Tools to help the lit review process

*Here, we list some useful tools that the authors and researchers at our institution have used in practice to make evidence synthesis tasks quicker and easier. Table 1 focuses on freely available tools that do not require a steep learning curve to use them. If you have the experience or interest in using more advanced tools, for example, those utilising the R programming language, see the Systematic Review Toolbox at:* [*http://www.systematicreviewtools.com/*](http://www.systematicreviewtools.com/)*. For paid-for tools, including systematic review software packages, please see Table 2. The Systematic Review Toolbox also indexes journal articles about systematic review tools, so please visit the website if you want to read more about a particular tool. For ‘manual’ tools such as quality assessment checklists and reporting guidelines, also see the Systematic Review Toolbox (*[*http://www.systematicreviewtools.com/*](http://www.systematicreviewtools.com/)*).*

**Table 1: Free tools**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stage of the systematic literature review**  | **Task** | **Tool to Assist** | **Function** | **Notes** | **Date Accessed** |
| Getting Started (Chapter 2) | Initial stages of planning | [Padlet](https://padlet.com/) | Almost like an electronic pinboard, you can collate your ideas here and share them with supervisors, collaborators and colleagues. | You can add content from anywhere and in multiple formats; links, documents, images. You can annotate your content with topic headings. | 29/05/2021 |
| Scoping (Chapter 4) | Developing the concepts of your review topic area | [FreeMind (sourceforge.net)](http://freemind.sourceforge.net/wiki/index.php/Main_Page) | Enables you to construct an electronic mind-map if you prefer this to pen and paper.  | You can export your map if you wish to include it in your review report. | 29/05/2021 |
| Scoping (Chapter 4) | A quick check to see how much literature is available  | [PubMed PICO Tool](https://pubmedhh.nlm.nih.gov/nlmd/pico/piconew.php) | A search tool that allows you to simply enter your population, intervention, and comparator and/or outcome if appropriate, the tool then searches PubMed for you. | Only recommended for a scoping search as the tool does not allow you any control over the search terms and syntax, nor does it give you access to a full search strategy for reporting purposes. | 29/05/2021 |
| Scoping (Chapter 4) | Scoping the literature in order to develop a search strategy  | [PubMed PubReMiner: a tool for PubMed query building and literature mining](https://hgserver2.amc.nl/cgi-bin/miner/miner2.cgi) | A search tool that allows you to perform a basic search via PubMed. Search results are displayed by a variety of analytical information – e.g., journals, the topic most often features in, prominent authors, and the most commonly used MeSH headings. | Information about the MeSH headings can inform your search string for MEDLINE/PubMed. Information about the key journals and authors can inform supplementary searching (e.g., hand searching of journals, and searching for specific authors in the databases). | 29/05/2021 |
| The Review Protocol (Chapter 4) | Estimate the amount of time it will take to conduct your review | [PredicTER (shinyapps.io)](https://estech.shinyapps.io/predicter/) | A tool that allows you to enter the time allocated to each task in the review, and therefore plan the overall number of days required. | Aimed at researchers, but may also be useful for student projects. Focuses on systematic reviews, and systematic maps. | 29/05/2021 |
| Searching (Chapter 5) | Identifying MeSH terms for your search strategy | [MeSH on Demand Tool: An Easy Way to Identify Relevant MeSH Terms.](https://www.nlm.nih.gov/pubs/techbull/mj14/mj14_mesh_on_demand.html) | Quick and easy way to look up MeSH terms relevant to your topic. Type in each concept (from your PICO or similar) and note the relevant MeSH terms. Also useful for identifying synonyms and related terms – see the ‘Concepts’ tab. | Offers a simple way to ‘brainstorm’ MeSH terms when developing your search strategy rather than going to MEDLINE/PubMed itself. | 29/05/2021 |
| Searching (Chapter 5) | Translating your search strategy across databases | [Systematic Review Accelerator: Polyglot](https://sr-accelerator.com/#/polyglot) | Allows you to copy and paste or upload a text file of a search strategy from MEDLINE/PubMed and automatically translates it to copy and paste into alternative bibliographic databases. | Covers the main medical/health care databases, and Web of Science, but check the database provider is the same as the one you are using. | 29/05/2021 |
| Reference Management (Chapter 5) | Manage your references throughout your review | [Mendeley – Reference Management Software & Researcher Network](https://www.mendeley.com/?interaction_required=true) | Import search results directly from databases. Check for and remove duplicates. Cite while you write. | Most reference tools require payment, but Mendeley is one of the most commonly used free ones. | 29/05/2021 |
| Searching (Chapter 5)  | Ensuring you have the most up-to-date evidence throughout your review | See for example: [How do I create an Alert? (Ovid)](https://wkhealth.force.com/ovidsupport/s/article/How-do-I-create-an-Alert-1489081398579) and [Saving, Alerting, and Managing Results – Web of Science Core Collection](https://clarivate.libguides.com/woscc/saving)  | Many databases (including Google Scholar) allow you to set up ‘auto alerts’ to email you at regular intervals (or whenever new literature is added) with new items identified by your search strategy. | Check the help pages of your chosen databases to see if you can set up an auto alert. Web of Science also allows you to set up Citation Alerts which will alert you each time a chosen paper is cited. Google Scholar can be used to monitor citations as well as search strategies. | 29/05/2021 |
| Citation Searching (Chapter 5) | Supplementary search to identify potentially relevant studies that have cited your included studies | [citationchaser](https://estech.shinyapps.io/citationchaser/) | You can search cited articles individually or in a batch, by entering data such as DOIs, PubMed IDs or titles. | You can download results as a RIS file for importing in reference management tools such as Endnote.You can also retrieve the reference lists for articles (backward citation chasing). | 29/05/2021 |
| Searching (Chapter 5) | Importing results from academic search engines such as Google Scholar into reference management tools | [Publish or Perish (harzing.com)](https://www.harzing.com/resources/publish-or-perish) | Download this tool to your computer and you can perform searches through Google Scholar (amongst other sources) and then save the results in various file formats, many of which are compatible with reference management tools. | Google Scholar should not be used as an alternative to bibliographic databases but offers a useful supplementary source to check relevant studies have not been missed. From Google Scholar itself, you can only export one reference at a time, so using Publish or Perish allows you to export references in batches of up to 1,000 (check the maximum for the other sources). | 29/05/2021 |
| Study Selection (Chapter 6) | Screening studies against your inclusion and exclusion criteria | [Rayyan](https://www.rayyan.ai/) | Free access tool for screening of studies. Also has text-mining capabilities. | Many systematic review packages manage study selection, however, most require a subscription. Rayyan plans future developments including more functionality such as data extraction and assessment of the risk of bias. | 29/05/2021 |
| Quality Assessment (Chapter 6) | Displaying risk of bias visually  | [Risk of bias tools – robvis (visualization tool)](https://www.riskofbias.info/welcome/robvis-visualization-tool) | A web app designed for visualizing risk-of-bias assessments was performed as part of a systematic review. Creates the ‘traffic light’ plots and weighted bar plots associated with the Cochrane Risk of Bias tools. | The figures generated are of publication quality. | 29/05/2021 |
| Synthesising Quantitative Data (Chapter 7) | Meta-analysis | [RevMan](https://training.cochrane.org/online-learning/core-software-cochrane-reviews/revman) | Cochrane’s Review Manager tool is free for academic use. There is a web-based and a desktop version. You can use it to conduct meta-analyses and generate forest plots. | If you are not doing a Cochrane Review, you should run RevMan in [Non-Cochrane mode](https://training.cochrane.org/online-learning/core-software-cochrane-reviews/revman/revman-5-download/non-cochrane-reviews). | 29/05/2021 |
| Synthesising Quantitative Data (Chapter 7) | How to draw a funnel plot in excel | [Kurtosis | Information Training for the NHS | How to draw a funnel plot in Microsoft Excel](http://www.kurtosis.co.uk/technique/funnel/) | A step-by-step guide to enable you to create a funnel plot using Excel. | You can then copy your funnel plot from Excel into a Word document to include it in your review report. | 29/05/2021 |
| Presenting Data (Chapters 7, 8, 9) | Present and explore data visually in a concept map | [Kumu](https://kumu.io/) | Kumu allows you to organise complex data in a range of relationship maps, including concept maps. | The free version of Kumu should not be used for sensitive or confidential data. Private projects are available free to students. | 29/05/2021 |
| Writing Up (Chapter 10) | Create a PRISMA diagram | [PRISMA Diagram Generator (ShinyApp version)](https://estech.shinyapps.io/prisma_flowdiagram/) | Enter the data from your study identification (searching) and study selection (numbers and reasons for exclusion) and the tool will generate a PRISMA flow diagram, downloadable as PDF and PNG. | Alternatively, download a PRISMA Diagram template (Word document) from the [PRISMA website](http://www.prisma-statement.org/PRISMAStatement/FlowDiagram) to complete it manually. | 29/05/2021 |
| Writing Up (Chapter 10) | Generate in-text citations and a reference list as you write. | Most reference management tools have this function, including [Mendeley](https://www.mendeley.com/reference-management/mendeley-cite) (Mendeley Cite) | Mendeley Cite has an add-in for Microsoft Word. | Usually much quicker than manually citing and compiling a reference list. Can easily change referencing styles if you need to reformat your review (e.g., submitting to an alternative journal). | 29/05/2021 |
| Whole Process | Protocol DevelopmentStudy SelectionQuality AssessmentData ExtractionSynthesisAnalysisDocument ManagementReport Write UpCollaboration | [DistillerSR](https://www.evidencepartners.com/) | There are many software packages to support the whole review process (see Table 2a below), but currently DistillerSR is the only one with free access for students. | Note that the free student access gives you a basic account only. | 29/05/2021 |
| Dissemination (Chapter 10) | Choose a journal to submit your review to | [Journal/Author Name Estimator (JANE)](https://jane.biosemantics.org/index.php) | Enter the title and/or abstract of your review, and click on ‘Find journals’. JANE then searches PubMed to find similar articles, in order to suggest matching journals. | Check the impact factor of the journal and beware of predatory journals. To help identify high-quality journals, JANE now tags journals that are currently indexed in MEDLINE, and open access journals approved by the Directory of Open Access Journals (DOAJ).If you have a subscription to Endnote, it includes a similar [Manuscript Matcher](https://endnote.com/product-details/manuscript-matcher/) tool. | 29/05/2021 |

**Table 2a: Paid-for tools (Systematic Review Software Packages)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stage of the systematic literature review**  | **Tasks** | **Tool to Assist** | **Notes** | **Date Accessed** |
| Whole Process | Study SelectionData ExtractionQuality AssessmentSynthesisAnalysis (including Meta-analysis)Document ManagementCollaboration | [EPPI-Reviewer](http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=3396) | Developed by the EPPI-Centre, EPPI-Reviewer has both cloud-based and desktop versions. Fees are based on a monthly subscription model, per review and per number of users, for the duration of the review. When your user account or review expires you will be restricted to read-only access to EPPI-Reviewer. Users can regain full access at any time by resubscribing to the appropriate account and review(s). Discounted rates for those working in low- and middle-income countries. Free to Cochrane and Campbell review authors. | 29/05/2021 |
| Whole Process | Study SelectionData ExtractionQuality AssessmentDocument ManagementCollaboration | [Covidence](https://www.covidence.org/) | Annual subscriptions are available at the individual, package and organisational levels. Currently free (May 2021) for researchers undertaking research on COVID-19. Concessions are available for users in low- and middle-income countries. Free to Cochrane review authors. | 29/05/2021 |
| Whole Process | Protocol DevelopmentStudy SelectionQuality AssessmentData ExtractionSynthesisAnalysisDocument ManagementReport Write UpCollaboration | [DistillerSR](https://www.evidencepartners.com/) | Monthly and annual subscriptions are available. Free basic accounts for students. | 29/05/2021 |
| Whole Process | Protocol DevelopmentStudy SelectionQuality AssessmentData ExtractionSynthesis AnalysisMeta-AnalysisReport Write UpDocument ManagementCollaboration | [JBI-SUMARI](https://www.jbisumari.org/) | Annual subscription. Perhaps best-suited to researchers conducting JBI reviews.  | 29/05/2021 |

**Table 2b: Paid for tools (Individual Tasks)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stage of the systematic literature review**  | **Task** | **Tool to Assist** | **Function** | **Notes** | **Date Accessed** |
| Reference Management (Chapter 5) | Manage your references throughout your review | [Endnote](https://endnote.com/) | Import search results directly from databases. Check for and remove duplicates. Cite while you write. | Commonly used, Endnote’s desktop version has a one-time purchase. Discounted rate for students. It is often necessary to maintain an Endnote library in tandem with systematic review software packages for managing citations and generating reference lists. | 29/05/2021 |
| Citation Searching (Chapter 5) | Supplementary search to identify potentially relevant studies that have cited your included studies | [scite: Smart citations for better research](https://scite.ai/) | Enhanced citation searching allows you to see the context of a citation, e.g., whether it supports or contrasts the cited article’s findings. | The free, limited version is available, with monthly and annual subscriptions also available at various levels. | 29/05/2021 |
| Synthesising Qualitative Data (Chapter 7) | Synthesise qualitative data | [NVivo (qsrinternational.com)](https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home) | Designed for handling qualitative data from primary research, NVivo can also be used to code text from journal articles as if they were interview transcripts. It can also be used for framework synthesis. | Single software purchase. Free trial available. | 29/05/2021 |
| Writing Up (Chapter 10) | Writing the Background and Discussion | [Keenious – The new way of researching online](https://keenious.com/) | Recommends supporting citations generated by paragraphs of text and then links to source and citation. | Monthly subscription fee. | 29/05/2021 |