

A Role of Value-Added Mediated Search Services in Medical Publishing : A Case Study

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Objectives

In the past 25 years information needs and information seeking-behaviours among healthcare practitioners, hospital clinicians, biomedical researchers, academic staff and medical students have changed. It has been reported¹⁾ that, contrary to busy health practitioners, availability and use of the research literature are considered essential for academic or research settings. Gradually, information end-users have been gaining greater trust in their own bibliographic searching and become more and more independent of librarians' assistance. Since mid-1990s, there has been a decline in library-mediated search requests due to an increasing popularity of self-searching and online availability of a wide selection of information sources with seamless access to fulltext documents. Despite this, there still remains some space for medical libraries to maintain mediated search services, providing the traditional models are redesigned to meet new demands of library users.

According to Coumou and Meijman²⁾ the primary obstacles of health practitioners to information seeking seem to be lack of time and limited searching abilities. Similarly, Grefsheim et al.¹⁾ confirmed that the main benefits of using medical libraries by self-sufficient researchers was saving time in finding information and „obtaining information they would not have found otherwise“, which is closely related to perceived professional skills of librarians to retrieve and integrate data from multiple information sources.

The paper describes a case of mediated searching with pre-search and post-search interviews to get the best evidence on the effect of 2 drugs (chondroitin and glucosamine) in prevention and treatment of osteoarthritis. The retrieved and appraised documents were then used for the purpose of scientific publishing.

Case Study

This is a success story of joint efforts of a team of biomedical researchers who elaborated a traditional („narrative“) review³⁾ with elements of evidence based practice in cooperation with the medical library staff for publication in the international journal „*Current Topics in Nutraceutical Research*“.

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Evaluation of glucosamine and chondroitin in the prevention of osteoarthritis and maintenance of healthy joints.

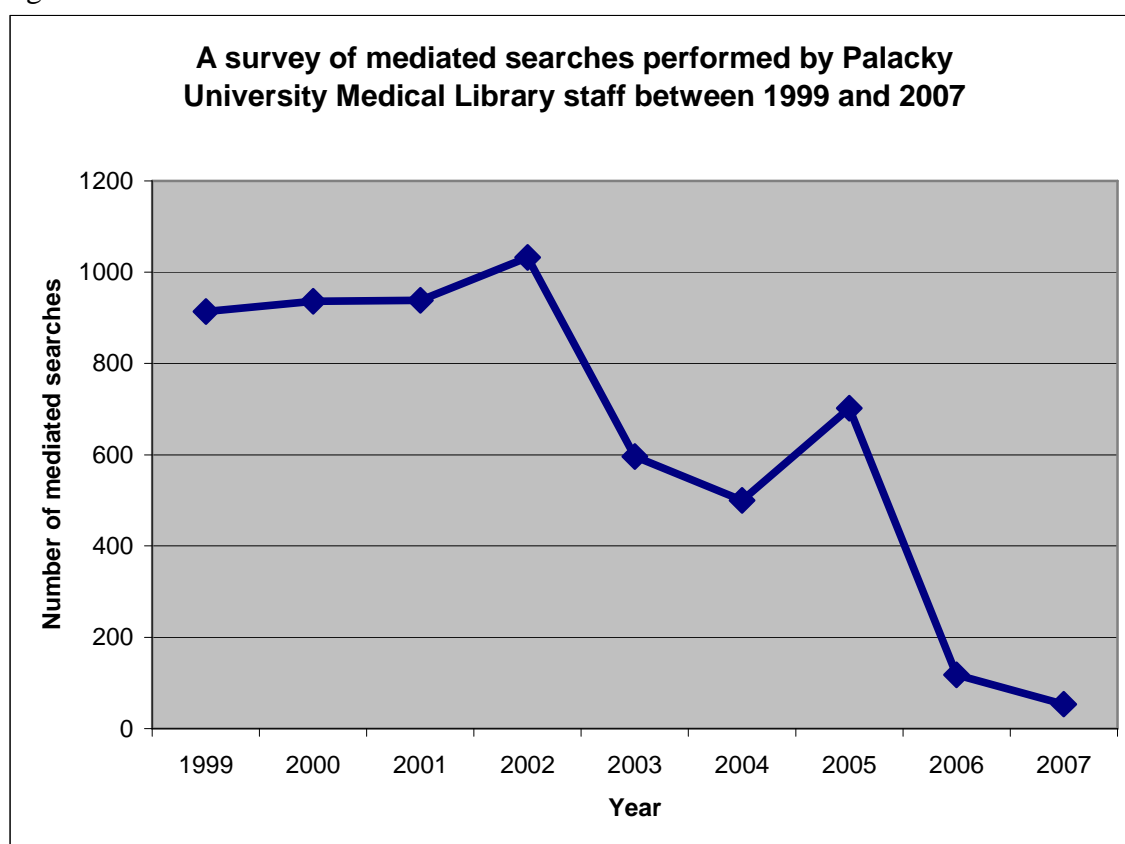
. Current Topics in Nutraceutical Research 2006; 4(3/4):175-186.

Background

Palacky University Medical Library (Olomouc, Czech Republic) has always reflected changing needs of its users, supporting medical education, healthcare, biomedical research and deployment of evidence-based medicine. Until recently, information seeking and

mediated searching have ranked among the most demanded services. In mid-1990s, the library was the only place with access to MEDLINE, and there were a few scholars with adequate skills to perform searches by themselves. In the most productive years of 1999-2005 the library's average annual output amounted to 800 accomplished search requests. A dramatic decline in the search requests started in 2005 (Fig.1), triggered by library staff reduction which required reclassification of the existing job positions. To buffer a negative impact on the library end-users satisfaction and their access to current literature a project was undertaken focused on systematic improvement of library users' search skills and abilities. New computer facilities were built up to accommodate the needs for training undergraduate and PhD students, academic staff and teaching hospital clinicians. It may be supposed that this activity was a useful pre-requisite for library users to become self-sufficient in searching biomedical literature.

Figure 1.



Author Team-Building

The first author of the invited paper (JG), associate professor of orthopaedic surgery, was addressed by the editorial board of the international journal „*Current Topics in Nutraceutical Research*“ (<http://ctnr.newcenturyhealthpublishers.com>), to write a traditional („narrative“) review dealing with therapeutic and preventive effects of 2 drugs, glucosamine and chondroitin, on osteoarthritis. He contacted another two colleagues, namely an associate professor of rheumatology (PH) and a professor of biochemistry (VS). All of them are experienced biomedical researchers and productive authors of scientific literature with high citedness of individual papers. Along with rich previous theoretical and clinical experience, their knowledge baseline was a similar review by VS et al.⁴⁾ that appeared a year before in the official journal of Palacky University Faculty of Medicine in Olomouc „*Biomedical Papers*“ (<http://biomed.papers.upol.cz>), using articles published between 1999 and 2005.

Pre-Search Interview with Library Staff

The first author (JG) belongs to the category of middle-aged, avid and self-sufficient information seekers; despite this, he is a frequent medical library visitor who knows the range and quality of the services offered by its staff. He is skilled enough to search Google and PubMed by keywords and authors, find, download and interpret relevant articles. As a rule, he uses the library to get documents unavailable online and browse the current print journals collection. As clinician-teacher, he regularly collaborates with the library staff to train undergraduate and postgraduate students in clinical search skills and fundamentals of scientific publishing. Why did he contact the library staff to request a mediated search? Here is his opinion: „I needed a professional to perform a comprehensive search quickly, across a variety of databases, followed by basic appraisal of the documents to comply with EBM principles. I knew I could trust our medical library staff“. In such a way a librarian (JP) became a member of the author team.

Strategy for Literature Search

There were 2 research questions to answer by the review: (a) a role of glucosamine and chondroitin for osteoarthritis; (b) general aspects of osteoarthritis and its management. The terminology was discussed and refined with the first author (JG). We searched MEDLINE (1966-2006), EMBASE (1980-2006), The Cochrane Library (3rd Quarter 2006), and SportDiscuss (1975-2006).

Post-Search Interviews

The search yielded a total of 1052 records. During several post-search sessions the first author (JG) and the librarian (JP) sorted out 39 most relevant articles related to question (a), and 36 studies dealing with question (b) based on analysis of titles/abstracts. The range of publication dates was 1980-2006. The fulltext versions of the articles were then evaluated according to the hierarchy of evidence, and the results were summarized in two separate tables for issues (a) and (b).

Evidence table (a): Cochrane review (2), Systematic review&Meta-analysis (2), Traditional review (9), Randomized controlled trial (8), Multicenter study (1), Drug evaluation study (13), Comment (2), Meeting abstract (1), Case report (1).

Evidence table (b): Cochrane review (2), Systematic review&Meta-analysis (3), Traditional review (14), Consensus Development Conference (3), Randomized controlled trial (1), Multicenter study (1), Cohort study (2), Methodological study (2), Laboratory research (6), Comment, editorial (3), Book (1).

Librarian's Follow-up Role in Review Writing

After post-search evaluation and interpretation of the literature, the author team was working under guidance of the first author; the librarian was responsible for preparing the section *Strategy for Literature Search*, two tables with summarized publication types, and a *List of References*. The peer-review procedure lasted 4 months before all of us could say „*Finis coronat opus*“ – or „*All's well that ends well*.“ For the library staff it was the first experience of this kind that confirmed the current quality of the library mediated search services, and a good reason for their further enhancement to support evidence-based medicine and scientific publishing. A proposal was made of a newly structured *Search Request Form* (Appendix 1) with such elements as a PICO framework of search questions⁵⁾, option for pre- and post-search interviews⁶⁾, including classification by strength of evidence, and specification of the purpose of the search (eg. research, patient care, teaching, publishing).

Discussion

Information searching plays an important role in modern clinical research and healthcare decision making, particularly in the context of evidence-based medicine. At present, better access to relevant information is closely related to searching documents on the web. However, as early as in 1999, Hersh⁷⁾ pointed out that end-users did not necessarily have to obtain optimal results when using information retrieval systems. Later on, Lau and Coiera⁸⁾ carried out a retrospective analysis which revealed that different subjects had different knowledge and levels of confidence before searching. Moreover, their „journeys“ how to get evidence may be subjected to cognitive biases, in particular *anchoring*. Anchoring means that previous beliefs have an impact on the way newly retrieved information is processed. In our case study this bias was obvious during the pre-search session, because the first author of the review (JG) had a baseline knowledge about the problem before he formulated a new search request. Librarian's involvement in the process of seeking information may help alleviate this problem by developing an objective approach to search strategy design. As emphasized by Vrabel⁹⁾, librarians and other information professionals, well-trained in performing extensive literature searches, are ideal partners for clinicians during the search for evidence, in particular for devising search strategies and optimizing retrieval supported by well-built questions. Librarian-clinician partnerships during the evidence search help ensure that majority of relevant research was located.

A recent information needs study¹⁾ of clinical specialists and biomedical researchers conducted at the US National Institutes of Health confirmed researchers' preferences for self-sufficiency in information seeking. In spite of this, there are some barriers to achieve the complete self-sufficiency. When seeking information, the most frequently mentioned problem was a lack of time to search for and gather information. Here could be some space left for active library involvement, because if the researchers spend less time gathering information, they can devote more time to reading and analyzing it. Respondents of the above study defined new, non-traditional opportunities for library interventions, such as preparing manuscripts and interpreting the validity of published information which is in agreement with our findings. Similarly, the most frequently perceived value of current and potential library services comprised advice on using information resources, analyzing results of a search, selecting most relevant articles, training end-users to improve searches and participation in researchers' projects, including scientific publishing.

In a review of evidence, Davies¹⁰⁾ interpreted the literature about information seeking behaviours of doctors, published in the period from 1996 to 2006 which has witnessed the development of user-friendly electronic resources and Internet search engines. One of the goals of the study was to show where medical librarians could impact on doctors' information seeking behaviour. The theoretical basis of such interventions consists of three elements: „articulated“ information need – literature searching – information resources, that are all interlinked and should not be considered in separation. Librarians have enough professional capacities to help doctors express their information needs to be searchable by themselves and/or third party (intermediary), to cross the key barrier in information searching – lack of time, to help combine a suitable search strategy with the identification and access to appropriate information resources. One issue of concern is that when information is not located due to an ineffective search strategy, the end users might think it does not exist, leaving them with a mistaken impression about the contents and coverage of the databases. Information professionals should maintain sufficient skills to assist inexperienced users in

terms of converting the clinical question to a searchable strategy, using adequate search terms, suitable databases, right connectors etc. This intervention could help doctors realize that their search did not fail due to a lack of relevant evidence, but rather owing to errors in the search strategy.

Ellis et al.¹¹⁾ have arrived at similar conclusions, when analyzing user-intermediary interactions during mediated searching. It is clear from their research that the intermediary helped the users to identify search terms more clearly and focus on the references obtained. In most cases, the users and intermediary considered the communication process very effective and the interaction taking place during online searching to affect the user perception of the problem. In general, the users gave a positive evaluation of the retrieved answers in terms of focus, completeness and novelty. It may be alleged that the librarian–clinical researcher interaction in our case study was in a good agreement with the findings of the above paper.

Lessons Learned

- It seems difficult to maintain the traditional concept of mediated literature searching face-to-face with the improving search skills, self-sufficiency of health information seekers and plethora of information sources available.
- Literature data as well as our experience confirm that there is still much space left for librarians and information professionals to actively enter and influence the process of medical information retrieval, because:
 - Information seeking is time-consuming;
 - Search skills of end-users are limited;
 - Library users expect new services, eg.
 - Retrieval and integration of data from multiple information sources.
 - Interpreting validity of retrieved documents.
 - Assistance in preparing manuscripts for scientific publishing.
 - If librarians are to have a place in their workflow, it must be in the users' context.
- „Think globally–Act locally“ - *Palacky University Medical Library goals&perspectives*:
 - Maintain and further enhance professional capacities for mediated searching.
 - Bring back popularity of mediated searching by introducing new features, eg. evidence-based search request, pre- and post-search interviews with users, management of results in concert with EBM principles, assistance in scientific publishing.
 - Marketing of the value-added services, "time-saving" aspect as a selling point.

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Acknowledgements

The authors would like to thank Dr. Dana Subova for technical assistance.

Appendix 1.

Palacky University Medical Library, Olomouc, Czech Republic

<http://knihovna.upol.cz/lf>

Search Request Form Proposal



Kindly fill in the details below and send the form to the Medical Library (klf@tunw.upol.cz)

* required information

Full Name:*

Job Title:*

Department: *

Contact Address:*

Phone Number:*

Email:*

Date:*

Search Question:

- Description**

- PICO format (search terms) **

Patient/Problem/ Population	Intervention/ Exposure	Comparison (if any)	Outcomes
			..

- Additional information (eg. exclusion criteria):*

.....
.....

Reason for Requesting Search:*

Patient care Research CME Teaching Publishing Congress
 Other (specify)

Date Range:*

Last 2 years Last 5 years Last 10 years All years Other (specify)
.....

Age Groups:

Infant Child(2-18) Adult(19-44) Middle-aged&aged(45+) Aged (65+)

Gender:

Male Female Both

Language:

Czech English German French Other (specify)

Publication type preferences:

Reviews Research articles All

Delivery deadline:*

.....

Delivery mode:*

Email Regular mail Collect from Library:

Pre- and post-search interviews:

To help the library staff improve quality of the services, would you like to participate in:

- *Pre-search interview* YES NO
to brush-up the query, finetune terminology, select databases;
- *Post-search interview* YES NO
to assess the results, verify fulltext availability, sort documents by publication types etc.

Comments:

For more information kindly contact:
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