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ISSN Online 2704-4890 | ISSN Print 2720-7609

Online first publication

Special Communication

HSI Journal (2026) Volume 8 (Issue 1):1371-1373. https://doi.org/10.46829/hsijournal.2026.3.8.1.1317-1373

Open Access

Strengthening research quality through rigorous search strategy development and appraisal

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Received September 2026; Revised January 2026; Accepted February 2026

Keywords: Literature search strategy; evidence synthesis; PRISMA-S reporting

Cite the publication as Ankamah S (2026). Strengthening research quality through rigorous search strategy development and appraisal. HSI Journal 8 (1):1371-1373. https://doi.org/10.46829/hsijournal.2026.3.8.1.1371-1373

I write to highlight the critical importance of well-designed and transparently reported search strategies in health sciences research manuscripts submitted to the Health Sciences Investigations (HSI) Journal. As research output from Sub-Saharan Africa continues to grow, meticulous reporting of search methods is essential to ensure trustworthy evidence synthesis and to inform policy, clinical decision-making, and health system strengthening. Systematic and scoping reviews depend on comprehensive literature retrieval; however, suboptimal search practices remain common.

Recent evaluations indicate that only a small proportion of reviews demonstrate comprehensive search methods. For example, Layton [1] found that only 5% of prosthodontic systematic reviews met the recommended search strategy criteria. Common shortcomings include reliance on a single bibliographic database, superficial keyword usage, omission of controlled vocabulary, and inadequate documentation of search syntax. These weaknesses reduce search sensitivity, introduce selection bias, and limit reproducibility [2]. For example, systematic and scoping reviews conducted in Ghana and across Sub-Saharan Africa often demonstrate significant methodological limitations. Common practices include searching only one or two major bibliographic databases and neglecting grey literature, despite established guidance advocating for multi-database and supplementary search approaches [3,4]. Furthermore, these reviews frequently restrict inclusion to English or a small set of foreign languages, resulting in the under-representation of locally generated evidence [3,5,6]. Additional shortcomings include the underuse of supplementary search methods such as reference-list screening and citation chasing, as well as insufficient documentation of full search strategies. This lack of rigour limits reproducibility and critical appraisal, despite the availability of clear reporting standards such as the Preferred Reporting Items for Systematic Reviews and Meta-Analyses literature search extension (PRISMA-S) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) [4,7]. A high-quality search strategy should begin with a clearly defined review question, ideally structured using frameworks such as Population, Intervention, Comparison, and Outcome (PICO) or Population, Exposure, and Outcome (PEO) [2,8]. Database selection must also be intentional. Although PubMed remains essential for identifying indexed biomedical literature, supplementing it with contextually relevant databases and repositories improves completeness. For African public health research, incorporating regional sources such as the World Health Organization Institutional Repository for Information Sharing (WHO IRIS) ensures the retrieval of policy documents, technical reports, and other grey literature that offer contextual perspectives often absent from indexed journals.

Within PubMed, best practices require combining controlled vocabulary (for example, Medical Subject Headings [MeSH]) terms such as “Antiretroviral Therapy, Highly Active” or “Hypertension”) with free text synonyms. Evidence shows that integrating free text terms with subject headings significantly increases sensitivity [9].

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Similarly, the use of Boolean operators, proximity logic, and careful application of filters enhances precision while maintaining comprehensiveness [10]. Objective, structured approaches to strategy development have been shown to yield higher sensitivity than conceptual or ad hoc methods, 97% versus 75% in a comparison by Hausner et al. [10]. Bramer et al. [8] proposed systematic procedures for identifying candidate terms by comparing thesaurus terms with free text synonyms, demonstrating improved efficiency and performance. Likewise, Cooper et al. [4] outlined an eight-step process that supports rigour from question refinement to post-search validation.

Transparent documentation is essential. Reporting the search interfaces used (e.g., PubMed via the National Library of Medicine [NLM]), precise search dates, and full search strings, including both MeSH and keyword terms, promotes reproducibility and allows reviewers to assess completeness. The PRISMA-S extension offers practical guidance for documenting search processes [11], while the Peer Review of Electronic Search Strategies (PRESS) checklist supports peer review of search syntax to detect errors and enhance rigour [2,12]. Given this evidence, peer reviewers and editorial boards play a vital role in ensuring adherence to search strategy standards. Requiring the submission of complete search strategies as supplementary material can facilitate methodological evaluation in line with PRISMA-S and PRESS guidelines. Adopting these standards, along with continued author capacity building, can improve the quality, reproducibility, and global visibility of manuscripts published in HSI Journal. To further strengthen the journal's scientific contribution, I encourage HSI Journal to develop brief author guidance outlining specific expectations for search strategy structure and reporting. This would be especially timely given the rapid growth of evidence synthesis output in Ghana and the wider region.

In conclusion, rigorous and transparently reported search strategies underpin high-quality evidence synthesis. To strengthen the quality and credibility of reviews published in HIS Journal, two priority actions are recommended: encouraging or requiring adherence to PRISMA-S for transparent reporting of literature searches and promoting reviewer and editorial capacity building through the application of the PRESS checklist for peer review of search strategies. By reinforcing best practices through guidance and review standards, HSIJ can make a profound contribution to research integrity, knowledge translation, and health sciences scholarship in Africa.

DECLARATIONS

Ethical consideration
Not applicable

Consent to publish
The author agreed on the content of the final paper.

Funding
This work received no external funding.

Competing Interest
The author declares that there is no conflict of interest regarding the publication of this article.

Author contributions
The author contributed to the conceptualisation, drafting, and critical revision of the manuscript and approved the final version.

Acknowledgement
Not applicable.

Availability of data
Not applicable.

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