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Benefit of additional search techniques to support literature searches in systematic reviews: the “forward citation searching” and “similar articles” functions

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Background and objective

Besides conducting a conventional Boolean search and checking reference lists, further database search techniques may be required to achieve a (preferably) complete search result, in particular for complex research questions of systematic reviews (SRs) [1,2,3]. Our preliminary searches for the development of an SR on systemic psychotherapy showed inconsistencies in subject headings and a wide variability in terms, so it was nearly impossible to cover all search terms with a conventional Boolean search. Therefore we decided to use add-on search techniques such as “similar articles” and “forward citations searching”.

Our objective was to evaluate the benefit of the “similar articles” and “forward citation searching” functions as add-on search techniques for an SR of randomized controlled trials.

Methods

In an SR on systemic psychotherapy we evaluated “forward citation searching” (in Web of Science and Google Scholar [GS]) and the “similar articles” function in PubMed, using 40 potentially relevant studies identified by a first step of screening the search results of the Boolean search.

After screening the hits retrieved by the Boolean search and checking reference lists (step I), we analysed the benefit of the add-on techniques on the basis of the additional citations and studies found (step II).

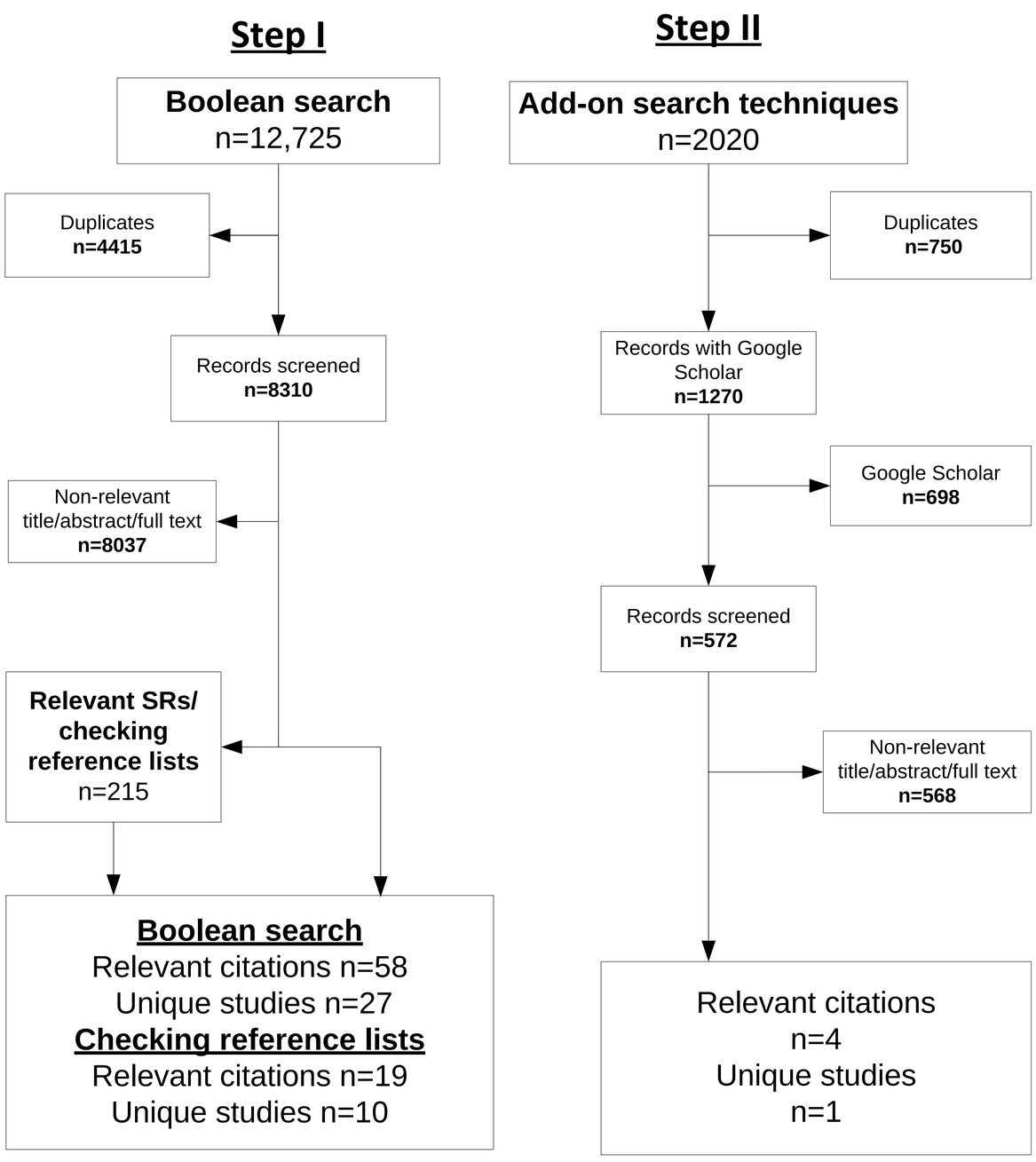

Figure 1: Flow chart of results of the different search techniques

Table1: Results of search techniques

		Relevant citations n=81	Relevant unique studies n=38	Percentage of relevant studies identified
Step I	Boolean search	58	27	71.05%
	Checking reference lists	19	10	26.32%
Step II	Add-on search techniques	4	1	2.63%

Results

The Boolean search yielded 58 relevant citations and 27 relevant unique studies; checking reference lists produced 19 additional relevant citations and 11 relevant unique studies (step I).

The application of the add-on search techniques (step II) yielded a total of 2020 hits; 1270 remained after duplicate deletion. Citations from GS largely included only information on authors and titles and did not always include information on sources. Furthermore, no abstracts were included, which turned out to be impracticable for the screening process (full texts would have had to be ordered in almost all cases). It was thus decided to remove these 698 citations and screen the remaining 572; 4 additional relevant citations were identified only by citation tracking: 3 were multiple publications on known studies and 1 was a unique study (see Figure 1). The “similar articles” function added no relevant citation. The add-on search techniques identified a total of 2.63% of all relevant studies (see Table 1).

Conclusions

Our findings indicate that, in contrast to conventional Boolean searches and checking reference lists, add-on search techniques may have little impact on the size of the evidence base of SRs investigating a complex research question. Only 4 additional relevant citations were identified in our example (3 were multiple publications on known studies and 1 was a unique study).

Since we only tested these different search techniques within one SR, further research is required. In particular it should be evaluated what benefit the different search techniques have independently of one another as add-on techniques to a Boolean search.

References

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