

The pond is wider than you think!

Problems encountered when searching family practice literature

Walter W. Rosser, MD, CCFP, FCFP, MRCGP Caroline Starkey, MB, BS, MSC, MRCGP Rita Shaughnessy, MLS

abstract

OBJECTIVE To explain differences in the results of literature searches in British general practice and North American family practice or family medicine.

DESIGN Comparative literature search.

SETTING The Department of Family and Community Medicine at the University of Toronto in Ontario.

METHOD Literature searches on MEDLINE demonstrated that certain search strategies ignored certain key words, depending on the search engine and the search terms chosen. Literature searches using the key words "general practice," "family practice," and "family medicine" combined with the topics "depression" and then "otitis media" were conducted in MEDLINE using four different Web-based search engines: Ovid, HealthGate, PubMed, and Internet Grateful Med.

MAIN OUTCOME MEASURES The number of MEDLINE references retrieved for both topics when searched with each of the three key words, "general practice," "family practice," and "family medicine" using each of the four search engines.

RESULTS For each topic, each search yielded very different articles. Some search engines did a better job of matching the term "general practice" to the terms "family medicine" and "family practice," and thus improved retrieval. The problem of language use extends to the variable use of terminology and differences in spelling between British and American English.

CONCLUSION We need to heighten awareness of literature search problems and the potential for duplication of research effort when some of the literature is ignored, and to suggest ways to overcome the deficiencies of the various search engines.

résumé

OBJECTIF Expliquer les divergences dans les résultats de recension dans les ouvrages scientifiques concernant la pratique générale britannique et la pratique familiale ou la médecine familiale en Amérique du Nord.

CONCEPTION Une recension comparative des ouvrages scientifiques.

CONTEXTE Le Département de la médecine familiale et communautaire de l'Université de Toronto, en Ontario.

MÉTHODOLOGIE Des recensions dans les ouvrages scientifiques faisaient valoir que certaines stratégies de recherche ignoraient certains mots clés, selon le moteur de recherche ou les termes utilisés. Des recensions à l'aide des mots clés en anglais «pratique générale», «pratique familiale» et «médecine familiale» combinés aux sujets «dépression» et «otite moyenne» ont été effectuées dans MEDLINE à l'aide de quatre moteurs de recherche différents sur le Web: Ovid, HealthGate, PubMed et Internet Grateful Med.

PRINCIPALES MESURES DES RÉSULTATS Le nombre de références dans MEDLINE extraites pour les deux sujets, lorsque la recherche était faite avec chacune des trois expressions clés «pratique générale», «pratique familiale» et «médecine familiale», à l'aide de chacun des quatre moteurs de recherche.

RÉSULTATS Pour chacun des sujets, la recension a produit des articles très différents. Certains moteurs de recherche étaient plus efficaces dans le jumelage du terme «pratique générale» aux expressions «pratique familiale» et «médecine familiale» et se traduisaient ainsi par de meilleurs résultats. Le problème de nature linguistique est attribuable à l'usage différent de la terminologie et aux distinctions dans l'orthographe de l'anglais américain et britannique.

CONCLUSION Il importe de sensibiliser davantage les chercheurs aux problèmes dans la recension des ouvrages et au potentiel de duplication des efforts en recherche, lorsque certains ouvrages sont ignorés. Il faut également suggérer des façons de remédier à cette lacune des divers moteurs de recherche.

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Cet article a fait l'objet d'une évaluation externe.

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RESEARCH

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Two countries divided by a common language is how George Bernard Shaw is said to have described linguistic differences between the United Kingdom and North America.¹ Since 1985, the first author (W.W.R.) has been a member of the Royal College of General Practitioners in the United Kingdom and has received that College's journal every month. His research interests spurred the habit of reviewing bibliographies in areas of particular interest to him. He found that British researchers in general practice frequently ignored studies published in North America that asked the same questions and often arrived at the same answers. In particular he noted that, in preventive recall studies, many North American findings that complemented British research findings were not mentioned or referenced.^{2,3}

In 1996, the second author (C.S.), a British general practitioner interested in research and education, came to the University of Toronto to participate in the Academic Fellowship Program in the Department of Family and Community Medicine. During course work, she noticed that her literature searches yielded results very different from those of her Canadian colleagues. In casual discussion, W.W.R. and C.S. realized that the likely cause of the discrepancy was the use of the key word "general practice" rather than "family medicine" or "family practice" when performing literature searches.

Both parties had previously attributed the differences they observed to possible arrogance of those working on opposite sides of the pond. Both had observed a tendency on the part of people presenting papers at academic meetings to ignore or discount the value of the work of those from other countries. In some ways this was not surprising, given the quite marked differences in the organization of primary care services in the United Kingdom, Canada, and the United States.

METHODS

When we realized the importance of actual key words, or even the spelling of some key words, our first hypothesis was that using "general practice,"

Dr Rosser is Professor and Chair of the Department of Family and Community Medicine in the Faculty of Medicine at the University of Toronto in Ontario.

Dr Starkey, a family practitioner from the United Kingdom, was a Visiting Academic Fellow in the Department of Family and Community Medicine.

Ms Shaughnessy is the Librarian in the Department of Family and Community Medicine.

"family medicine," or "family practice" as key words in a literature search would yield substantially different results. The Librarian for the Department of Family and Community Medicine at the University of Toronto (R.S.) was asked to complete a series of literature searches substituting the three key words.

Otitis media and depression were selected as common topics in family and general practice to be searched on MEDLINE from 1993 to 1997. Each topic was searched with identical search strategies on four Web-based search interfaces: Ovid,⁴ PubMed,⁵ HealthGate,⁶ and Internet Grateful Med (IGM).⁷

With the exception of Ovid, which is licensed for University of Toronto use, these search interfaces are freely available on the Internet. Many free MEDLINE sites have become available during the past couple of years.⁸ Each one has a different search engine, so the way in which it processes the search query varies, as does the ease of use and the number of references retrieved.⁹

Ovid Technologies in the United States produce the Ovid search engine. It has basic and advanced modes to suit the skill of the user. The search engine prefers use of MEDLINE's Medical Subject Headings (MeSH) and guides to the appropriate headings. Key word searching is available, as is the ability to limit search results in many ways—by language, age group, study type, and so on. Some knowledge and experience is required for effective searching.

The National Library of Medicine, producers of MEDLINE, created PubMed in 1996 to search MEDLINE and made Grateful Med available free on the Internet in 1997. Both versions handle search queries more intuitively than Ovid, that is, they translate the query into appropriate medical subject headings without the searcher having to know or choose exact MeSH terms. PubMed offers basic and advanced modes; advanced mode allows users to search multiple concepts in any field and has all the limits available for tailoring a search. PubMed advanced mode assumes some knowledge of MEDLINE indexing. Grateful Med is simpler and very user friendly, but has fewer features: for example, field searching is limited to subject, author, and title. The IGM requires little knowledge of MEDLINE indexing.

HealthGate Data Corp in Massachusetts, a commercial vendor, offers MEDLINE free on its website. The HealthGate search engine offers basic and advanced modes: basic mode searches the last 2 years only and allows key word entry in a single query box; advanced mode offers multiple concept searching with use of Boolean operators, major

MeSH designation, selected field searching, and selected limits. It does not have the full range of search capabilities that Ovid and PubMed do and is not as intuitive as Grateful Med.

The terms "general practice," "family medicine," and "family practice" were searched as text words or free text and then each one was combined with "otitis media" as a major MeSH heading where otitis media was the main subject of the article. The same strategy was then repeated for "depression." All searches were limited to the English language.

RESULTS

Table 1 shows sample literature searches and the yield of articles for each key word. The surprising finding was that use of the three key words yielded different references with each of the four search engines. PubMed and IGM, to their credit, merged the key words "general practice" and "family practice," yielding the most complete list for these terms. PubMed and IGM took into account both "general practice" and "family practice" and used them interchangeably. This resulted in a more complete search of both British and North American literature.

Some remaining and surprising differences were also noted. One might expect that searching "general practice" would turn up articles in British journals, but this was not always the case. For example, the search on Ovid using "family practice" found articles from the *British Medical Journal* while "general practice" found articles from the *Lancet* published in the United States (**Figure 1**).

The search on depression, while resulting in far greater numbers of articles in all categories, followed the same pattern as described for otitis media. The IGM did the best job of recognizing "family medicine" as interchangeable with "general practice" and "family practice." It yielded the most consistently complete results for all three terms (**Figure 2**).

Further exploration of the literature using British and American spellings of words such as paediatrics (pediatrics), orthopaedics (orthopedics), and gynaecology (gynecology) yielded very different results with almost no articles in common between North American literature and that of the United Kingdom. **Table 2** lists some of the key words spelled differently in the United Kingdom and the United States.

Our librarian pointed out that, if appropriate MeSH headings were used by investigators, this deficiency would not occur. The reality of research in the clinical setting, however, is that relatively few family

physician or general practitioner investigators have a good working knowledge of MeSH headings, and very few have the luxury of a librarian who is knowledgeable in overcoming the problems found in these searches.

Table 1. Results of MEDLINE searches from four different search engines using three different key words for the topic otitis media and for the topic depression

SEARCH HISTORY: TERMS COMBINED	OVID	HEALTHGATE	PUBMED	IGM
OTITIS MEDIA				
General practice	15/46 33%	19/46 41%	32/46 70%	21/46 46%
Family medicine	21/46 46%	8/46 17%	6/46 13%	21/46 46%
Family practice	19/46 41%	14/46 30%	21/46 46%	25/46 54%
DEPRESSION				
General practice	22/131 17%	82/131 63%	83/131 63%	63/131 48%
Family medicine	2/131 2%	54/131 41%	20/131 15%	66/131 50%
Family practice	62/131 47%	73/131 56%	71/131 54%	75/131 57%

DISCUSSION

The discrepancy observed in the results of literature searches carried out on both sides of the pond was more dramatic than any of us expected. The systemic problem identified has already resulted in unnecessary duplication of effort. A particular example is found in an article by Iliffe et al in the *British Journal of General Practice*.¹⁰ The references in this article are all from the British literature. There is no mention of the international World Health Organization project on AUDIT (Alcohol Use Disorders Test)^{11,12} or work by Watson et al,¹³ Albert,¹⁴ or Wolf-Klein et al¹⁵ that were found using a search based on the key word "family practice." There are no references to any of these authors' work in Iliffe et al, but there is reference to work in American geriatrics journals that would not have been excluded by the use of the search term "general practice."

By contrast, an American meta-analysis of computer-based reminder systems published in the *Journal of the American Medical Association*¹⁶ searched with

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Figure 1. Percentages of all literature found on otitis media: Four different search engines and three different key words were used.

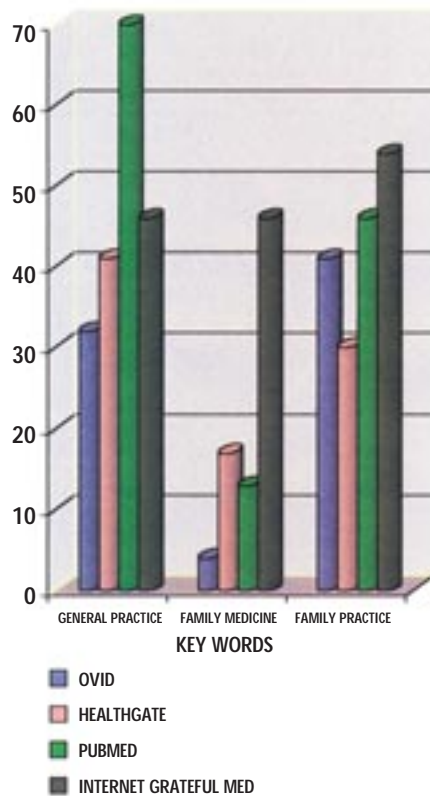
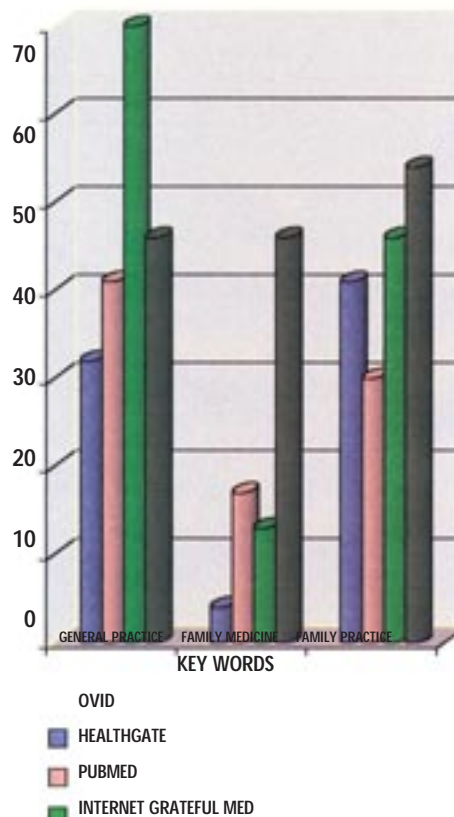


Figure 2. Percentages of all literature found on depression: Four different search engines and three different key words were used.



“family practice” and failed to include European studies, eg, Robson et al,¹⁷ that we found by searching with the term “general practice.” These examples were chosen at random from our library shelves, and we believe they are not isolated incidents. We might add that if our discipline had only one acceptable name, not three, this would alleviate the problem.

Our discipline is not yet internationally strong enough that we can afford to disregard the published work of an entire nation or continent when embarking on, or drawing conclusions from, a research study. We hope that, by identifying the problem and making members of our research community aware of the potential for duplication of research effort, these literature searching deficiencies can be avoided.

From the Canadian perspective, agreement on use of a universal name for our discipline might reduce these literature-search problems in the future. Many countries throughout the world, led by the World

Health Organization, are shifting toward using the names family medicine and family practice.

To avoid duplication of research effort in the discipline of general practice or family medicine, it is important that investigators in the United Kingdom and North America seek out appropriate MeSH headings or search engines that use the terms “general practice,” “family medicine,” and “family practice” interchangeably.

Should these headings or search engines not be available, searches should be carried out using all three terms as key words to detect all relevant literature on a subject in the English language. With this understanding and the knowledge that British and American spellings of many words can similarly affect literature search results, we hope family medicine researchers will overcome the problem of incomplete searches that could lead to unnecessary duplication of effort. ♦

Table 2. Terms that could be neglected or confused in searching

UNITED KINGDOM REFERENCE	UNITED STATES REFERENCE
General practice	Family practice Family medicine
Registrar or trainee	Resident
House officer	Intern
Consultant	Staff
Trainer	Preceptor
Student	Clerk
Vocational training scheme	Residency program
Paediatrics	Pediatrics
Anaesthesia	Anesthesia or anesthesiology
Orthopaedics	Orthopedics
Casualty or accident and emergency	Emergency room or ER
Operating theatre	Operating room or OR
Haematol-	Hematol-
Gynaecol-	Gynecol-
Outpatient*	Ambulatory care*

*Closest terms, but not equivalent.

Correspondence to: Dr Walter W. Rosser or Ms Rita Shaughnessy, Department of Family and Community Medicine, University of Toronto, 620 University Ave, 8th Floor, Toronto, ON M5G 2C1; e-mail dfcm@utoronto.ca

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Key points

- In this study, literature searches for the topics "otitis media" and "depression" had remarkably different results when matched with the key words "general practice," "family medicine," or "family practice."
- This appears to be why studies in the United Kingdom and North America do not cite studies from the opposite location. This lack of research communication could lead to duplicate studies and wasted effort.
- When conducting searches, we recommend matching the topic with each of the terms "general practice," "family medicine," and "family practice."

Points de repère

- Dans cette étude, les recensions des ouvrages scientifiques sur les sujets « otite moyenne » et « dépression » se sont traduites par des résultats remarquablement différents selon qu'on les jumelait aux mots clés en anglais « pratique générale », « médecine familiale » et « pratique familiale ».
- Il semble que ce fait explique pourquoi les études au Royaume-Uni et celles en Amérique du Nord ne citent pas réciproquement les études réalisées dans l'autre pays. Cette lacune de communication en recherche peut se traduire par une duplication des études et des efforts inutiles.
- En procédant à des recensions, nous recommandons de jumeler le sujet avec chacune des expressions « pratique générale », « médecine familiale » et « pratique familiale ».

Research

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