search strategy peer-review have not been formally evaluated. Informally, the authors question if the technical and topic knowledge to peer-review a literature search strategy is one barrier, perhaps also being linked to the time it takes. As an indication, Hausner et al. (2016) reported that the time taken to quality appraise literature searches used in effectiveness evaluation was between 0.5 to 6.75 hours (18). There is also an issue with transparency of search strategy reporting. Yoshii et al.

(2009) suggest that explicit reporting of the search strategy (or strategies) is a mechanism for enabling critical appraisal of the search (19). Even this requires some technical knowledge as it relates to the structure of the search or use of Boolean operators, and it requires either knowledge of controlled indexing terms (the meaning of which is not always clear from simply seeing the indexing term in a search strategy) or taking the time to cross-check the thesaurus and related search terms. Furthermore, whilst it is valuable to find the search strategies reported in systematic reviews, they are the final and best possible iteration of the search strategy, presented almost entirely without explanation or context.

A need for narratives

Craven and Levay (2011) have recommended including a 'search narrative' when reporting a literature search strategy (20). They suggest that a search narrative would aid the peer-review of literature searches, since it would contextualise any major decisions that have shaped the development of a search strategy (20). They argue that presenting a search strategy explains *how* studies were located and that the inclusion of a search narrative explains *why*.

Whilst Craven and Levay set out the idea of a search narrative, they do not detail what information should be included in the narrative, and why it would be of use to peer-reviewers or those without literature searching expertise. We set out a worked example in this method note.

What could the narratives cover?

This method note is written to be read alongside the PRESS guideline (15), with a view to adding further context to, and confidence in, reported literature searches (21). We envisage that the narrative would be presented

IN THE APPENDIX OF THE REVIEW AND ALONGSIDE THE PRIMARY LITERATURE SEARCH STRATEGY. IN BIO-MEDICAL REVIEWS, THIS MIGHT BE THE MEDLINE SEARCH STRATEGY.

WE ENVISAGE TWO SECTIONS TO THE NARRATIVE:

1. CONCEPTUAL: THE PURPOSE OR AIM OF THE LITERATURE SEARCH STRATEGY IS DEFINED

THIS SHOULD BE A SHORT AND SPECIFIC STATEMENT TO SET OUT THE PURPOSE AND AIMS OF THE LITERATURE SEARCH. THIS MIGHT DUPLICATE THE RESEARCH QUESTION, INCLUSION CRITERIA OR INFORMATION NEED, OR STATEMENT OF DECISION PROBLEM, IN WHICH CASE IT CAN BE RE-STATED HERE OR OMITTED.

AS IT RELATES TO PRESS, THIS WOULD AID THE CONCEPTUAL UNDERSTANDING OF THE SEARCH, ENABLING A PEER-REVIEWER OR SEARCH USER TO BEGIN TO CONSIDER WHETHER THE RESEARCH QUESTION HAS BEEN SUITABLY TRANSLATED INTO SEARCH CONCEPTS (22). THIS IS WHAT CRAVEN AND LEVAY ARGUE SHOULD BE INCLUDED BUT SUCH NARRATIVES ARE STILL UNCOMMON (8).

2. CONTEXTUAL: A WORKED EXPLANATION OF THE SEARCH STRATEGY

THIS SHOULD BE NARRATIVE DETAIL THAT IS PRESENTED ALONGSIDE THE SEARCH SYNTAX ITSELF. HOW MUCH DETAIL TO OFFER IS AN INEXACT SCIENCE BUT, BASED ON SOME ASSUMPTIONS SOURCED FROM THE PRESS GUIDELINES, THESE ARE THE COMMON AREAS THAT WE FEEL ADDITIONAL INFORMATION WOULD BE WARRANTED TO ASSIST WITH PEER-REVIEW:

> ➤ LOGIC OPERATORS: THE USE OF BOOLEAN LOGIC AND/OR PROXIMITY OPERATORS IN THE SEARCH STRATEGY CAN BE EXPLAINED, IF NOT CLEAR. WHY HAS ADJACENCY BEEN SET AT THREE SPACES, FOR INSTANCE;
> ➤ USE OF FIELD CODES: FOR EXAMPLE, CLARITY ON WHAT TI,AB,KW,OT,RN. MEAN IN OVID AND WHY THESE FIELD CODES ARE BEING USED;

- ➤ USE OF CONTROLLED SYNTAX: WHY TERMS ARE BEING FOCUSED, WHY TERMS ARE NOT BEING EXPLODED AND, IF LINES HAVE BEEN EXPLODED, A VERY BRIEF SUMMARY OF WHAT ADDITIONAL TERMS ARE CAPTURED, SINCE THIS IS NOT CLEAR;

- ➤ EXPLANATION OF NON-SPECIFIC CONTROLLED SYNTAX: FOR EXAMPLE, 'TANNING' AS A MeSH TERM WOULD NOT LOOK OUT OF PLACE AS AN ACTIVITY TERM IN A SEARCH ON SUN PROTECTION BUT IT IS A MeSH TERM WHICH, IN FACT, RELATES TO THE TANNING OF HIDES AND NOT OF HUMANS;

- ➤ QUALIFICATION OF UNCLEAR SEARCH TERMS OR USE OF TRUNCATION: A BRIEF EXPLANATION OF THE RELEVANCE OF ANY UNCLEAR SEARCH TERMS (IN CONTEXT OF THE REVIEW'S AIM) OR A VERY BRIEF SUMMARY OF SEARCH TERMS THAT WERE TESTED BUT NOT ULTIMATELY INCLUDED IN THE SEARCH STRATEGY. THE RATIONALE FOR THE USE OF TRUNCATION MAY ALSO BE OF BENEFIT; AND

- ➤ ANY LIMITATIONS: FOR EXAMPLE, WHY SEARCH SYNTAX IS INDICATED TO SEARCH ON TITLE ONLY AND NOT TITLE OR ABSTRACT; RATIONALE FOR DATE OR LANGUAGE LIMITS AND CHOICE OF SEARCH FILTERS.

WORKED EXAMPLE

IN FIGURE ONE, WE PRESENT A WORKED EXAMPLE OF HOW WE ENVISAGE THE SEARCH NARRATIVE MIGHT LOOK. WE HAVE USED AN EXAMPLE FROM A SYSTEMATIC REVIEW TO IDENTIFY MODEL-BASED ECONOMIC EVALUATIONS OF PHARMACOGENETIC AND PHARMACOGENOMIC TESTS (23). WE HAVE BROKEN UP THE SEARCH TO CLEARLY SHOW THE POPULATION, THE SEARCH FILTER, THE SEARCH LOGIC (WHERE THE LINES ARE COMBINED), AND ANY LIMITS THAT ARE BEING USED.

DISCUSSION

THE RATIONALE FOR CRAVEN AND LEVAY'S SEARCH NARRATIVE IS COMPELLING. OUR SUGGESTION IS TO EXTEND THEIR IDEA TO PROVIDE NOT ONLY A CONCEPTUAL NARRATIVE BUT ALSO CONTEXTUAL INFORMATION TO EXPLAIN HOW A COLLECTION OF SEARCH TERMS CONSTITUTES A SYSTEMATIC LITERATURE SEARCH STRATEGY. AS NOTED

ABOVE, IT IS WORTH REMEMBERING THAT SEARCH STRATEGIES, AS PRESENTED IN SYSTEMATIC REVIEWS, REPRESENT THE FINAL DRAFT AND BEST ITERATION OF MANY HOURS OF WORK. WITHOUT SOME FORM OF EXPLANATION, THE DECISIONS MADE ON SEARCH STRUCTURE, OR SEARCH TERM SELECTION (IN PARTICULAR ANY TOPIC-SPECIFIC PECULIARITIES WHICH MAY BENEFIT FUTURE LITERATURE SEARCHES), AND SEARCH TERMS THAT WERE TESTED BUT NOT INCORPORATED, FOR EXAMPLE, ARE LOST.

WE ALSO QUESTION WHETHER RECORDING A MORE DETAILED SEARCH NARRATIVE – AS WE SET OUT IN FIGURE ONE – WILL IMPROVE THE EFFICIENCY AND UPTAKE OF PEER-REVIEW, PERHAPS ALSO OPENING UP THE SEARCH STRATEGY TO TOPIC EXPERTS WITHOUT LITERATURE SEARCHING EXPERTISE, OR OTHER REVIEW USERS, SUCH AS LAY USERS OF RESEARCH (24). THERE MAY BE BENEFIT WHEN SEARCHES COME TO BE UPDATED, WHERE TIME AND MEMORY HAVE LAPSED (OR THE LITERATURE SEARCHER HAS CHANGED) SINCE THE SEARCH STRATEGY WAS DESIGNED AND PREVIOUSLY RUN. IN THESE CIRCUMSTANCES, THE SEARCH NARRATIVE MAY SERVE AS *AIDE-MEMOIRE*.

A QUESTION REMAINS ON THE LEVEL OF DETAIL REQUIRED IN THE SEARCH NARRATIVE. JUST AS THERE IS NO EMPIRICAL DATA FOR WHAT CONSTITUTES AN EFFECTIVE SEARCH (4), THERE IS NO GUIDANCE ON WHAT CONSTITUTES EFFECTIVE PEER-REVIEW OF LITERATURE SEARCH STRATEGIES, AND NO CONSENSUS ON WHAT CONSTITUTES 'GOOD SEARCHING'. HOW MUCH DETAIL TO RECORD WILL DEPEND ON THE COMPLEXITY OF THE SEARCH AND REVIEW TOPIC, THE PROXIMITY OF THE READER TO THE PROJECT OR TOPIC, AND THE EXPERIENCE OF THE REVIEWER. IF THE INTENTION IS ALSO TO MAKE REVIEWS AND SEARCH NARRATIVES MORE ACCESSIBLE TO A LAY AUDIENCE, MORE DETAIL MAY BE NEEDED, BUT THIS WOULD NEED TO BALANCE WITH ENSURING THE LENGTH OF THE NARRATIVE PROVIDED DID NOT ALSO ACT AS A BARRIER TO ACCESSIBILITY.

WE ANTICIPATE THAT NOTE-TAKING IS PART OF SEARCH STRATEGY AND PROTOCOL OR REVIEW DEVELOPMENT (25). IN THE AUTHORS' EXPERIENCE, COMPLETING A SEARCH

NARRATIVE WOULD NOT INVOLVE MUCH FURTHER WORK OTHER THAN REPORTING THE NOTES WRITTEN AT THE SEARCH STRATEGY DEVELOPMENT STAGE.

Summary

IN THIS METHOD NOTE, WE QUESTION IF THE PRIMARY SEARCH STRATEGY IN A SYSTEMATIC REVIEW SHOULD BE ACCOMPANIED BY A SEARCH NARRATIVE. A SEARCH NARRATIVE COULD OFFER A CONCEPTUAL AND CONTEXTUAL REPORT ON THE SEARCH STRATEGY, WHICH WE SUGGEST MIGHT BENEFIT THE PEER-REVIEW OF LITERATURE SEARCHES AND INCREASE ENGAGEMENT WITH, AND DISCUSSION OF, THE LITERATURE SEARCH STRATEGY FROM REVIEW STAKEHOLDERS, TOPIC EXPERTS AND LAY USERS OF RESEARCH. SEARCH NARRATIVES WOULD ALSO INCREASE THE TRANSPARENCY OF DECISION-MAKING IN LITERATURE SEARCHING.

Highlights

· WHAT IS ALREADY KNOWN
IN 2011, CRAVEN AND LEVAY PUT FORWARD THE IDEA FOR A SEARCH NARRATIVE. THEY ARGUE THAT PRESENTING A SEARCH STRATEGY EXPLAINS *HOW* STUDIES WERE LOCATED BUT THAT THE INCLUSION OF A SEARCH NARRATIVE EXPLAINS *WHY*.

· WHAT IS NEW
IN THIS METHOD NOTE, WE RE-VISIT THIS IDEA AND DEVELOP IT THROUGH THE EXPLORATION AND PRESENTATION OF A WORKED EXAMPLE OF A SEARCH NARRATIVE. WE EXPLORE IF THE IDEA FOR A SEARCH NARRATIVE CAN BE EXTENDED TO PRESENT CONCEPTUAL AND CONTEXTUAL DETAIL ON THE LITERATURE SEARCH STRATEGY.

· POTENTIAL IMPACT FOR RSM READERS OUTSIDE THE AUTHORS' FIELD

WE ASK IF THE USE OF SEARCH NARRATIVES, WHICH PROVIDE BOTH CONCEPTUAL AND CONTEXTUAL DETAIL ON THE PRIMARY LITERATURE SEARCH STRATEGY, CAN INCREASE THE UPTAKE OF PEER REVIEW OF LITERATURE SEARCH STRATEGIES. WE ALSO ASK IF PROVIDING GREATER DETAIL ON THE STRUCTURE AND DECISIONS BEHIND LITERATURE SEARCH STRATEGIES COULD BENEFIT TOPIC EXPERTS WITHOUT LITERATURE SEARCHING EXPERTISE, OR OTHER REVIEW USERS, SUCH AS LAY USERS OF RESEARCH.

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Search purpose: to identify model-based economic evaluations of pharmacogenetic and pharmacogenomic tests. The search narrative below is intended for the review team.

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R)
Host: OVID   Data Parameters: 1946 to Present
Date Searched: 05/03/2015   Hits: 4187
Searcher: CC   Press Checked: JP and SD

		Search Strategy	Notes (# refers to line)
Intervention	1	Genetic Testing/ (27360)	1. Database controlled indexing term for Genetic testing. No subheading terms are available;
	2	((gene$ or genom$) adj3 test$).ti,ab,kw,ot. (47181)	2. Truncation to capture genes and genome or genomic;
	3	((gene$ or genom$) adj3 screen$).ti,ab,kw,ot. (28598)	
	4	((gen$ variant$ or gen$ variation$) and (test$ or screen$)).ti,ab,kw,ot. (13508)	
	5	(DNA adj5 (test$ or screen$)).ti,ab,kw,ot. (21814)	
	6	*DNA/ and (test$ or screen$).ti,ab,kw,ot. (11567)	6. The indexing term has been focused here (indicated by the * symbol) and then free text is used to further focus the indexing term for specificity;
	7	exp Pharmacogenetics/ (9577)	7. Pharmacogenetics has been exploded to capture Toxicogenetics. Explosion (indicated by exp) captures not only the primary term (e.g. Pharmacogenetics) but also any available sub-headings (such as Toxicogenetics, in this intsnace);
	8	(pharmacogenetic$ or pharmacogenomic$).ti,ab,kw,ot. (10846)	
	9	*Genotype/ (6096)	9. The indexing term has been focused here (indicated by the * symbol) to narrow search results to records in which the indexing term is the primary focus of the references;
	10	(genotype or genotyping).ti,ab,kw,ot. (146862)	
	11	or/1-10 (279529)	11. Lines 1-10 are combined using OR to retrieve records containing either one or all of the search strings/terms listed. The free-text lines are being searched on: title (ti), abstract (ab), author assigned keyword (kw) and original title (ot)
Search Filter	12	exp *decision support techniques/ (18297)	12. This line has been exploded to capture the indexing term, 'data interpretation, statistical.' The indexing term has been focused (using the * symbol) so as to retrieve papers in which these indexing terms represent the main focus of the indexed study.
	13	((economic adj3 evaluat$) or (cost$ adj3 (utility or decision or benefit or consequence or model or effect$ or minimisation or minimization)) or (CBA or CEA or CUA) or DAM or (decision adj3 (model$ or analytic or tree)) or (model based or model-based) or Pharmacoeconomics).ti,ab,kw,ot. (168759)	13. This free-text line is used to locate studies which might have models or modelling data as a part of their analysis. It looks for cost effectiveness, cost utility, cost benefit and cost minimisation (UK and US variants) as well as cost consequence. It also employs the use of acronyms for these types of analysis, such as: CBA (cost benefit analysis), Cost effectiveness analysis (CEA) and Cost utility analysis (CUA).
	14	12 or 13 (185150)	
Search logic	15	11 and 14 (5020)	15. This line combines the intervention set (lines 1-10: being combined at line 11) AND the search filter (lines 12 or 13: being combined at line 14).
Search limits	16	(letter or editorial or historical article).pt. (1539038)	16. This line removes the listed publication types from the search. This takes the total search (at line 15) and removes the listed publication types at line 17.
	17	15 not 16 (4961)	
	18	exp animals/ not humans.sh. (4003797)	18. This study is only interested in human populations so line 18 seeks to remove studies conducted on (or indexing) animals. It does this using the same Boolean NOT connecter as at line 16, and it uses the Cochrane limit to remove these studies (13).
	19	17 not 18 (4187)	

Figure One: the search narrative