Evidence Based Library and Information Practice

Evidence Summary

Clinician-selected Electronic Information Resources do not Guarantee Accuracy in Answering Primary Care Physicians' Information Needs

Reviewed by:
Martha Ingrid Preddie
Doctoral Student, School of Information and Library Science, University of North Carolina at
Chapel Hill, Chapel Hill, North Carolina, United States of America
E-mail: mipreddie@gmail.com

Abstract

Objective – To determine if electronic information resources selected by primary care physicians improve their ability to answer simulated clinical questions.

Design – An observational study utilizing hour-long interviews and think-aloud protocols.

Setting – The offices and clinics of primary care physicians in Canada and the United States.

Subjects – Twenty-five primary care physicians of whom 4 were women, 17 were from Canada, 22 were family physicians, and 24 were board certified.

Methods – Participants provided responses to 23 multiple-choice questions. Each physician then chose two questions and looked for the answers utilizing information resources of their own choice. The search processes, chosen resources and search times were noted. These were analyzed along with data on the accuracy of the answers and certainties related to the

answer to each clinical question prior to the search.

Main results – Twenty-three physicians sought answers to 46 simulated clinical questions. Utilizing only electronic information resources, physicians spent a mean of 13.0 (SD 5.5) minutes searching for answers to the questions, an average of 7.3 (SD 4.0) minutes for the first question and 5.8 (SD 2.2) minutes to answer the second question. On average, 1.8 resources were utilized per question. Resources that summarized information, such as the *Cochrane Database of Systematic Reviews*, *UpToDate* and *Clinical Evidence*, were favored 39.2% of the time, *MEDLINE* (Ovid and *PubMed*) 35.7%, and Internet resources including Google 22.6%. Almost 50% of the search and retrieval strategies were keyword-based, while MeSH, subheadings and limiting were used less frequently. On average, before searching physicians answered 10 of 23 (43.5%) questions accurately. For questions that were searched using clinician-selected electronic resources, 18 (39.1%) of the 46 answers were accurate before searching, while 19 (42.1%) were accurate after searching. The difference of one correct answer was due to the answers from 5 (10.9%) questions changing from correct to incorrect, while the answers to 6 questions (13.0%) changed from incorrect to correct. The ability to provide correct answers differed among the various resources. Google and Cochrane provided the correct answers about 50% of the time while *PubMed*, Ovid *MEDLINE*, *UpToDate*, *Ovid Evidence Based Medicine Reviews* and *InfoPOEMs* were more likely to be associated with incorrect answers. Physicians also seemed unable to determine when they needed to search for information in order to make an accurate decision.

Conclusion – Clinician-selected electronic information resources did not guarantee accuracy in the answers provided to

simulated clinical questions. At times the use of these resources caused physicians to change self-determined correct answers to incorrect ones. The authors state that this was possibly due to factors such as poor choice of resources, ineffective search strategies, time constraints and automation bias. Library and information practitioners have an important role to play in identifying and advocating for appropriate information resources to be integrated into the electronic medical record systems provided by health care institutions to ensure evidence based health care delivery.

Commentary

This research adds to knowledge base created by Westbrook, Coirea and Gosling's investigation of clinicians' use of information resources to answer simulated clinical questions. Inclusion criteria were family physicians in Canada and the United States as well as general internists in the United States who were attending to patients regularly in a clinic. There was no predetermined sampling. Instead, physicians were selected based on availability. This resulted in the majority of the participants being primary care physicians from the McMaster Online Rating of Evidence (MORE) system, a project in which clinicians are involved in rating published research studies and systematic review articles. Participants included faculty members from departments of family medicine at a Canadian university and the University of Pittsburgh. This occurrence introduced some measure of bias into the study since those physicians can hardly be regarded as representative of primary care practitioners in general.

While the use of interviews was appropriate in order to discern participants' experience and use of computers, electronic resources and the Internet, the article failed to fully

describe the application of think-aloud protocols, why they were utilized, as well as how they benefited the study. This shortcoming makes it difficult to determine the feasibility of replicating this study in a different subject group. The study also failed to indicate how the correct answers to clinical questions were determined. However, the majority of the questions utilized for answering and searching were used previously in a 2002 study conducted by Hersh and colleagues. This served to validate the main data collection instrument.

The researchers acknowledged other limitations: the small number of participants, essentially volunteers who possessed a fervent interest in evidence based medicine, the focus on primary care physicians only, and the use of simulated questions rather than the observation of physicians seeking information during actual clinical encounters. Despite these shortcomings, the findings of the study are reliable since they mirror the results of earlier studies in terms of the occurrence of a considerable number of changed answers after searching including health care practitioners changing answers from correct to incorrect. [Hersh et al., "Factors Associated with Successful Answering of Clinical Questions," (328); Hersh et al., "Factors Associated with Success in Searching *MEDLINE*," (289)]. However, the results differ somewhat from Westbrook et al.'s study of clinicians in Australia, where the findings revealed that notwithstanding some errors, the use of online information retrieval systems resulted in "significant improvement in the quality of answers provided by clinicians to typical clinical problems" (315).

While the original study does not suggest further areas for research, this study could have benefited from an investigation of the reasons for physicians' choice of resources, search strategies, and acceptance of provided answers, especially when these changed from correct to incorrect. Future research could also explore the relationship between physicians' original self-assessed skills pertinent to research, database searching and the Internet, and their performance in answering clinical questions. Additionally, the successful use of Google and Cochrane, along with the unsuccessful use of the highly touted *UpToDate*, warrant further investigation.

The significance of this article to library and information practice is its acknowledgement that the use of electronic information resources by primary care physicians does not guarantee accuracy in answering their information needs. The integration of evidence based information resources into electronic medical record systems has the potential to improve accuracy. Library and information professionals should assume the responsibility to advise parent institutions that, in the integration of information resources into electronic medical record systems, designs should facilitate the retrieval of accurate information by clinicians, regardless of individual search competencies. Such systems should provide easy and effective search capabilities, as well as the ability to prompt physicians to seek information from designated evidence based sources, when an improvement in care is possible.

Works Cited

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