Suggested Steps for Designing a Systematic Review

NOTE: These steps may vary based on the type of review being conducted, the research team, and the content area. These are suggested steps and are not reflective a validated system of conducting reviews. Please see https://training.cochrane.org/handbook/current/chapter-01 for expert opinions and in-depth information regarding designing and conducting a systematic review.

1. Draft a preliminary Population, Intervention, Comparison, Outcome(s) or other relevant preliminary statement of focus (i.e., PICO, SPIDER, SPICE) to effectively design the preliminary research question, hypothesis, and potential data set of interest. https://utas.libguides.com/SystematicReviews/FormulateQuestion
2. Conduct a literature review (see Preliminary Literature Review Resources Section below) using a single database (i.e., Pubmed, Google Scholar) to identify preliminary systematic reviews consistent with the topic being researched as well as trials conducted consistent with the review scope (i.e., if the review is interest in observational studies search and identify those, randomized controlled trials search and identify).
3. In addition, search PROSPERO register of systematic review to ensure that there is no work currently underway that heavily overlaps with the proposed research. https://www.crd.york.ac.uk/prospero/
4. Review relevant systematic reviews (i.e., Cochrane reviews) that have contributed to the field of interest, document their search terms for use in designing the search strategy, and revise PICO and research question according to the findings that have already been reported or research identified.
    a. Example 1: Researchers are investigating existing studies of psychological interventions for personals with alcohol use disorders and social phobias and ≤4 studies are found in preliminary literature review that meet inclusion criteria. The inclusion criteria may need to be expanded either a broader population, a wider variety of intervention types, or
    b. Example 2: Researchers are investigating the impacts of psychological interventions for persons with alcohol use disorder and PTSD however, a Cochrane review was recently (i.e., <5 years) published regarding this question. The researchers should consider modifying their research question to ensure they are investigating work that has not been previously conducted.
5. Modify the preliminary PICO or other focus organization of the research question based on the literature search findings and existing systematic reviews.
6. Create a preliminary draft of a timeline for the project.
7. Identify advisors who are content experts in the field being researched and ask about their opinion and assistance on the review moving forward. Modify the review according to expert feedback.
8. Through advisor's assistance identify second reviewer for abstract screening.
9. Identify all relevant data bases to search based on prior reviews and best practices (i.e., Pubmed, PsychInfo, CINHAL, Embase) as well as your strategy for Grey Literature Searches.
10. Using the systematic reviews identified in the literature searches and library resources begin designing Pubmed search terms for your review. Ensure that you are using validated search terms whenever possible (e.g., ISSG webpage, Cochrane Reviews)
11. Contact Medical Librarian or Search Specialist to advise on:

    a. Research question and focus structure.
    b. Databases to search
    c. Search terms
    d. Training in abstract review software and advising on software to use (i.e., COVIDENCE, Rayyan)
12. Create a profile with PROSPERO the systematic review registry. Begin uploading sections of your review that are completed. Those sections from the PROSPERO submission that are not completed or drafted make a document and outline in order to draft your submission for review by content experts, advisors and other relevant persons.
    a. Website can be found here https://www.crd.york.ac.uk/prospero/ instructions to register and other information are available on the website.
    b. Identify other reviews in PROSPERO that are consistent with the research proposed and assess their methods to ensure consistency with best practices and become familiar with the content requirement of pre-registration.
13. Develop search terms for all databases included. Review all search terms after completion with a Medical Librarian or Systematic Review Expert for consistency and validity.
14. In the meeting with the Librarian also identify the best study quality review method for your research. For example, in reviewing the study quality for randomized controlled trials a researcher may choose to use the Cochrane Risk of Bias Version 2.0 tool. https://methods.cochrane.org/bias/resources/rob-2-revised-cochrane-risk-bias-tool-randomized-trials
15. Complete all sections of the PROSPERO submission with the help of content experts as well as methods (i.e., systematic review) experts and informed by literature on best practices. See resources provided by the lab for systematic reviews.
16. Present PROSPERO registration to the review/research team for edits. Modify PROSPERO submission based on feedback and submit once completed.
17. Create decision tree for abstract inclusion: http://www.i-deel.org/blog/around-meta-analysis-12-decision-trees and review for clarity with second reviewer.
18. Run search terms across data bases including grey literature search. Upload into a single citation manager (i.e., Endnote, Mendeley). Deduplicate using Endnote or other software.
19. Export citations to chosen Abstract review software (i.e., COVIDENCE, Rayyan).
20. Conduct a quality control check of interrater reliability between abstract reviewers. Consult experts on the number (i.e., k=) of how many studies will be best to review. In some case k=50 studies are satisfactory. Review studies for discrepancies in coding (i.e., reviewer differences on included, excluded or maybe). In the event of a disagreement consult methods or content experts regarding study inclusion.
21. Discuss findings from the quality control check with study team and second reviewer. Modify inclusion criteria and decision tree for abstract screening as needed based on discrepancies.
22. Continue abstract screening until complete. After quality control check reviewer review abstracts separately with resolution at the completion of abstract screening.
    a. Document all reasons for exclusion in areas for notes on abstracts.

23. Resolve abstracts that are unclear or where there is a discrepancy between reviewers. resolution either through downloading an excel output of decisions regarding abstracts and discussing discrepancies or through the chosen abstract screening software itself.
    a. Note: Some studies will remain unclear or 'maybe' until full texts have been acquired and reviewed.
    b. Some studies will require content expert's assistance in full text review to determine their alignment with the review focus and inclusion.
24. Create a data extraction form in excel or other software using included studies as well as the data that was noted in the PROSPERO submission under Data Extraction that was required to be documented.
25. Acquire full texts of all articles for inclusion through websites and the Brown Library Illiad services.
26. Review all full texts to assess inclusion, extract relevant data, and assess studies for potential metanalysis.
27. After studies for inclusion have been established and preliminary study data has been extracted present findings of study design, intervention, population, and results summaries to research team for review as well as a discussion of the potential to conduct metanalyses findings.
28. Conduct study quality assessment by double screening all studies using the quality assessment tool chosen (i.e., Cochrane Risk of Bias tool).
29. NOTE: Meta-analysis and decisions regarding meta-analysis are beyond the scope of this guide. In the event of ≥4 similar studies please consult a systematic review expert, medical librarian, or statistician on best practices for meta-analyses.

Preliminary Literature Review Resources and Guide:
Resources for conducting a literature review and guides on exploring research question s include the links below and the attached article.
https://libguides.brown.edu/Reviews/types
https://libguides.uwf.edu/c.php?g=215199&p=1420520

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