COVID-19 ARTICLES

Lessons from COVID-19 to future evidence synthesis efforts: first living search strategy and out of date scientific publishing and indexing industry

Dear Editor,

Nussbaumer-Streit et al. [1] reported a timely study on the exclusion of non-English language reports in systematic reviews but cautiously generalized the implications to rapid reviews rather than systematic reviews. The results complement the guidance in the new edition of the Cochrane Handbook [2]. However, the time of publication of this report coincides with the COVID-19 outbreak that introduces a geographical bias toward the inclusion of non-English literature. Although many researchers will try to publish in English, literature in non-English should not be ignored. We also thought it will be an added value to share our other experiences on literature search for evidence synthesis on COVID-19.

1. Vocabulary chaos and controlled vocabulary

When the first case of COVID-19 was reported on November 17, 2019, neither the virus nor the disease it causes had a name. It is hard to describe and report such a thing in academic literature especially when journals' submission systems can mandate using at least five keywords to describe your work. As a result, researchers started creating names using terms related to geography (e.g., ''Wuhan Pneumonia''), some adding a date (''Coronavirus 2019''), and the others having a setting (''Wuhan Seafood Market Pneumonia Virus'').

Until the Coronaviridae Study Group of International Committee on Taxonomy of Viruses (ICTV) named it ''Severe Acute Respiratory Syndrome Coronavirus 2'' (SARS-CoV-2) [3] and WHO designated the disease it causes as COVID-19 [4], a variety of designations were used and are still being used to describe the same concept. Medical Subject Headings (MeSH) were being updated so frequently that it was hard to keep up. My colleague asked ''What if they change the Supplementary Concept tomorrow?'' Ironically, I had to change my search strategy the following day because MeSH changed the concept from ''Wuhan Coronavirus'' to ''Severe Acute Respiratory Syndrome Coronavirus 2.'' Fortunately, NLM has documented these changes [5,6]. When some of the Supplementary Concepts become a Subject Heading, they may change again. It may take decades until a well-known concept becomes a subject heading. Recent examples are ''Meta-Analysis'' and ''Systematic Reviews'' that were added to MeSH only in 2008 and 2019, respectively, when hitherto they were not even supplementary concepts.

2. Lesson 1: problem—many search strategies, none stable

Librarians and information specialists are frequently asked to design and run searches for literature on COVID-19. Apart from the fact that designing search strategies can be subjective and strategies may vary from one search expert to another, terminology is changing rapidly and search strategies that were accurate when first published can become unreliable and unable to retrieve relevant literature in a consistent manner. Although search experts rely on reported terms by the authors and indexing terms from indexing bodies—both shown to be insufficient for COVID-19—we would all benefit from a single source of truth: a standardized and up-to-date way to find literature on a particular concept. Using a validated search filter could certainly help but the rapid growth of relevant literature and a lack of stable Subject Headings both mitigate against the reliability of this approach.

3. Lesson 2: solution—the first living search strategy

Although COVID-19 is an extreme example, search experts are aware that changes in MeSH (Subject Headings annually and Supplementary Concepts weekly) and Emtree (thrice a year) may mean that search strategies may become out of date within a year and may require an update, and limiting the search to publication date or database entry date may offer only a temporary workaround. In addition, databases may change their records and add, modify, or delete fields that necessitate changes to the syntax of search strategies. The need for living search strategies has always been there, but COVID-19 has brought this need into sharper focus. To date, there has been no open platform to develop living search strategies and search experts have become accustomed to writing searches using word processing programs and sharing them in text documents (e.g., spreadsheet or PDF) with all the limitations this implies [7].

Conflicts of interest: The authors declare they have no conflicts of interest.

Fig. 1. Visualization of COVID-19 search strategy.

As a response, we offer what may be the first living search strategy with live search results using the 2Dsearch platform. This search strategy is being updated and curated as the concept develops and as the new terminology appears in MeSH via the following permanent link: https://app.2dsearch.com/new-query/5e8072c5e0b7360004cd2b74.

We expect that this search strategy (Fig. 1) is going to be updated continually in the coming weeks adding at least the following concepts that are currently (1st April 2020) inactive:

- COVID-19 diagnostic testing (Supplementary Concept)
- COVID-19 serotherapy (Supplementary Concept)
- COVID-19 drug treatment (Supplementary Concept)
- COVID-19 vaccine (Supplementary Concept)

4. Lesson 3: future—updating publishing and indexing industry

Since criticism continues against the traditional long process of publishing peer-reviewed papers and indexing delays [8], at the time of writing, more than a quarter of studies on COVID-19 are not published in any journal and are not indexed in MEDLINE or Embase. This means that any evidence synthesis effort must consider searching preprint servers such as medRxiv and bioRxiv in addition to ClinicalTrials.Gov at least in rapidly growing topics [9]. It is unfortunate that none of the main bibliographic databases index these unpublished literature sources. This is the time for both academic publishers and indexing bodies to consider whether they are letting science down by not being more inclusive.

Bearing in mind these lessons, search experts such as librarians and other information professionals are designing and sharing search strategies in all the possible ways and formats freely and openly. We hope these efforts could be systematized via a common platform in the near future. At the same time, this pandemic puts a great responsibility on information professionals' shoulders who are volunteering their time and expertise in designing search strategies to answer the most crucial questions.

Now more than ever, we need to share what we have learned.

Farhad Shokraneh
Information Scientist
Cochrane Schizophrenia Group
Division of Psychiatry and Applied Psychology
School of Medicine
University of Nottingham
Nottingham, UK
Institute of Mental Health
A Partnership Between the University of Nottingham and
Nottinghamshire Healthcare NHS Trust
Nottingham, UK
E-mail address: Farhad.Shokraneh@nottingham.ac.uk (F. Shokraneh)

Tony Russell-Rose
Goldsmiths
University of London
London, UK

References

[1] Nussbaumer-Streit B, Klerings I, Dobrescu AI, Persad E, Stevens A, Garritty C, et al. Excluding non-English publications from evidence-syntheses did not change conclusions: a meta-epidemiological study. J Clin Epidemiol 2020;118:42−54.

[2] Lefebvre C, Glanville J, Briscoe S, Littlewood A, Marshall C, Metzendorf M, et al. Searching for and selecting studies. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al, editors. Cochrane Handbook for Systematic Reviews of Interventions. 2nd ed. Chichester (UK): John Wiley & Sons; 2019:67−107.

[3] Coronaviridae Study Group of the International Committee on Taxonomy of Viruses. The species Severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2. Nat Microbiol 2020;5(4):536−44.

[4] World Health Organization. Naming the coronavirus disease (COVID-19) and the virus that causes it. Available at https://tinyurl.com/t82w9ka. Accessed April 1, 2020.

[5] US National Library and Medicine. New MeSH supplementary concept record for the 2019 novel coronavirus, Wuhan, China. NLM Tech Bull 2020;432:b3.

[6] US National Library and Medicine. New MeSH supplementary concept record for coronavirus disease 2019 (COVID-19). NLM Tech Bull 2020;432:b7.

[7] Russell-Rose T, Shokraneh F. Designing the Structured search experience: rethinking the Query-Builder Paradigm. Weave J Libr User Experience 2020;3(1). https://doi.org/10.3998/weave.12535642.0003.102.

[8] Shokraneh F. Lessons learned from COVID19 for science communication: long road from submission to getting indexed in MEDLINE and Embase. Available at https://tinyurl.com/sxk5wkl. Accessed April 1, 2020.

[9] Shokraneh F. Keeping up with studies on COVID-19: systematic search strategies and resources. BMJ 2020;369:m1601. https://doi.org/10.1136/bmj.m1601.

Reply to letter to the editor "Lessons from COVID-19 to future evidence synthesis efforts: first living search strategy and out of date scientific publishing and indexing industry"

In the letter to the editor, "Lessons from COVID-19 to Future Evidence Synthesis Efforts: First Living Search Strategy and Out of Date Scientific Publishing and Indexing Industry" [1], Shokraneh and Russel-Rose make an important point that we believe aligns with our article "Excluding non-English publications from evidence-syntheses did not change conclusions: a meta-epidemiological study" [2].

The authors emphasize that for some topics, such as the current coronavirus disease (COVID-19) outbreak, it is essential to search for non-English literature. Although we agree, we would like to point out that the current COVID-19 pandemic presents a unique situation that cannot be generalized to most other medical topics. With COVID-19, the world has witnessed the emergence of a new disease, initially beginning in a single country alone. Although at the beginning of the outbreak the medical literature was mostly limited to the Chinese language, English language publications slowly caught on as the disease spread worldwide. Ignoring Chinese language publications for any evidence synthesis during the early phase of the outbreak would have meant ignoring the bulk of the evidence. We would even argue that including the Chinese language in searches of English-speaking databases (e.g., PubMed or Embase) is not enough—a situation such as the COVID-19 pandemic requires searches in Chinese databases. In the Discussion of our paper, we touch upon the fact that these special situations require flexibility and justify a language-inclusive approach [2].

This position also coincides with the new Cochrane interim guidance for rapid reviews that recommends limiting publications and searches to English only and including other languages if justified [3]. The first Cochrane Rapid Review on quarantine to control COVID-19 followed this rationale [4]. From 29 included studies, six were published in the Chinese language and listed in Chinese literature databases [4]. Because COVID-19 has become a rapidly evolving pandemic, future rapid reviews should also include languages of countries that have become heavily affected in the meantime (e.g., Italian or Spanish). Nevertheless, as time passes, more and more high-quality studies on COVID-19 from countries like China, Italy, and Spain will be published in English. Consequently, as the scientific literature on COVID-19 matures over time, focusing on English-language publications will once again capture the most important findings on this topic in the future.

Shokraneh and Russel-Rose [1] also raise the issue of the role of studies not (yet) published in journals and evolving vocabulary in the context of the COVID-19 pandemic. While our study did not examine the publication status of the included studies or how the searches were conducted, these considerations are extremely important for rapidly evolving situations such as the COVID-19 pandemic. It highlights that the selection of information sources and search approaches for rapid reviews have to be considered even more carefully than for systematic reviews. Fortunately, a number