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Title:

In defence of librarian-mediated searching: a skill that supports evidence-based research and practice.

Abstract

Librarians at the Bracken Health Sciences Library, Queen's University, Canada support evidence-based research and practice in a number of ways. Teaching sessions are offered as part of the curricula in Nursing, Medicine and Rehabilitation. Librarians also teach accredited sessions as part of the Faculty Development offerings. Although there is a strong emphasis on teaching end-users to perform effective searches, librarians still perform a large number of literature searches, provided at no cost, for faculty and for the clinical staff at seven partner institutions in Southeastern Ontario. Research teams often ask librarians to become part of their systematic review research projects or to present jointly at professional conferences. This paper will posit that literature searching continues to be a critical part of librarians' work, that it is a vehicle that demonstrates librarians' skills and encourages faculty and clinicians to seek our expertise to support evidence-based research and practice.

1) Introduction

Mediated searches, those carried out by librarians for library users, are sometimes referred to as expert searches. At the Bracken Health Sciences Library, Queen's University at Kingston, mediated searching is offered as a core, no-fee service to faculty and clinical staff. Bracken is an academic health sciences library but, due to its outreach partnerships with hospitals and health units in the region, it in effect acts as a special library when it comes to the provision of librarian-mediated literature searches. Because this library has taken on roles previously ascribed to special libraries, the librarians are realizing that there is tremendous value in developing expert searching skills. Faculty and clinicians contact the library regularly and appreciate the rapid response to their enquiries. This paper will demonstrate that the relationship between librarian and health care professional can develop beyond that of service provider and information requester and lead to partnerships in major research projects and publications.

2) Literature Review

Until the mid 1980s, computer-based searching was almost exclusively performed by specially trained medical librarians. In the late 1980s user-friendly search interfaces were developed and, by the late 1990s, the databases themselves were easily accessible on the Internet (Role of expert searching, 2005). MEDLINE became freely available on the World Wide Web in 1997. These developments resulted in a tremendous increase in end-user searching and a well-documented corresponding decrease in demand for mediated literature searches. At the University of Illinois at Chicago Library of the Health Sciences (Peoria) mediated searches accounted for 9% of the types of questions asked at its service points in 1990/91; by 2004/05, they made up only 0.2% of transactions (De Groot *et al.*, 2007). At Yale's Cushing/Whitney Medical Library, mediated searching decreased by 96% between the years 1986 and 1996 (Grajek *et al.*, 1997). At the Memorial University of Newfoundland Health Sciences Library, the demand on Computer Search Services dropped from 1754 search requests in 1987/88 to 164 requests in 1998/99 (Barnett *et al.*, 2001).

The early days of online searching saw the stature of health sciences libraries rise. Mediated online searches provided a great deal of job satisfaction (Atlas, 2000). As end-user searching became more prevalent throughout the 1990s, especially after web-based systems were widely available, the role of librarian shifted from searcher to trainer (Atlas, 2000; Role of expert searching; 2005).

Users usually prefer to do their own searches first (Crea *et al.*, 1992; Barnett *et al.*, 2001) and then ask for mediated searches if they are unhappy with the results. Health professionals who receive training are satisfied with their search results only 66% of the time (Brettle *et al.*, 2001). Medical staff are often unwilling to spend a long time searching for information (Urquhart *et al.*, 2007). Over half of health sciences library users surveyed rate the importance of instruction equally with the importance of search services (Barnett *et al.*, 2001). Moreover, providing information literacy instruction does not reduce the volume of mediated-search requests (Brettle *et al.*, 2006).

The literature shows that librarians are better at finding information (McKibbin *et al.*, 1990) and do so in less time than health professionals (Brettle *et al.*, 2006). Because end users are seeking speedy results, they often turn to quick search box-style search engines on the open web, in particular, Google and Google Scholar, where the quality of search results is often not acceptable (Giustini, 2005).

The evidence-based movement has "created a renewed interest in the knowledge base and skill set required for expert literature searching and expert consultation" (Role of expert searching, 2005). The Medical Library Association (MLA) urges that "health sciences librarians must continue to play a significant role in the expert retrieval and evaluation of information in support of knowledge-and evidence-based clinical, scientific, and administrative decision making at all health institutions" (Role of expert searching, 2005).

The MLA has identified areas where well-planned expert literature searches have a high impact. They include: complex or unusual cases, research design support, support of basic science research, institutional support of patient safety, institutional support of litigation, key business and academic decisions, support of scholarship and grant applications, and best practice identification and development (Role of expert searching, 2005).

Health sciences librarian-mediated searches are shown to contribute to clinical decision making and to improved patient care (Mathis *et al.*, 1994). Information supplied in literature searches rarely impacts diagnosis but in about 50% of cases it contributes to therapy, treatment plan, patient quality of life, and minimisation of risks of treatment (Urquhart *et al.*, 2007). An earlier Michigan study found that 85% of respondents indicated that a mediated search had been of value to patient care, and 56% indicated that they had handled the case differently as a result (Mathis *et al.*, 1994).

Since 2004 the demand for librarian-mediated literature searches has increased significantly at this academic library. Informal comments from colleagues seemed to indicate they were surprised by the amount of work performed by Bracken librarians completing literature searches for users. The authors wanted to find out how many other Canadian Medical School libraries provided literature searching and were hoping to convince our colleagues in libraries that don't, that this is a valuable service, both for library users and for the librarians' maintenance of competence. In addition, the authors were hoping to find a link between the provision of literature searching and increased research collaboration with faculty.

3) A survey of Canadian medical school libraries

To determine current practices regarding mediated searches in Canadian academic health sciences libraries, the authors distributed an online survey (via SurveyMonkey.com, Appendix A) to the seventeen members of the Association of Faculties of Medicine of Canada. This survey asked about the nature and scope of the literature search service that each institutions' librarians provided, the types of educational services they offered, and the research projects in which librarians were involved.

Of the seventeen survey requests sent, 12 libraries provided a response, resulting in a response rate of about 71%. Seven or 58% of the institutions said they were performing literature searches for at least some subset of their users, with the remainder claiming insufficient staffing, high workload and minimal demand as the major reasons for not providing this service. All libraries performing literature searches supplied them for their faculty, clinical staff and graduate student/resident user groups, and a majority also included undergraduate students and the general public. These respondents said that they would provide literatures searches for faculty members at least occasionally at no charge, and conversely, those supporting their community users with this service usually charged them for it. Although the libraries in this group are providing literature searches for their users, only 2 of 7 respondents indicated that they offered value-added services such as appraisal or synthesis of search results.

The seven institutions that do offer literature searches fall into two main categories: one small group of two libraries, of which Bracken Library is one, with a larger complement of librarians involved in the task and producing at each site over 100 literature searches per librarian in 2007. The other group consists of five libraries with 2 to 5 librarians who performed between 2 and 41 literature searches per librarian in the same year. This certainly reflects the workload issue mentioned by the libraries that do not provide literature searches. It should be noted that even the high number of 100 searches per librarian in 2007 equates to a little over 2 searches per week, per librarian.

The authors were interested to see if there was a connection between literature searching for users and teaching activities. All respondents said they were involved in many types of educational programs for their users, with the most common types listed being "Individual consultations" (100%), "Curriculum-integrated sessions" (92%), and "Faculty development sessions" (83%). Echoing the literature (Brettell *et al.* 2006) the survey results do not seem to make a connection between the types of education sessions offered and whether

an institution provides literature searches, who they provide them to, or how many they complete. Almost all twelve respondents offer all types of education sessions, whether they provide literature searches or not. (Table 1)

Type of Educational Activity	Libraries providing Literature Searches (n=7)	Libraries NOT providing Literature Searches (n=5)	Total Libraries (n=12)
Drop-in sessions	5 (71%)	3 (60%)	8 (67%)
Sign-up sessions	5 (71%)	4 (80%)	9 (75%)
Curriculum Integrated	7 (100%)	4 (80%)	11 (92%)
Faculty Development	6 (86%)	4 (80%)	10 (83%)
Individual Consultations	7 (100%)	5 (100%)	12 (100%)
Attend Problem-Based Learning groups	2 (29%)	1 (20%)	3 (25%)
Prepare Assignments	4 (57%)	3 (60%)	7 (58%)
Mark Assignments	5 (71%)	4 (80%)	9 (75%)
Attend Curriculum Meetings	6 (86%)	2 (40%)	8 (67%)

Table 1: Number of Libraries Reporting Educational Activities

Interestingly, the only possible correlation was that the libraries providing literature searching to faculty indicated more frequently that librarians attended faculty curriculum meetings. It would be interesting to increase the sample size to find out if this correlation exists elsewhere. In the future, it might also be informative to look at how many education sessions are taught and see whether the numbers correlate to the numbers of librarian-mediated literature searches.

The survey also asked about the librarians' involvement with faculty research projects. The results of the survey appear to show a relationship between literature searches being done for faculty (and other groups) and the degree of collaboration with faculty on systematic reviews and clinical, education and basic science research projects. Three out of the five members not preparing literature searches reported being involved in any of these kinds of activities, two of these worked with faculty in one research area and one library reported working in two research fields (average of 1.3 research areas). The "literature searchers" on the other hand include only one library that did not collaborate with faculty in these ways, while two libraries participate in all four types of projects, two report collaborations in two research areas and two more in one research area (average of 2.3 research areas). (Table 2)

Research Areas	Libraries providing Literature Searches							Libraries NOT providing Literature Searches				
	1	2	3	4	5	6	7	1	2	3	4	5
Systematic Reviews		x		x	x	x	x	x				x
Clinical Research		x		x	x							
Education	x	x			x		x		x			
Basic Science		x			x				x			
None			x							x	x	

Table 2

Libraries providing literature search services are involved in more research collaborations with faculty

The final question of the survey gathered data on whether librarians were leading research projects (including sabbaticals) in the various domains of evidence-based librarianship as defined by Crumley and Koufogiannakis (2002). Again, the non-literature searching libraries almost exclusively reported no leadership of these projects, with only one library listing one area of research endeavour. Of those that were providing literature searches, only 2 out of 7 reported no projects of this sort and those who did report activity were working in a wider variety of research areas.

4) What happens at Bracken Health Sciences Library

The Bracken Health Sciences Library (henceforth, Bracken) serves the Schools of Medicine, including Life Sciences Departments, Nursing and Rehabilitation Therapy within the Faculty of Health Sciences at Queen’s University. Other campus users include students and faculty from other related departments such as Psychology, Engineering and Kinesiology. Bracken also provides services to a number of outreach partners. These partners are hospitals and other health care institutions in the region that contract with Bracken for a variety of library services including reference and research, document delivery, licensing of databases and electronic full-text resources, and training on the use of these resources.

Librarian-mediated literature searching is one of the primary services offered by Bracken. The service is offered to Queen’s University faculty, postgraduate medical students, and staff of our outreach partner institutions. Searches are performed by all eight librarian positions currently on staff at Bracken. Table 3 shows mediated search statistics for the last 10 years. The numbers reflect the findings in the literature showing low numbers during the years end-users were expected to be performing their own searches and librarians believed that training users was the best approach to successful search results: after all, the end-user knows best what he/she is looking for. The number of literature searches began to increase after Bracken started serving hospital staff at the above mentioned partner institutions. Over the next few years, the librarians realized that clinicians do not have the time to look for the needed information, and in fact have no time to learn how to do the searching. The complexity of information systems, and the increasing number and fragmentation of available resources made the entire process even more cumbersome. At the same time, the movement of evidence-based practice was creating an imperative for information seeking, particularly information from reliable and trustworthy sources.

	Literature Searches Completed	Assignments Marked
1998/99	32	472
1999/00	12	511
2000/01	21	415
2001/02	15	769
2002/03	51	1410
2003/04	115	1544
2004/05	513	1264
2005/06	630	1052
2006/07	1013	971
2007/08	872	913

Table 3: Literature searches and assignment marking at Bracken Library.

Since the outreach partnership contracts included mediated literature searches, individual clinicians were not billed for the searches. At the time, Bracken had been charging a small fee to faculty and graduate students who requested a search, and it was decided to remove this fee, as of May 2002, to allow librarians to respond to all requests without first establishing if the requester was entitled to a fee- or free-based transaction and to simplify the library's accounting process.

Over the past eight years, Bracken librarians have developed considerable searching expertise, not only due to the number of searches performed, but also due to the large number of student assignments that are marked as part of the curriculum. (Table 3). Students in Life Sciences, Medicine, Nursing and Rehabilitation Therapy all perform literature searches that are evaluated by the librarians. Some of these are simple searches prescribed by the assignments, but most are based upon an individual student's personal research project. Marking one of these search strategies involves the same skills as performing a complex literature search in many databases and information sources. Librarians provide feedback on appropriate additional sources that the student may have omitted, on appropriate subject headings and search strategies that would lead to additional results, and even on how best to formulate their research question.

Bracken librarians work closely with faculty to design these assignments and marking rubrics have also been developed to ensure that the assessment is related to the students' level of searching expertise (e.g. first year Nursing students are not expected to demonstrate the same level of searching as Masters students in Rehabilitation Therapy). This liaison role has also helped faculty appreciate librarian expertise and, the authors believe that, coupled with the mediated search service, this has resulted in a number of requests to include librarians in research projects. In recent years two librarians have been asked to join research teams in the School of Nursing, working on clinical and education research projects. One librarian has just begun a major involvement with the School of Nursing working on a number of initiatives for the Canadian Partnership Against Cancer. Another librarian is a team member for an extensive systematic review to be included in the database of the Johanna Briggs Collaboration (the nursing counterpart of the Cochrane Library), and she also worked on a grant proposal to the CAOT (Canadian Association of Occupational Therapists) / COTF (Canadian Occupational Therapy Foundation) for a Critical Literature Review \$5,000 grant. Multi-faceted literature searches, performed over many days, were undertaken by Bracken librarians to support a number of health sciences researchers. In a separate instance, having keen literature search skills led to an important publication. Looking at the recommended text for the Rehabilitation Therapy students, the liaison librarian noticed that the section on how to perform a literature search was not very accurate. She contacted the author of the chapter who asked her to co-author the revised chapter for the new edition of the textbook.

Mediated literature search topics reflect the diverse nature of the Library's clientele. Faculty, physicians, residents, nurses, graduate students, occupational and physical therapists, hospital administrators, psychologists and social workers are among the clients served. The following are examples of the wide range of literature search topics:

- Transition from hospital to long-term care – patient experiences
- Concurrent mental disorders – relapse prevention in youths
- Causes of protein-losing enteropathy following Fontan procedure in children
- Evidence-based practice for social work
- Potential health effects related to background radiation levels in groundwater
- Occupational health and safety of using cytotoxic drugs in home care
- Effectiveness of using mannequins to assess CPR skills.

At the moment this library does not offer synthesis or appraisal of the search retrieval. Occasionally the librarians will select the most obviously relevant articles to be printed when the requester needs the materials very promptly. Normally, after initial results are sent via email, it is possible for the requester to contact the

librarian if the search requires some refinement or a slightly different approach. The librarians keep a central record of past searches to enable a quick retrieval in the event a requester asks for an update six to 12 months later.

5) Conclusion

Performing literature searches helps librarians develop and maintain skills in the use of databases, in locating grey literature, and in effective research of web resources. Having to face a wide variety of topics also increases search skills especially when the concepts are multi-disciplinary and may take the searcher away from the more common search tools in the health sciences. With this breadth of knowledge, the librarians collectively have a “finger on the pulse” of this library’s users’ research, teaching, and clinical information needs. As well, because the librarians have developed expertise in using a variety of information resources, the authors believe that they are de facto better teachers on how to use these resources, better at preparing assignments based on the resources, and better at assessing the students’ searches for their class assignments.

In these times of ubiquitous information resources, when some librarians doubt about the future of librarianship, the Bracken librarians believe that mediated search services are a critical part of this profession’s work. Health sciences professionals need access to reliable information that often goes beyond that found in point-of-care resources. Health librarians need to support the needs of their clientele, and this can be achieved by developing and maintaining literature search expertise. There is also an increasing need to support faculty research and grant requests. Appropriate and extensive literature searches need to be included in systematic reviews of the literature which have become an emerging publication area since health sciences faculty and clinicians understand the value of quick and appraised knowledge transfer from research to application. For these many reasons, Bracken Health Sciences Library will continue to provide mediated searches in the foreseeable future, alongside a very busy education programme offered to all student groups and faculty served by this library.

The survey of academic health sciences libraries in Canada shows that very few libraries are involved in preparing librarian-mediated literature searches. The literature surveyed supports the need for this service and the Medical Library Association “urges” librarians to become or to maintain their skills as expert searchers. The authors’ survey was quite small and performed in a short timeframe. What is the picture elsewhere? Have libraries become so short-staffed that this service is one that could be cut or reduced given the rise in end-user searching? Are librarians losing, or not gaining, the necessary skills to be considered expert searchers? A deeper and wider survey may bring these answers. The authors would be interested in collaborating on such an endeavour.

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Appendix A: Survey Questionnaire

A. Literature Searching

1. Do librarians at your library perform literature searches for users?

YES (please go to #2)

NO (please complete the comment box and then click "Next" at bottom of page)

If NO, please give the reason(s) that you do not:

[Empty text box for reasons]

2. IF YES, please select all that apply:

	At no cost	For a fee
Faculty	<input type="checkbox"/>	<input type="checkbox"/>
Clinical staff	<input type="checkbox"/>	<input type="checkbox"/>
Graduate Students/residents	<input type="checkbox"/>	<input type="checkbox"/>
Undergraduate students	<input type="checkbox"/>	<input type="checkbox"/>
General public	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

[Empty text box for comments]

3. How many librarians are involved in performing these searches? _____

4. How many searches are performed per year?

2005 _____

2006 _____

2007 _____

5. Do librarians provide value-added services such as appraisal/synthesis of search results?

Yes

No

Comments

[Empty text box for comments]

NEXT

B. Education services

1. Is your library involved in education activities?

Yes – please continue below

No – please give reason(s) in box below, then Go to the last page

Reason(s) for not teaching:

2. If YES, please select all that apply, on a regular basis:

Drop-in sessions on various topics/resources

Sign-up sessions on various topics/resources

Curriculum-integrated sessions

Faculty development sessions

Individual consultations (beyond Reference work)

Librarians participate in PBL sessions

Librarians prepare assignments

Librarians mark assignments

Librarians attend curriculum meetings

Other (please specify)

NEXT

C. Research involvement

1. Are librarians involved in collaborating with faculty on: (please select all that apply)

- Systematic reviews
- Clinical research projects
- Education research projects
- Basic sciences research projects
- None of the above

Other (please specify)

2. Are librarians leading research projects (including sabbaticals) in the following EBL domains? (please select all that apply)

- Education
- Collections
- Management
- Reference/Enquiries
- Information access and retrieval
- Marketing/Promotion
- None of the above

Other (please specify)