Introduction to Systematic reviews and evidence syntheses - Video 4: Snowballing and write up - transcript

On the last video, we looked at a structured searching. Now we're going to look at identifying grey literature and using additional search methods to find papers that we might have missed with our search.

First of all, what do I mean by grey literature?

Publications that are not published commercially, so it will cover things like conference abstracts, theses and dissertations, study protocols that have been registered but not published in a journal, preprint that are available from places like medRxiv that are increasingly popular and also things like official documents and organisation reports that might hold useful information.

It will depend on what type of systematic review you're conducting as to which of these types of grey literature you will need. For example, if we're conducting a systematic review of intervention studies, we would almost always look at conference abstracts and study protocols. However, when we look at qualitative systematic reviews, realist reviews or mixed methods reviews, then theses become more important as do official documents and organisational reports. You will need to tailor the approach depending on what kind of review you're conducting. Remember to ask colleagues or librarians, if you have access to one, as to what you might do for a particular type of review.

The way we find these is called snowballing. One aspect is forward and backward citation tracking. Backward citation tracking is the terminology for looking at reference lists of papers. You would usually do this for your included studies or related review articles. Forward citation checking is taking a paper you've identified as an included study and seeing who might have subsequently cited that paper.

You'll find that a lot of databases like PubMed, but also things like Google Scholar, which we'll look at briefly, have related article or similar article linking that is powered by an algorithm within the database to link similar papers together if they're on the same topic or by the same authors or conducting the same kind of research.

You might find that if we haven't picked up conference abstracts on a database like Embase or Science Citation Index, that you might want to hand search a key conference within your subject area. Quite often these days, when we mean hand searching conference abstracts, it really is looking at the online conference Web sites and seeing what information it has, if there is a proceedings database or PDF of the conference workbooks to see whether they give details on the abstracts.

There are specific trial registries that we would want to look out for protocols if we're looking particularly for intervention studies, ClinicalTrials.gov or WHO search portal for trials. The URLs for these resources will be in the handbook that accompanies this presentation.

Searching preprint archives has become much more important, specifically in the advent of the rush to get papers out during the COVID emergency. We'll probably see pre-print publication becoming more important as we go forward. There are specific archives within medicine, such as medRxiv that would be worthwhile searching. However, you do need to realise that the papers within the pre-print archives will not have had any peer review.

There will need to be consideration, to what extent you may be include the final publication in your review. For some reviews, we would do additional web searching, whether that's a Google Scholar search, whether it's a Google or other web browser search or whether it's targeting specific web-sites for information. You might find that you do contact authors and the experts in the field either to ask them whether they know of publications around this topic or to ask them for additional information, particularly if you find a conference abstract with limited detail, you might contact the authors for full study reports if available.

What we'll look at now is how you might use a resource like Google Scholar, but the Citation Indexes is within Web of Science also allows you to do this as does Scopus.

I've identified a paper from my original search. This is a systematic review. And I want to see whether it's been cited by subsequent publications because it came out in 2018. I also might want to look at its reference lists, and I also want to see whether that the algorithm within a database might link it to other similar papers that I've

missed. As I said, one useful resource for doing this is Google Scholar, we can copy the article title and run over to Google Scholar and paste it into the search box and click on Search. You'll see that the record for that paper becomes available to us. To make the most of the it is worth being logged in to a Google account if you can. You can use My library to select and organise results. You'll see here that this paper has been subsequently cited by another 52 papers. If we click on this link, we can link through to other similar papers. We can scroll through and tick to highlight any that might be relevant for us so that we can take a closer look at them later. I'll just click on some that I like the look of, and if I link through to my library, you'll see that I've got them saved there. I want to go back to the original paper. You'll see that I've also got the related article linking, and I can do the same thing here so I can tick any that I want to take a closer look at.

It's very important how you report this when you come to publishing your final review. Make notes when you're doing this kind of messy searching. I would note down the dates that I'm searching. I would note down that I've search for a particular article on Google Scholar. That I have screened through the 52 cited references that I've also screened through the 101 related articles and I selected 6 articles for further screening. Each time, although it's a slightly fluid process, keep notes of what you do.

I can go to PubMed if I didn't want to use Google Scholar. We're now in a full article record in PubMed. If we scroll down, what we'll see that rather than related articles, PubMed has similar articles. We could link through and see all similar articles and select papers that we're interested in. The way we select in PubMed is that we send to and use a Clipboard. You'll see it links through to similar articles. So I can click on those again, I can click on the relevant ones, send them to clipboard. I can go back to my original one. And you'll see if I scroll down, it also has cited by articles. On Google Scholar we had 52 on PubMed we only have 15. It is worth playing about, maybe doing a search of both to see, which gives you better results because you might find that it picks up different things.

If you want to then look at the reference list, you could always link through to the free full text and screen the references. Then adding any additional papers to your reference management software.

That's a brief look at how you can use tools like PubMed, Google Scholar. You can also use Science Citation Index or Scopus in a similar way if you have access to them.

You're mitigating against missing things with your main search and increasing the likelihood that you have a really sensitive search process.

Once you've done your search, you probably need at this stage to finalise your protocol and register it somewhere. PROSPERO, I've already mentioned, is a free repository of systematic review protocols. You can submit a protocol there. If you wanted to publish it in a journal for additional peer review then several journals do now accept protocols, particularly, open access journals . We've mentioned preprint archives. You can publish protocols on preprint archive. Open Science Framework (OSF) is a good way of publishing your protocol and encouraging collaboration with other people with their thoughts and comments.

Some additional things to think about. You've seen that we have a structured approach to searching that searches multiple databases plus a rather unstructured approach for gathering papers via snowballing, and that means that you do need a very good way to manage your references. This generally means using some kind of software, whether it's reference management software like Endnote or Mendeley or if you want to automate more parts of the systematic review writing process, review management software like Covidence or RAYYAN. It's worth thinking about how you're going to manage these results. How are you going to remove duplicates? How are you going to screen your title and abstracts and your full text, what kind of software might be useful?

Quite often it may well be a combination of both reference management and review management software as well. I've already mentioned this, but it's really important to take notes during the process; to save your search strategies, to write down when you conducted your search, how many results you got from each database and search process so that you can adequately report your search when you're writing up the systematic review for publication. It's worth having a look at PRISMA-S before starting this whole process to make sure that you're keeping adequate notes so that you report in a structured way that we now require for systematic reviews.

We've now come to the end of our series of videos and demonstrations. Have a look at the handbook for useful resources and links to some further reading.

Thank you.