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Quality in systematic reviews: contribution of librarians

Qualité en revue systématique : apport du documentaliste

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Abstract

Librarians play a crucial role in both the quantitative and qualitative aspects of health care research, given the establishment of a trusting relationship between them and the physicians leading clinical research. Well-executed systematic reviews contribute significantly to the practice of evidence-based medicine. This feedback presents a collaborative perspective involving a librarian and two clinicians regarding their joint efforts in completing eight systematic reviews. It delineates the assistance offered by the librarian and exemplifies how the clinicians' attitudes impact the service quality and, consequently, the credibility of these works.

Mots-clés

Collaboration
Documentalistes
Médecins
Méthodologie
Pharmaciens
Recherche biomédicale
Revue systématique
REX (Retour d'expérience)

Résumé

Les documentalistes ont un rôle à jouer dans la démarche quantitative et qualitative de la recherche biomédicale, pour peu que s'établisse une relation de confiance entre eux et les chercheurs-praticiens. En effet, les revues systématiques (RS) de la littérature, bien conduites, peuvent appuyer la pratique de la médecine factuelle. Ce partage d'expérience est un regard croisé d'un documentaliste et de deux cliniciens hospitaliers sur leur collaboration dans la réalisation de huit RS. Il détaille le soutien apporté par le documentaliste et illustre combien la posture des cliniciens influence la qualité du service rendu, et par conséquent la crédibilité qui découle de ces travaux.

The authors declare that they have no conflicts of interest. CG wrote the initial manuscript, produced Figure 1 and selected Figure 2. MF and XA reviewed and modified the manuscript, Figure 1 and validated Figure 2. All authors approved the final version and contributed with their specific expertise.

LIST OF ABBREVIATIONS

DB : Database
CHU : University Hospital Centre
PICO : Population/Problème, Interventio, Comparateur, Outcomes
PRISMA : Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SR : Systematic Review

INTRODUCTION AND METHODOLOGY: CROSSED VIEWPOINTS OF A LIBRARIAN AND CLINICIAN

"Nothing has as much power to broaden the mind as the ability to examine systematically", said the philosopher emperor Marcus Aurelius. The practice of evidence-based medicine relies significantly on the utilization of the most current scientific data and knowledge pertaining to a given subject. In this context, systematic reviews (SR) of the literature can make a valuable contribution, provided they are conducted with the utmost rigor.

While recent literature has examined the qualitative contribution of librarians in conducting SR [1-5], few articles have synthesized the perspectives of librarians and clinicians regarding the necessity for collaboration in this demanding process. Nevertheless, this methodological feedback is crucial for supporting and advancing the involvement of librarians in these endeavors, ultimately contributing to the consolidation of evidence-based medicine [6-8].

With this objective, we aim to present our working methodology based on eight SR, either published or in progress, involving a documentalist and a clinician working in pairs within a French university hospital.

The initial segment of this article will elaborate on the support provided by the librarian to the clinicians, while the subsequent part will illustrate how the clinicians' engagement has influenced the quality of the service rendered by the librarian.

LIBRARIAN EXPERTISE TO SUPPORT RESEARCHERS

An escalating demand for SR support is becoming increasingly apparent in routine practice. This trend was identified in the literature by Cooper in 2013 as one of the future key points of the profession [9]. In 2018, through a scoping review, the role of librarians was extensively delineated, and they were encouraged to articulate their involvement in this emerging activity [10]. Assisting in the creation of a SR necessitates librarians to possess a high level of expertise in documentary research, a substantial capacity for self-training, and proficiency in project management. Furthermore, dedicated time for the completion of a SR is imperative, given its time-intensive nature [11, 12]. The extent of time support provided is contingent on the trust vested in it by the practitioner and the proficiency levels of both parties. Certain clinicians solely request librarians to formulate research equations, while others engage them comprehensively in the project, spanning from conceptualization to publication (Figure 1).

In France, working with librarians for SR remains underdeveloped. However, akin to the increasing reliance on statisticians by researchers for meta-analysis, librarian assistance, particularly in the SR process, could evolve into an automated procedure and serve as a hallmark of good practice. According to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) recommendations, the formulation of an optimal search strategy constitutes a pivotal element in any SR [13]. In this context, a section in the Cochrane Handbook for Systematic Reviews of Interventions (4.2.1), an international reference work, underscores the significant role assigned to literature search professionals [14].

The crafting of the research strategy stands as the primary reason why practitioners seek the expertise of librarians. It serves as the equilibrium point in SR and necessitates joint validation with the practitioner based on a protocol. Similar to any experimental approach, this protocol allows the pre-establishment of scientific objectives and the methodology of the work. The protocol's significance lies in its description of the SR process. For transparency, we advocate for its publication in the Prospero international registration database [15]. Without robust search algorithms founded on PICO criteria (Population/Problem, Intervention, Comparator, Outcomes), systematic retrieval of available scientific evidence is unattainable. Librarians possess expertise in the specific language required for formulating search equations and are adept at combining controlled vocabulary (such as descriptors in a thesaurus, e.g., Mesh) with natural language. They proficiently employ Boolean operators (AND, OR, NOT, etc.), truncation, and limits to refine results. Their proficiency extends to recommending which databases (DB) should be queried, comprehending intricacies,

and translating equations between DB (Pubmed, Web of Science, Embase, Cochrane Library, Scopus, etc.). Librarians establish monitoring systems facilitating clinicians in conducting dynamic rather than static SR, presenting a significant advantage. Literature indicates that the average time for a new clinical trial to be incorporated into an SR is approximately 4/5 years [16, 17], and future updates have the potential to reduce this timeframe. The role of the librarian in collaboration with practitioners at this stage is pivotal, given that practitioners typically receive limited training in these methodologies. For instance, many are unfamiliar with the distinction between Pubmed and Medline [18], leading them to occasionally confine their searches to Mesh without realizing they may overlook recent articles integrated into Pubmed. As with all SR work, search algorithms must exhibit transparency and reproducibility, underscoring the importance of their high quality.

Once the research strategy is formulated, the librarian undertakes a task demanding rigor and methodology. They query databases, import results into bibliographic reference management software (EndNote, Zotero, etc.), and then perform the de-duplication phase, typically manually. Subsequently, they provide a file in RIS format, integrable by the clinician into bibliographic reference management software or a systematic review tool (Rayyan [19], Covidence, etc.). The two reviewers can then independently commence the initial "screening" phase (study selection) based on the title and abstract of the references. The second screening stage is then based on the full text of the references selected in phase 1. Here, the librarian locates and provides the full texts to the reviewers. This division of labor alleviates the clinician from conducting all the described steps, thereby optimizing medical time.

In the final phase of SR, some practitioners seek the librarian's assistance, as they can contribute to refining the search strategy, drafting the Prisma Flow Diagram [20], or controlling the bibliographic references of the impending publication. In case of rejection following initial submission, the librarian can propose alternative journals leveraging their knowledge of scientific publishers and bibliometrics. However, the involvement of the information specialist should not be confined to the concluding phase, as the absence of a robust documentary search strategy from the outset may lead to "irrecoverable" methodological limitations, necessitating the initiation of the work anew.

Over time, librarians will enhance their skills and confidence, enabling them to support future professionals and residents embarking on SR, even those new to the methodology (Figure 2). They will guide them through various stages and offer advice on checks to be conducted in Prospero before commencing an SR.

PRACTITIONERS INFLUENCE THE QUALITY OF THE SERVICE PROVIDED BY THE LIBRARIAN

In this context, we draw upon the experiences of two university hospital practitioners, one of whom spent three years in an English university team specializing in secondary research. The findings demonstrate that clinician involvement has a profound impact on the librarian's work, influencing the quality of the human relationship established, the time dedicated to collaboration, and the effectiveness of methodological knowledge transfer.

Supporting SR can be daunting for both seasoned and novice librarians [7]. It is crucial for practitioners to be cognizant of this fact and adept at articulating their research objectives, blending technical expertise with accessibility. Similarly, the librarian's level of expertise in documentary research can be perplexing for practitioners whose proficiency in this domain may be rudimentary [21].

Librarians need two levels of understanding: that of the patient, to understand what they are looking for, and that of the practitioner, to search as closely as possible to the clinician's speciality. Once a relationship of trust has been established, everyone will be able to share their knowledge and skills for the benefit of the SR process.

Time for exchange is precious and essential in terms of efficiency and quality. As much time as necessary, but as little as possible, is the subtle balance that the librarian must try to strike with the clinicians' workload. However, experience has convinced us that this time is unavoidable, particularly when it comes

to detailing the parameters of the SR: eligibility criteria, chosen DBs, etc. The clinician must invest time in providing the essential information [7, 11]. Written exchanges of any kind are no substitute for direct communication. In order to optimise it, it should be prepared and supported by a written document, if possible the protocol or, failing that, the synopsis of the project. It is worth remembering that exchanges with a librarian are confidential.

In this article, we share a collaborative working experience that proves to be mutually beneficial for both participants: the librarian, well-versed in utilizing a thesaurus, formulates a Mesh-based equation. Subsequently, the librarian and clinician engage in discussions to amalgamate their dual expertise, encompassing both methodological and thematic aspects. The ensuing search algorithm is meticulously developed, leveraging the full range of possibilities offered by the thesaurus, whether in an exploded or non-exploded Mesh format. This collaborative ethos underscores that if clinicians can effectively impart their expertise with sufficient precision, the librarian's requirement for dual skills in documentation and medicine becomes discretionary.

The interpersonal dynamics and the allocated time significantly impact the quality of the service provided, with the clinician's teaching proficiency and methodological knowledge also playing crucial roles. The quality of this multidisciplinary exchange proves invaluable for both participants. Interprofessional training supplements self-training and the resources available to clinicians, such as Rayyan, among others. While systematic review training is readily accessible for librarians in the United States [7, 11, 22], its development in France remains limited. In 2020, Folb's study indicated that librarian participation in continuing education workshops on systematic reviews increased their knowledge levels and enhanced their skills [22].

CONCLUSION: LIBRARIANS HAVE A ROLE TO PLAY IN THE QUANTITATIVE AND QUALITATIVE APPROACH TO BIOMEDICAL RESEARCH

This feedback demonstrates that the transfer of expertise from clinicians to librarians has proven to be a tangible asset. This transfer not only enables librarians to enhance their support capabilities for other researchers but also provides them with a form of scientific and methodological legitimacy. Librarians play a crucial role in the qualitative approach to biomedical research: they act as custodians of the reliability of the research equation, contribute to bias limitation, and, ultimately, can enhance the credibility of evidence-based research, thereby better supporting the practice of evidence-based medicine [23].

Adherence to the chronological process of a systematic review (SR) is fundamental. It is a systematic and organized procedure that necessitates a foundation in solid, reproducible research and specific skills. The inclusion of a librarian among the authors or in the acknowledgments is now considered a judgment criterion during the review phase and could potentially evolve into a future requirement.

FIGURE 1 : PROPOSED CHRONOLOGICAL SEQUENCE FOR CARRYING OUT A SYSTEMATIC REVIEW IN COLLABORATION WITH A LIBRARIAN AND TWO CLINICIANS

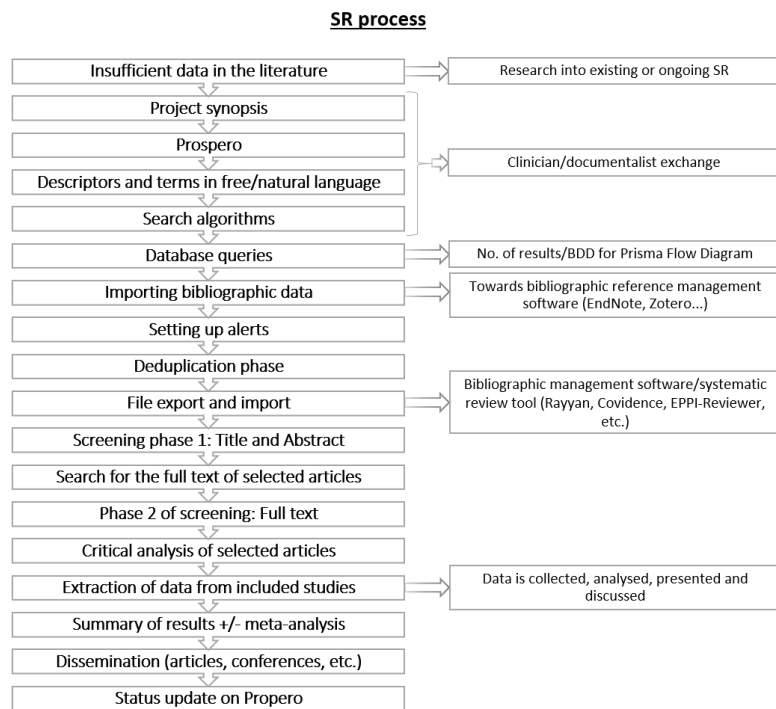
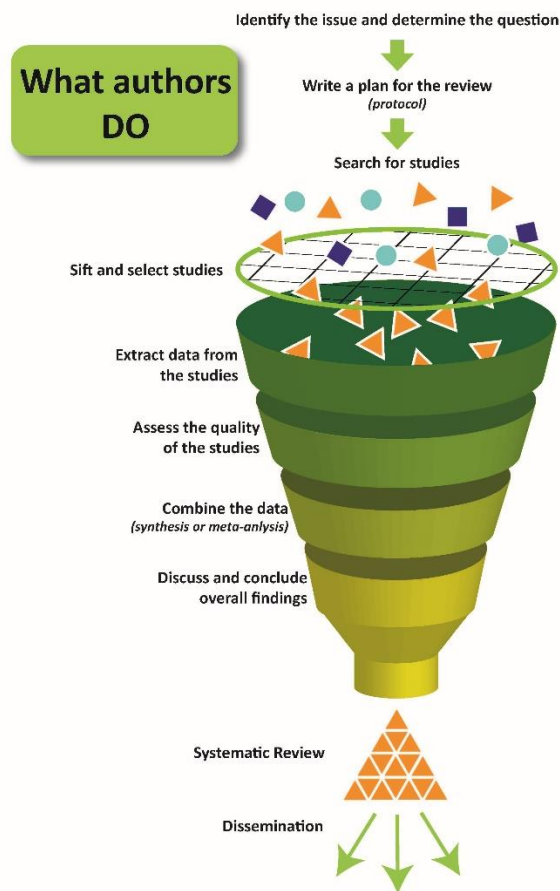


FIGURE 2 : THE SYSTEMATIC REVIEW PROCESS: WHAT AUTHORS DO



Designed by Jessica Kaufman, Cochrane Consumers & Communication Review Group, Centre for Health Communication & Participation, La Trobe University, 2011. <https://doi.org/10.1002/ccc.12001>

ABOUT AUTHORS



Caroline Giroudon graduated from the University of Lyon 3 in 2002 with a post-graduate diploma (DESS) in Information-Communication, specialising in Documentary Information Services. She began her career as a librarian with the Staff of the South-East Land Region of the French Army. In 2003, she joined the documentation centre for paramedical schools at the Lyon University Hospital (Hospices civils de Lyon), before moving to the Central Documentation Department in 2005. These two successive posts enabled her to develop her skills in a wide range of fields: medical, paramedical, administrative, professional and student. The first systematic reviews (SR) in which she participated in September 2016 dealt with stent-retriever thrombectomy for acute ischaemic stroke; they gave rise to two publications in 2018. When she was set up in 2017, she joined the Researchers' Team, a specialist team at Documentation Centrale, whose aim is to respond to the growing demand for SR and bibliometric information from physicians. She is dedicated to elevating the status of the documentation profession, while underscoring the significance of acquiring new skills to align with the evolving nature of the profession.



Xavier Armoiry has been a professor in pharmacy in Lyon since 2018. He divides his time between clinics at Hôpital Édouard Herriot, teaching and research at Université Claude Bernard Lyon 1. He is a specialist in health technology assessment, particularly medical devices, with a particular focus on clinical and medico-economic evaluation.



Maxime Fieux has been a clinical fellow in Professor Stéphane Tringali's O-HNS department since 2019. He aims to strengthen the HCL's regional and national influence in rhinology via the national collaborations he has developed through his involvement in the French Rhinology Association (AFR), of whom he is a member. With a passion for fundamental research, he has completed a Masters 2 in biostatistics and is currently working on his PhD thesis at the Paris Est Créteil university. He is working on biologics in chronic rhinosinusitis with nasal polyps and non-invasive routes of administration thanks to a transdisciplinary collaboration with the Verrier/Monge team at the LBTI, IBCP, Lyon, France. He is also been a teacher at the Lyon Sud Charles Mérieux Faculty of Medicine and Maieutics since 2019, where he teaches anatomy and ENT according to the programme defined by the French College of ENT and Cervico-facial Surgery, of whom he is a member.

REFERENCES

- [1] Schellinger J., Sewell K., Bloss JE., Ebron T., Forbes C. The effect of librarian involvement on the quality of systematic reviews in dental medicine. *PLoS One*. 2021;16(9):e0256833.
- [2] Rethlefsen ML., Farrell AM., Osterhaus Trzasko LC., Brigham TJ. Librarian co-authors correlated with higher quality reported search strategies in general internal medicine systematic reviews. *J Clin Epidemiol*. 2015;68(6):617-26.
- [3] Meert D., Torabi N., Costella J. Impact of librarians on reporting of the literature searching component of pediatric systematic reviews. *J Med Libr Assoc*. 2016;104(4):267-77.
- [4] Koffel JB. Use of recommended search strategies in systematic reviews and the impact of librarian involvement: a cross-sectional survey of recent authors. *PLoS One*. 2015;10(5):e0125931.
- [5] Harris MR. The librarian's roles in the systematic review process: a case study. *J Med Libr Assoc*. 2005;93(1):81-7.
- [6] Nicholson J., McCrillis A., Williams JD. Collaboration challenges in systematic reviews: a survey of health sciences librarians. *J Med Libr Assoc*. 2017;105(4):385-93.

- [7] McKeown S., Ross-White A. Building capacity for librarian support and addressing collaboration challenges by formalizing library systematic review services. *J Med Libr Assoc.* 2019;107(3):411-9.
- [8] Obasola OI., Kinengyere AA., Peter D., Chiweza D., Ross-White A., Godfrey C. Perceptions, experiences, and attitudes of health care professionals regarding the role of librarians in fostering evidence-based health practice: a systematic review protocol. *JB I Evid Synth.* 2021;20(1):181-8.
- [9] Cooper ID., Crum JA. New activities and changing roles of health sciences librarians: a systematic review, 1990-2012. *J Med Libr Assoc.* 2013;101(4):268-77.
- [10] Spencer AJ., Eldredge JD. Roles for librarians in systematic reviews: a scoping review. *J Med Libr Assoc.* 2018;106(1):46-56.
- [11] Campbell S., Dorgan M. What to Do When Everyone Wants You to Collaborate: Managing the Demand for Library Support in Systematic Review Searching. *Journal of the Canadian Health Libraries Association / Journal de l'Association des bibliothèques de la santé du Canada.* 2015;36(1):11-9.
- [12] Borah R., Brown AW., Capers PL., Kaiser KA. Analysis of the time and workers needed to conduct systematic reviews of medical interventions using data from the PROSPERO registry. *BMJ Open.* 2017;7(2):e012545.
- [13] Liberati A., Altman DG., Tetzlaff J., Mulrow C., Gøtzsche PC., Ioannidis JP., et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *Bmj.* 2009;339:b2700.
- [14] Cumpston M., Li T., Page MJ., Chandler J., Welch VA., Higgins JP., et al. Updated guidance for trusted systematic reviews: a new edition of the Cochrane Handbook for Systematic Reviews of Interventions. *Cochrane Database Syst Rev.* 2019; 10:Ed000142.
- [15] Booth A., Clarke M., Dooley G., Gherzi D., Moher D., Petticrew M., et al. The nuts and bolts of PROSPERO: an international prospective register of systematic reviews. *Syst Rev.* 2012;1:2.
- [16] Elliott JH., Turner T., Clavisi O., Thomas J., Higgins JP., Mavergames C., et al. Living systematic reviews: an emerging opportunity to narrow the evidence-practice gap. *PLoS Med.* 2014;11(2):e1001603.
- [17] Shojania KG., Sampson M., Ansari MT., Ji J, Doucette S., Moher D. How quickly do systematic reviews go out of date? A survival analysis. *Ann Intern Med.* 2007;147(4):224-33.
- [18] NLM. Medline, PubMed, and PMC (PubMed Central): How are they different? [Available from: <https://www.nlm.nih.gov/bsd/difference.html>]
- [19] Ouzzani M., Hammady H., Fedorowicz Z., Elmagarmid A. Rayyan-a web and mobile app for systematic reviews. *Syst Rev.* 2016;5(1):210.
- [20] Prisma. Prisma Flow Diagram 2020 [Available from: <http://prisma-statement.org/PRISMAStatement/FlowDiagram.aspx>]
- [21] Moore M. Teaching physicians to make informed decisions in the face of uncertainty: librarians and informaticians on the health care team. *Acad Med.* 2011;86(11):1345.
- [22] Folb BL., Klem ML., Youk AO., Dahm JJ., He M., Ketchum AM., et al. Continuing education for systematic reviews: a prospective longitudinal assessment of a workshop for librarians. *J Med Libr Assoc.* 2020;108(1): 36-46.
- [23] Kirtley S. Increasing value and reducing waste in biomedical research: librarians are listening and are part of the answer. *Lancet.* 2016;387(10028):1601.