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Mapping the Systematic Review Toolbox

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OBJECTIVES

The Systematic Review (SR) Toolbox is an open online resource of tools to support the systematic review process. The toolbox has been well-received by the systematic review community and is recommended by Cochrane as a source of review production software. To ensure the toolbox resource remains current and useful to researchers, a literature mapping exercise was undertaken to develop a search strategy to regularly horizon scan for review production tools.

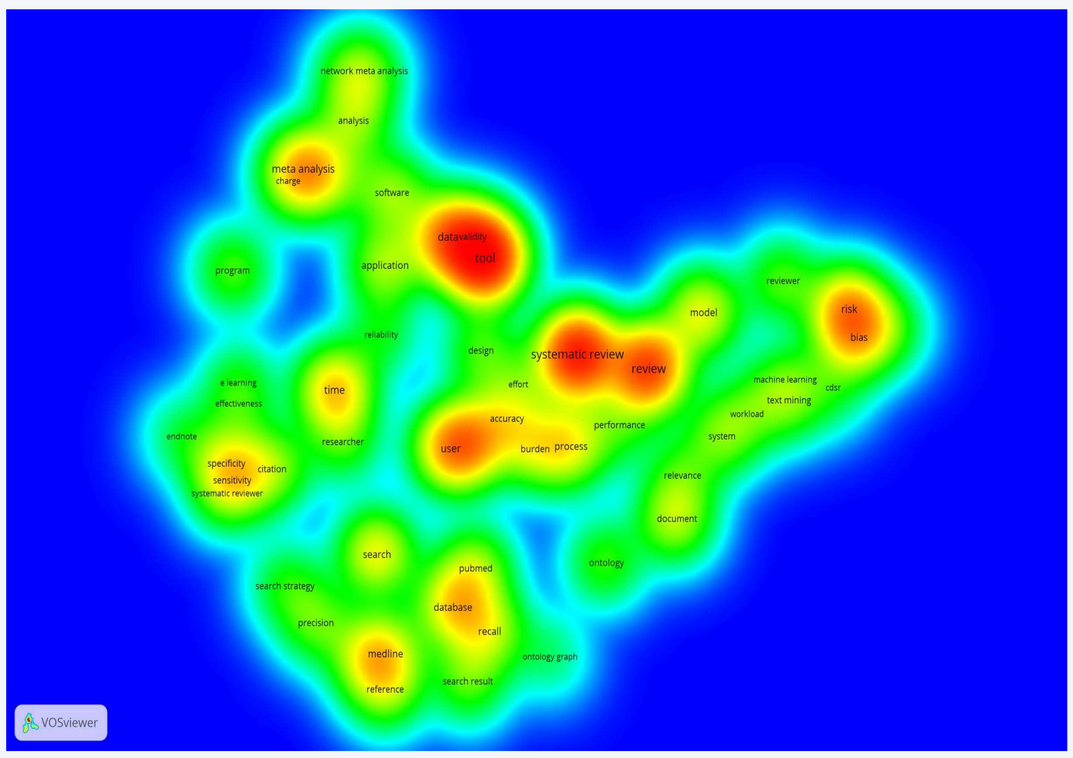
METHODS

Research publications of tools to support the systematic review process were analysed using two tools to enable the mapping of the literature; Yale MeSH Analyser and VOS Viewer text-mining software. Data was extracted on 1) MeSH subject headings and 2) free-text terms relating to systematic review tools. This data was used to develop a search strategy that would automatically search a number of sources at regular intervals, including MEDLINE, ensuring new tools are identified and indexed in the toolbox efficiently.

Figure 1: Example of MeSH Analysis

PMID	25588314
Title	Using text mining for study identification in systematic review...
Author (Year)	O'Mara-Eves A (2015)
MeSH Headings	Computational Biology* / methods Computational Biology* / trends
	Data Mining / methods* Data Mining / trends Databases, Factual
	Evidence-Based Medicine
	Humans
	Information Storage and Retrieval / trends
	Publications

Figure 2: Density Visualization Map



RESULTS

82 publications relating to software tools published in the toolbox were analysed. 38 of these publications were indexed on MEDLINE and therefore had a PubMed identifier (PMID) to enter into Yale MeSH Analyser (see Figure 1).

77 MeSH headings were identified. The most frequently occurring MeSH heading was **Software** (n=16) followed by **Information Storage and Retrieval** (n=15). 33 MeSH headings ranged between 2-16 occurrences. 44 MeSH headings had single occurrences. 5 publications had no MeSH headings assigned.

The bibliographic data (including abstracts) of the 38 analysed publications were uploaded to VOS Viewer and a density visualization map (See Figure 2) was generated to identify a network of frequently occurring and relevant free-text terms.

A MEDLINE search strategy was developed based on the findings from Yale MeSH Analyser & VOS Viewer. The search strategy is currently being tested to identify the best balance of sensitivity and specificity. References retrieved by the search are screened using the toolbox inclusion and exclusion criteria. New tools identified from the screened references are added to the toolbox.

CONCLUSIONS

The mapping exercise enabled the development of an efficient search strategy to identify new tools to support the systematic review process. Future plans are to translate the search strategy to search a range of information sources in multiple disciplines. Further research is required to analyse the publications not indexed on MEDLINE, including grey literature. The mapping exercise and search strategy contributes to the development of the SR Toolbox and may be a useful method to identify software tools in other areas of health research.

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