Teaching in medical libraries – an analysis of publications from Europe in Medline

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Abstract

Introduction
Teaching is one of the key functions in medical libraries. Accordingly it can be assumed that there are a lot of publications on teaching in Medline. As members of EAHIL are looking forward to closer cooperation in the educational field, the publication activity in Europe is of special interest.

Methods
A search in Medline was carried out by using the focused MeSH terms TEACHING and MEDICAL LIBRARIES since year 2000. The results were sorted geographically (Europe, USA, rest of the world) and analysed by publication types and content.

Results
Out of 92 references only 23 were published by Europeans, 62 by Americans and 7 by the rest of the world after the duplicates had been omitted. These results are mainly based on the indexing of Medline. A surprisingly small number of publications were of better quality such as systematic reviews, meta-analysis or randomized controlled trials: in Europe two systematic reviews and in USA one randomized controlled trial. The themes of the publications are further analysed and discussed.

Conclusions
The proportion of European publications on teaching in medical libraries is very low in Medline. Cooperation within research of educational matters in medical libraries is highly recommended. Publications of high quality will help the libraries to develop teaching practices and thus implement evidence-based practice.

Key words: Teaching; Medical libraries; Librarians; Europe
Introduction

The significance of teaching in medical libraries has strongly increased within the last three decades as it is currently assumed that the students and the specialists in working life do know the basic techniques of searching information and the relevant information sources. User attitudes are developing towards an end-user literature searching. Information specialists are generally seen as crucial agents in training and providing end-user assistance. As the amount of medical information is growing enormously, new databases emerge and search techniques change all the time; hence medical students and practicing doctors must continuously keep their search skills up to date. In teachers’ role health care librarians can bring order to the chaos which health care professionals face while coping with the barrage of available information.

On this basis it is utterly important that teaching in medical libraries is sufficient, professional and of high-quality. This requires that the library professionals have sufficient pedagogical knowledge in order to perform this important task. Do librarians have deeper knowledge of pedagogical models, different learning theories and educational tools? The traditional library instruction must be re-evaluated. “Learning by doing” should be recommended rather than lecturing passive students. Learning strategies that support lifelong learning should be encouraged.

One way to get updated information of teaching in libraries is to find high-quality articles in which library professionals share information, tell about successful teaching experiences and share good evidence-based practice of educational discoveries. The publications reflect the teaching trends: What issues are recent and of special interest? Are there new discoveries that should be shared with colleagues? It is imperative that librarians are encouraged to publish on even small but successful research projects. Only by sharing experiences can new methods be implemented in the best possible way in the libraries and thus put evidence-based practices into effect.

Methods

A search in Medline was carried out by using the focused MeSH terms TEACHING and MEDICAL LIBRARIES since year 2000. The results were sorted geographically (Europe, USA, rest of the world) and analysed by publication types and contents. The contents of the publications is analysed and compared Europe versus the rest of the world by adding to the basic search strategy further restricting MeSH terms such as Librarians, teaching/methods, problem-based learning, distance learning and communication. The target groups of teaching in medical libraries were also analysed. In addition the journals where the articles were published were examined.

Publication activity in Europe and rest of the world

Out of 92 references only 23 were published by Europeans, 62 by Americans and 7 by the rest of the world after the duplicates had been omitted. These results are mainly based on the indexing of Medline. However it turned out that in the “rest of the world” group some articles were not indexed properly by country; however this deficiency was taken into account and the transfers to the right groups were made. Out of the 23 European articles 16 were published by authors who have English as their native language and who come from e.g. United Kingdom and Ireland. MEDICAL LIBRARIES and TEACHING –publications are clearly dominated by Anglo-American authors. As the search is of very narrow topic no generalizations can be made but perhaps this reflects a trend. The reason for the dominance of United Kingdom in European publications is naturally the language advantage as almost everything is published in English. Library professionals with other
native languages do certainly accomplish as much research work and teaching in libraries but there is a significant threshold to start writing in English. Foreign-language authors’ English texts must mostly be checked by translation professionals and it is an economic question as translation is expensive. Perhaps EAHIL could offer help to foreign-language European authors who have good ideas for articles but lack the required language skills. EAHIL could gather a group of English speaking voluntary “proof-readers” for stylizing texts for publishing. Perhaps the proof-readers could be offered a possibility to be one of the authors depending on their contribution. In this way the international collegial cooperation could be activated.

The seemingly low publishing number of Europeans in Medline can certainly be explained by the fact that European medical library professionals prefer to publish in their own professional journal *Journal of the European Association for Health Information and Libraries* (JEAHIL) which is unfortunately not indexed in Medline. European librarians who are not native English speakers do certainly publish actively in their own national professional journals. These journals are mostly not included in Medline. So the real difference between European and American librarians publishing activity is not as significant as one might assume on the basis of Medline.

**About the journals in which the articles on “medical libraries and teaching” are published in Medline**

The articles about Medical libraries and teaching are published in highly concentrated certain journals targeted to the library professionals. This was to be expected: 82.61% of the European articles were published in *Health Information and Libraries Journal*. Only one article was published in *Journal of the Medical Library Association*, one in *Revue Medicale de Liège* and one in *Medical Teacher*. Even if it is most useful to share experiences and tell about different research projects to colleagues in library journals it would be desirable to publish across professional borders. A journal like *Medical Teacher* would bring more visibility to librarians acting as teachers. This is important because libraries must continuously prove their competence and expertise for maintaining their position, personnel and appropriations. Publishing across professional borders may also add up-to-date knowledge of librarians’ teaching skills into the clinical environment. This could encourage to integrating search skills training into the medical substance-specific education which would be optimal to medical students. European medical library professionals do actively publish in their own professional journal JEAHIL. It is unfortunate that this excellent journal is not included in Medline. In JEAHIL there are a lot of important articles on teaching in medical libraries but they cannot be searched in Medline unlike the *American Journal of Medical Library Association* (JMLA).

The American authors publish articles in two main library professional journals: *Journal of Medical Library Association* 17 articles and *Medical References Services Quarterly* 27 articles. There were totally 62 articles published by Americans. The rest were published in different, mostly clinical journals. A positive discovery was that articles were found also in the *Journal Family Practice*. Information on teaching and training opportunities in medical libraries should reach primary health care personnel; general practitioners who usually do not get any education on searching databases and new information sources after graduating and leaving the universities. Very little was published about nurses and their training in medical libraries. However, search skill training courses are certainly arranged for nurses and other health care personnel in medical libraries. Only one article was published in *Clinical Excellence for Nurse Practitioners*. Nurses are an important target group that are looking for training in medical libraries, and it should not be neglected.
The quality of published articles on teaching in medical libraries

A surprisingly small number of high-quality articles such as systematic reviews, meta-analysis or randomized controlled trials were found in Medline. Since year 2000 two systematic reviews have been published in United Kingdom and one randomized controlled trial in the USA. Also a couple of articles were indexed as “randomized controlled trials as topic”. One of the European systematic reviews covers librarians’ professional competence in teaching. The problem is that there is limited evidence to demonstrate that the information literacy training health librarians provide, is effective in improving clinicians' information search skills or has an impact on patient care. Selecting an appropriate measure to evaluate the impact of training is a key factor in carrying out any evaluation. This systematic review provides guidance to health librarians by highlighting measures used in various circumstances, and those that demonstrate validity and reliability (1). These kind of reviews examining measures for evaluating library services are extremely important.

The other European systematic review was on effective e-learning for health professionals and students. Barriers and solutions are discussed in this article (2). Distance-learning is one of the most popular topics related to Teaching in Medical Libraries.

The American randomized controlled trial is about interactive tutorials in medical library instruction (3). And the interesting result was that a clear majority of the participants preferred interactive tutorials to passive tutorials. Generally speaking the subjects distance learning and computer-assisted instruction have been quite popular in publications on teaching in medical libraries.

There is without doubt a need for more systematic reviews. A systematic review is a literature review focused on a research questions that aim to identify, appraise, select and synthesize all high quality research evidence which is relevant to the question. Systematic reviews are not limited to medicine and are quite common in other sciences where data are collected, published in literature, and where an assessment of methodological quality for a precisely defined subject would be helpful. A common belief is that systematic reviews are prepared only of randomized controlled trials. However, library professionals should remember that reviews can be prepared of observational studies too. The Cochrane Library has an approach for producing systematic reviews of observational studies. There are also a lot of tools for assessing quality and susceptibility to bias in observational studies. This makes it possible to write reviews of a variety of topics about observations in a library environment.

The popularity of different topics on teaching in medical libraries

What were the most popular topics on teaching in medical libraries in the European articles in Medline? As could be expected librarians discussing their professional competence and role and evidence-based practices. The pedagogical themes problem-based learning, distance education, educational models, computer-assisted introduction were popular and as were educational measurement. It was good to notice that six articles were published on the topic program evaluation, as it is really important to share these experiences with colleagues.

Very little, almost nothing was published on medical postgraduate education (including health care professionals in primary health care) or nurses as teaching target groups. Exactly zero results arose with terms marketing and consumer satisfaction which both are important topics when planning, evaluating and carrying out teaching activities in medical libraries. It is also unfortunate to notice that in Medline nothing was published from a research point of view in European medical libraries.
(MeSH-terms science/education or research) which would be an important factor in developing library activities to the right direction.

Americans published significantly more on the “classical topics” described by MeSH terms “Information storage and retrieval” and “bibliographic or factual databases”. There were also a lot of articles on communication and medical education unlike in European articles. Evidence-based practice and evidence-based medicine were also objects of interest. Librarians were popular writing topics in American articles as well; there were 16 articles indexed with the term librarian of the 62 American total search results. For the American authors problem-based learning appeared to be much more interesting topic than distance learning. The search results also showed that the learning process has been much more common writing topic in USA than in Europe.

The effectiveness of teaching in European medical libraries

The librarians’ professional competence was mostly discussed in the articles which evaluate the efficiency and success of training. A critical appraisal on effectiveness of training health care professionals in literature search skills is published in United Kingdom (1). The article raises one important aspect: the measures used in evaluation must be tested for the key criteria of validity and reliability. By using appropriate measures the effectiveness of teaching and also the professional competence of librarian teacher can be objectively evaluated and compared with colleagues. In this way international benchmarking becomes easier – the good results could be used as models of efficient teaching.

Another important article evaluated the impact of library user training programs across the Thames Valley Strategic Health Authority in the UK (4). The major findings of this research were that training health-care personnel in the use of electronic resources impacts positively on their information literacy skills and confidence, and that the information available to them is considered to have potential value across health-care practice. It would be most interesting to find out how the pedagogical skills and knowledge of new educational models of librarian teachers influence teaching results. This could be carried out by comparing the effectiveness of teaching given by e.g. 10 librarians with pedagogical education and on the other hand by librarians without any pedagogical studies. In this way the need and effects of library professionals’ pedagogical studies could be estimated.

Nordic countries published a joint article International trends in health science librarianship (5). The authors carried out a survey for librarians in Sweden, Denmark, Norway and Finland to identify common developments in their countries. A focus on pedagogy was seen as the most important trend. This hopefully will influence education of librarians and information specialists. A good evidence-based practice demands pedagogical skills of library professionals today and even more so in the future.

Articles on teaching methods and pedagogical theories published by European health library professionals

Teaching methods in European medical libraries is a popular topic in Medline. Ten articles out of a total of 18 European articles are indexed with MeSH term Teaching/methods. These articles include themes such as problem-based learning (PBL), distance education, computer-assisted introduction, educational models and educational measurement. Since long problem-based teaching has been the most common method in medical libraries, and it is initially derived from clinical education. Appearing at the end of the 1960's, it has been adopted by medical schools world-wide. On the basis
of this it can be assumed that PBL has been particularly studied. However, it seems that distance education and kind of closely related concept computer-assisted introduction interest the European medical librarian teachers as much. This tells us about a trend of teaching methods: a huge part of the learning process takes place on the Internet and by the help of distance courses. This change demands new skills and knowledge of training librarians.

Chalon P. et al. (6) from Belgium has published an interesting article about problem-based learning, description of a pedagogical method leading to evidence-based medicine. The article reviews the theoretical basis and process of PBL, emphasizing teacher-student relationship and discussing the suggested advantages and disadvantages of this curriculum. Students in PBL programs make greater use of self-selected references and online searching. From this point of view, PBL strengthens the role of health libraries in medical education. Another European article examines if primary care teams have easy access to information in GP training practices from the point of view of problem-based learning (7).

Booth A. et al. published in 2003 an interesting paper (8) about “Working together: supporting projects through action learning” in which it was found that active learning is a good method also for staff development in medical libraries. The article is a survey of a problem-based learning method, action learning which provides group-based means of meeting skills deficits associated with project management and delivery. Action learning is feasible in meeting the training needs of a project staff. It may also provide means of meeting the shared learning needs of communities of practice within a virtual environment. Knowledge management requires exploiting shared learning across projects.

Distance education (MeSH) and conceptually closely related term computer-assisted instruction (MeSH) are also popular pedagogical topics. There is one European systematic review from Northumbria University in North of England. It is about effective e-learning for health professionals and students — barriers and their solutions. A systematic review of the literature — findings from the HeXL project (4). The main barriers are: requirement for change; costs; poorly designed packages; inadequate technology; lack of skills; need for a component of face-to-face teaching; time intensive nature of e-learning; computer anxiety. A range of solutions can solve these barriers. The main solutions are: standardization; strategies; funding; integration of e-learning into the curriculum; blended teaching; user friendly packages; access to technology; skills training; support; employers paying e-learning costs; dedicated work time for e-learning. The authors argue that librarians can play an important role in e-learning: providing support and support materials; teaching information skills; managing and providing access to online information resources; producing their own e-learning packages; assisting in the development of other packages.

A comparative study from UK has been published with title “Availability of a virtual learning environment does not compensate for the lack of a physical facility” (10). This articles has an interesting conclusion. The research suggested that reduced access to hard copy books and journals was not compensated for by increased use of electronic library resources. As expected, training,
ease of navigation and access to the virtual learning environment were very important to student satisfaction.

On the basis of these European articles it can be concluded that librarians can in many ways play an important role in teaching health informatics skills both in regards of e-learning and being physically present in the class rooms. The learning results depend on how skilled the teachers are and how well they know pedagogics. Distance learning does not compensate for the lack of a physical facility.

Program evaluation

All kind of program evaluations in medical libraries are worth sharing with colleagues. Six articles on program evaluation concerning teaching in medical libraries were published in Medline by Europeans and five articles by Americans. These numbers tell that Europeans were more active to share experiences about program evaluation with respect to the relative number of publications.

Europeans evaluated programs on the following topics: Information literacy in continuing professional development of medical practitioners; information skills training in health libraries; impact of library user training programs; effective e-learning for health professionals and students; studying health information from a distance; supporting projects through action learning (working together). One comprehensive article that deserves recognition is “Evaluating the impact of library user training programmes across Thames Valley Strategic Health Authority in the UK” (4). The object was to assess whether information literacy skills training taken up by health professionals (a total of 487 health professionals) impacts on their confidence and skills in using electronic sources of health information. The remarkable and positive results from librarians’ point of view was that training health-care personnel in the use of electronic resources impacts positively on their information literacy skills and confidence, and that the information available to them is considered to have potential value across health-care practice.

The American titles about program evaluation are much more original and exciting such as: An individualized hybrid strategy for assessment in library-based instruction; development of a post-master’s online certificate in health sciences librarianship; Peer Tutor Project; Use of MedlinePlus by former peer tutors and the adults they taught. The article about the use of an audience response system in an evidence-based mini-curriculum is an excellent example of how librarians and clinicians teach together the evidence-based principles and techniques for searching literature (11). An optimal pedagogical solution is multi-professional teaching activity. The teachers followed the problem-based learning principles: clinical search questions arose from students’ patient encounters. A follow-up session two months later reinforced Medline principles. To add the interactivity of the follow-up sessions, librarians used an audience response system to measure students' understanding of literature retrieval techniques and to gauge student preferences for information seeking on clinical topics.

These kind of useful evaluation studies can give new ideas to colleagues and serve as an example on how to implement good evidence-based practice in teaching. From the articles concerning program evaluations library professionals can learn more about evaluation measures to be implemented in assessing the results of own teaching efficiency. It is true that program evaluation articles are actively published in the European medical library professionals’ own journal JEAHIL. But publishing should be widened beyond this own journal as it is not so far included in Medline. Many research workers and other professional groups than library professionals miss these important and useful articles when searching only in Medline.
More about European absent topics in Medline that would be of great importance

Very little is published about graduate medical education or continuing medical education in medical libraries: in Medline only two European and four American articles were indexed with either term. However, medical practitioners obviously need some search skills training after graduating as searching technique may rapidly change and new information sources continuously arise. But at least in Finland it is possible for the dissertation writers, postwriters and postgraduates to participate in search skills training which mostly is voluntary. The GPs in primary health care are usually left outside the training possibilities.

Postgraduate education, teaching and medical libraries

Postgraduate education was almost non-existing as a topic among the articles. However, this topic is most important as searching techniques may rapidly change and new information sources continuously arise. Even if the search training in medical libraries is mostly aimed for first year medical students postgraduate students and graduated doctors in primary health care centers should not be forgotten. In Finland it is possible for the dissertation writers, postwriters and postgraduates to participate in search skills training but it is mostly voluntary. Often the training is integrated in some wider study program such as Clinical Research, Writing a dissertation or Writing Science literacy courses.

There was one European article asking a relevant question: do primary care teams have easy access to information in GP training practices (7). Librarians could have an important professional role in extending the teaching beyond the university world.

Marketing and teaching and medical libraries

For reaching search skills training beyond the university surrounding the librarians in medical libraries should know something about marketing and communication. Librarians are traditionally not experienced skillful marketers as they do not usually have this kind of education. However, marketing is needed when advertising the library training courses efficiently. No European articles with index term Marketing was unfortunately found. Unlike European medical libraries the Americans have published much more articles on communication combined with the keywords medical libraries and teaching. Communication skills and interaction between teachers and students is an essential element in teaching and learning processes.

Marketing is seen so important for medical libraries that JEAHIL had a special issue on promoting and marketing library services in 2012 but these articles are not indexed for Medline. Further WHO’s HINARI program has recently started an active email discussion about the ways how to market library services and knowledge of information sources and different courses. In HINARI email conversations many interesting suggestions have been made that could be noticed even in medical libraries trying to announce the training courses outside the universities (mainly primary health care professionals). Some of them are as follows:

- Communicate effectively: regularly update your website, send out emails, provide new staff orientation, talk up the library and its services through informal word of mouth, put up posters, have a key message (10 words or less that you want people to know about the library)
- We use Facebook and blog to inform our community about what we do
- We always have Journal clubs, Research forums, Writers week, Tip of the week (what’s new in the library) and Open Friday (to answer any research related questions like PICO development etc.; here Librarians are called upon to assist researchers in information search and retrieval as well as encouraging them to practically search EBM databases.

**Nurses and teaching in medical libraries**

It is amazing that almost nothing was published on nurses; about teaching them in medical libraries. Nurses use the libraries and participate actively in different training courses. The librarians should be encouraged to publish more on this subject. To teach library skills and database searching to nurses differs from that with medical students and physicians.

**Interdisciplinary communication**

Interdisciplinary communication and teaching in medical libraries is not a popular topic even if the subject is very important and current. More experiences would be appreciated on how librarians and clinicians teach the medical students together. It would be ideal to integrate the search skills training to other substance-specific medical education to support the work and studies of students.

**Consumer satisfaction and teaching in medical libraries**

Consumer satisfaction combined with teaching in European medical libraries produces zero result. This is unexpected as after every course and teaching event students usually give feedback in some form. More reviews should be published on student satisfaction of different teaching activities in the library. It would be interesting to compare consumer satisfaction with various teaching methods and draw conclusions of the factors that lead to good teaching results.

**Staff development and teaching in medical libraries**

It is surprising that only one article was indexed with the term Staff. It could be expected that teaching in medical libraries would also concern internal education for library personnel. It would be most interesting to learn how the education of staff is arranged and what kind of courses are available to keep library professionals updated specially with regards to pedagogical matters. Librarians’ knowledge of pedagogy varies from profound theoretic studies at university level to one-to-three day courses or international workshops, so therefore staff development in medical libraries is necessary.

**Research or library science**

Research in library science form the foundation for evidence-based practice in libraries. Basic research lays the foundation for discoveries and inventions and therefore also for the development of the library activities in the right direction. Wikipedia describes the contents of the academic courses in library science as follows: academic courses in library science include collection management, information systems and technology, research methods, cataloging and classification, preservation, reference, statistics and management; however, pedagogy is not mentioned.
Library science is constantly evolving, incorporating new topics like database management, information architecture and information management, among others. It is almost amazing to notice that nothing about pedagogy skills training is mentioned. As the trend is that library professionals act more and more as teachers it would be necessary that the academic courses in library science would include pedagogy or that pedagogy courses would be arranged as distance education specially tailored for library professionals. EAHIL could take an active role in this. Meanwhile publications on the research results in library science about pedagogical matters would be very much appreciated. For example teaching methods and tools, distance learning, tutorials, learning results, evaluation measures and so on. Unfortunately the combination research and teaching and medical libraries produced zero European publications. Only one European publication was found in combination library science/education and teaching and medical libraries.

Internationality or international cooperation

Only one article was found indexed with MeSH terms internationality or international cooperation combined with teaching in medical libraries. Americans had published nothing on these topics. This is disappointing in terms of EAHIL because it also means that there is not enough networking and common projects within EAHIL at least related to teaching. The only article on international cooperation theme is published by Nordic countries and tells about International trends in health science librarianship (5). However more articles should be published about ongoing international cooperation and results of successfully completed international projects. EAHIL could be a good basis for networking and finding foreign partners to establish educational cooperation. EAHIL could maintain a register of possible willing partners for publishing together with foreign colleagues. This is how more active publishing could be created. In this way language barriers could also be broken: with the help of the register willing partners with English as native language would be easier to find. Finally, again it must be noticed that JEAHIL has been active in publishing on international cooperation: there has been one special issue on international cooperation and networking in 2013 but these articles do not reach Medline searchers.

Conclusions

In Medline the proportion of European publications on teaching in medical libraries is quite low. It is remarkable as teaching activities have strongly increased within the last three decades. One important explanation is that European library professionals mostly publish articles in their own professional journal JEAHIL that is not included in Medline. However, more active publishing on pedagogical matters and sharing successful experiences with colleagues would encourage library professionals to experiment with new teaching methods and to implement them into the practice.

Another reason for the low number of European publications on teaching in Medline could be the language barrier. Foreign-language authors often have to use expensive translators to proof-read the language. Perhaps EAHIL could provide support by establishing a register of volunteer translators. In Medline the European articles on teaching are strongly concentrated to one journal: Health Information and Libraries Journal. The publishing should be extended beyond the library professional journals such as clinical or pedagogical journals. This would bring more visibility of teaching activities and projects in medical libraries. The very small number of “high-quality” publications is surprising as the medical librarians should know the value of systematic reviews and randomized controlled trials.

Systematic reviews can also be produced of observational studies. There are several viewpoints of teaching in medical libraries that would be of great importance such as postgraduate education,
marketing of library services, consumer satisfaction, staff development and articles of educational matters in library science. Hopefully there will be more publications on other professions than physicians as teaching targets, for example nurses who are active medical library users. The old truth is also true for medical libraries: publish, not perish!
REFERENCES


