Information-seeking by general practitioners
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Summary

This thesis is about how general practitioners look for medical information.

Chapter 1 provides an overview of the main aspects of information-seeking by general practitioners. The topics discussed are: the influence of the information explosion, general practitioners’ information needs, an information-seeking model, and the subjects who took part in our studies.

Chapter 2 describes the literature relating to the information sources general practitioners use. Analysis of the use of information sources by general practitioners is important for both practical and theoretical reasons. First, discovering the ways in which general practitioners handle information may point to opportunities for improvement. Second, such efforts may lead to improvements in the methods of literature research in general.

Eleven relevant research publications published from 1975 to 1992 were found. The data showed that general practitioners used colleagues most often as information sources, followed by journals and books. This corresponds with findings in other professions.

Several factors influenced the use of information sources by general practitioners, including:
- physical, functional and intellectual accessibility of the source;
- age and social context of the physician;
- participation by the physician in research or teaching;
- practice characteristics; and
- stage of the information-gathering process.

The publications studied suggested ways to improve information-gathering in the areas of computerization, education, library organization, and journal articles.

Chapter 3 reports on the management of bibliographic information by general practitioners involved in research. As a result of changes in information technology and the rapid growth of publications, methods of searching the literature have changed. Systematic searching of the growing literature has become very important. It is not known whether researchers in general practice search systematically, and whether they have incorporated computerized sources in their research practice.

We aimed to assess the methods of searching the literature used by general practitioners, and therefore interviewed eight general practitioner researchers, two information specialists and a psychologist working in primary health care organisations.

The results showed that general practitioner researchers began their search in their private book collections, or asked colleagues for information. Later in the search
process, they used computerized information sources. Medline on CD-ROM and the computer-based indexes of two Dutch journals were most widely used. The general practitioners found it difficult to locate the appropriate terms to describe their research questions. Knowledge of the methods of searching the literature, and the skills required to use the information sources efficiently were both lacking. There was a need for instruction and training in the use of information sources. General practitioners needed a telephone help desk where their questions could be answered adequately.

The conclusion is that general practitioner researchers search the literature unsystematically. Although computerized databases were being used, knowledge and skills related to the use of these information sources should be improved.

**Chapter 4** presents our study of the information use and needs of a sample of Dutch general practitioners. This included the collection of suggestions for the improvement of information access for patient care and continuing medical education. We used a questionnaire, sent to a randomly selected sample of 500 registered Dutch general practitioners, of whom 226 (45%) replied.

We were especially interested in:
- familiarity with evidence-based medicine;
- analysis of patient-specific questions arising in practice;
- use of information sources; and
- suggestions for improvement of information access.

The results showed that 45% of the respondents had heard of evidence-based medicine, and 85% of the well-informed general practitioners expected a great change in patient management as a result of evidence-based medicine. The respondents had 6.9 patient-specific questions a week, half relating to therapeutic problems. They most frequently used drug reference and other private books, and consultations with general practitioner colleagues. Although 93% owned a personal computer at work, they seldom used it for patient-specific questions. Improvements concerned journal articles, which needed to be clearly organised and focused on daily practice, and evidence-based reviews, which should be easily accessible by computer. General practitioners wanted integration of guidelines and patient health information in the general practitioners’ Health Information System. We conclude that electronic information sources have not yet changed the patterns of use of information sources by Dutch general practitioner, whose needs were focused on easily accessible electronic information.

**Chapter 5** sets out the development of a model to evaluate retrieval quality of search queries performed by general practitioners using the printed Index Medicus, Medline on CD-ROM, and Medline through Grateful Med. Four search queries related to general practice were formulated for a continuing medical education course in literature searching. The search queries were on:
- haemorrhoids;
- prevention of sudden infant death;
- use of the telephone in general practice; and
- the general practitioner as gate-keeper.

The potentially relevant citations selected by the course instructor and by the 103
participants in the course were presented to three judges, who evaluated them for relevance and quality. The evaluation of quality was based on journal ranking, research design and type of publication. Relevant individual citations received a citation quality score from 1 (low) to 4 (high). The overall search quality was expressed in a formula, which included the individual citation quality score of the selected and missed citations, and the number of selected non-relevant citations. The outcome measures were the number and quality of the relevant citations, and the agreement between the judges.

The results showed that, out of 864 citations, 139 were assessed as relevant. Of these, 44 citations received an individual citation quality score of 1, 76 of 2, 19 of 3 and none of 4. The level of agreement between the judges was 68% for the relevant citations, and 88% for the non-relevant citations.

The chapter thus proposes a model for the evaluation of retrieval quality of search queries, based not only on the relevance, but also on the quality of the citations retrieved. With adaptation, this model could be generalized to other professional users, and to other bibliographic sources.

In chapter 6 the results of the comparative study of three methods of literature retrieval are presented. Evidence-based medicine requires new skills of physicians, including literature searching. We determined which literature retrieval method was most effective for general practitioners: the printed Index Medicus, Medline through Grateful Med, or Medline on CD-ROM.

The design was a randomized comparative study. In a continuing medical education course, three groups of health care professionals (87 general practitioners and 16 other health care professionals) used one of the literature retrieval methods to retrieve citations on four search topics related to general practice. For the analysis in pairs, we used the search results of the 75 participants who completed all four assignments. As outcome measures we used:

- precision and recall;
- an overall search quality score; and
- a post-course questionnaire on personal characteristics, experience with computers, handling medical literature, and satisfaction with course instruction and search results.

The results showed that the recall and overall search quality scores in the Index Medicus groups (n=32) were higher (P≤0.001) than those in the CD-ROM groups (n=31). In addition, the search quality scores in the Grateful Med groups (n=12) were higher (P<0.003) than those in the CD-ROM groups. There were no differences in precision.

We conclude that in the period from 1994 to 1997, the printed Index Medicus seemed the most effective literature retrieval method for general practitioners. For inexperienced general practitioners there is a need for training in electronic literature retrieval methods.

In our final chapter, chapter 7, we discuss the results of our studies. In addition, we make recommendations for general practitioners; researchers in general practice and library and information studies; medical educators; and medical librarians.