Evidence Based Library and Information Practice

Evidence Summary

Web Search Engines - Not Yet a Reliable Replacement for Bibliographic Databases

A Review of:

Bates, J., Best, P., McQuilkin, J., & Taylor, B. (2017) Will web search engines replace bibliographic databases in the systematic identification of research? *The Journal of Academic Librarianship*, *43*(1), 8-17. https://doi.org/10.1016/j.acalib.2016.11.003

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Abstract

Objective - To explore whether web search engines could replace bibliographic databases in retrieving research.

Design - Systematic review.

Setting - English language articles in health and social care; comparing bibliographic databases and web search engines for retrieving research published between January 2005 and August 2015, in peer-reviewed journals and available in full-text.

Subjects - Eight bibliographic databases: ASSIA (Applied Social Sciences Index and Abstracts), CINAHL Plus (Cumulative Index to Nursing and Allied Health Literature), LISA (Library and Information Science Abstracts), Medline, PsycInfo, Scopus, SSA (Social Services Abstracts), and SSCI (Social Sciences Citation Index) and five web search engines: Ask, Bing, Google, Google Scholar, Yahoo.

Methods - A literature search via the above bibliographic databases and web search engines. The retrieved results were independently appraised by two researchers, using a combination of tools and checklists, including the PRESS checklist (McGowan et al., 2016) and took guidance on developing search strategies from the Centre for Reviews and Dissemination (2009).

Main Results - Sixteen papers met the appraisal requirements. Each paper compared at least one bibliographic database against one web-search engine. The authors also discuss findings from their own search process. Precision and sensitivity scores from each paper were compared. The results highlighted that web search engines do not necessarily use Boolean logic and in general have limited functionality compared to bibliographic databases. There were variances in the way precision scores were calculated between papers, but when based on the first 100 results, web search engines were similar to some databases. However, their sensitivity scores were much weaker.

Conclusion - Whilst precision scores were strong for web search engines, sensitivity was lacking; therefore web search engines cannot be seen as a replacement for bibliographic databases at this time. The authors recommend improving the quality of reporting in studies regarding literature searching in academia in order for reliable comparisons to be made.

Commentary

Due to the deluge of research information on the internet, web search engines could be seen as a viable, free alternative to searching bibliographic databases. This paper was reviewed using the AMSTAR 2; a critical appraisal tool for systematic reviews (Shea et al., 2017).

The systematic review's methods and search strategy were clearly explained and provided, giving the research strong validity. Unlike the studies included in the review, the authors performed their search via more than one web search engine and provided clear reasons for the search engine choices. In the methodology the authors state that the review followed the PRISMA guidelines (Moher et al., 2009), however the authors have not included a figure or list of the excluded articles, as the PRIMSA flow diagram would suggest including.

All findings are provided, including those of the authors' search in both bibliographic

databases and web search engines. Limitations are discussed, including the age of some papers retrieved and a discrepancy in the ways different papers define "precision". One paper used a scoring system (Tober, 2011) based on their definition of recall, precision and importance, whilst others calculated precision from a selected number of hits (first 10, 50, or 100 hits) rather than the total number retrieved. This meant the authors struggled to analyse precision scores. The findings of this paper are consistent with previous studies in suggesting that web search engines, in particular Google Scholar, could be used in conjunction with bibliographic databases when searching for information. Interestingly, two papers suggested that Google Scholar could offer better precision scores than some bibliographic databases (McFadden et al., 2012; Walters, 2009). However, web search engines should not at this stage be used as a reliable replacement.

The authors did not explore if there were relevant results retrieved from web search engines that were not found in the bibliographic databases. This may help to determine the value of web search engines for contributing unique evidence, that otherwise might not be identified in traditional systematic review searches.

Grey literature (for example, unpublished reports or conference abstracts) is a form of evidence often required in social care research (Ford & Korjonen, 2012), but often not indexed in bibliographic databases. Therefore, it would be interesting to see this study replicated to explore searches for different forms of evidence.

This paper highlights the need for a consistent definition of precision to assist academics comparing studies in future research. Overall this paper adds to the growing body of research exploring the potential of web search engines for retrieving empirical research, so it is useful for librarians deciding whether to incorporate web search engines into their teaching.

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