Chapter 65

Insights into the Search Behavior of Non-Medical Professionals Based on Task Difficulty and an Evaluation against New Generation Medical Information Retrieval Strategies

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ABSTRACT

Medical information searching is amongst the most common type of search performed on the Internet. The accessibility and availability of publicly available medical domains has made medical domains a popular destination to perform medical type searches. However, non-medical professionals may find performing a medical type search difficult due to limited knowledge and expertise. Thus, medical information retrieval strategies are key in assisting non-medical professionals experience a productive search session. In this chapter, the authors review information retrieval strategies and introduce new generation information retrieval strategies. They then analyze search behavior of non-medical professionals when searching across varying levels of task difficulty. This is followed by an evaluation on how new generation medical information retrieval strategies support a non-medical professional's medical search session when searching across varying levels of task difficulty. Results of this research study provide a better understanding of the search behavior of non-medical professionals when searching across varying levels of task difficulty. The results also provide suggestions on how information retrieval strategies can better assist non-medical professionals when searching across varying levels of task difficulty.

1. MEDICAL INFORMATION SEARCHING ON THE RISE

A survey conducted by Pew Internet and American Life Project in February 2012 reports, "searching using a search engine is one of the most popular activities performed on the Internet" (Purcell, Brenner and Rainee, 2012) and "80% of Internet users have searched for health or medical based information online ranging from information on memory lost and dementia to information on end of life decisions" (Fox, 2012). "In the year 2011 people have searched for new medical topics such as information on food and drug safety, childbirth and pregnancy" (Fox, 2012). These new topics were not searched for in previous years. Results of both these surveys (Fox, 2012 and Purcell and Brenner and Rainee, 2012) indicate not only is medical information searching a popular type of search but the scope and range of searches performed is also growing.

Before the existence of the Internet, medical information searching was confined to books and journal articles found in bookstores and libraries. The advent of the World Wide Web has enabled medical information to be made available online. In addition, people have also become technology savvy and use the World Wide Web to perform searches as part of their daily routine. Initially, publicly available medical information was obtainable only on general search engines but now specialised medical domains (vertical domains) or medical search engines are also available. People prefer to perform medical searches on medical domains as they trust information on medical domains (Spink et al. 2004 and Bradley, 2007). They are also able to focus on the search without being distracted with non-medical related search results. The ability to search for medical information online has several advantages. Amongst them are: being able to locate information quickly (Younger, 2010), to be better informed of general healthcare (Coiera, 2004) and promotes interactivity during the search process with the availability of images and videos

rather than just text documents. In addition to general search engines and medical search engines there are also more purposefully-focused medical domain called the clinical trial domain. An example of such a domain is ClinicalTrials.gov[1]. This domain is maintained by the United States National Institutes of Health. As the name implies this website provides information on clinical trials conducted around the world. The creation and usage of specialized domains such as *ClinicalTrials* indicate non-medical professionals prefer using specialized domains to conduct a medical search in comparison to general search engines.

In this research study, we review information retrieval strategies discussed in Inthiran, Alhashmi and Ahmed (2012a). We name the information retrieval strategies discussed in Inthiran, Alhashmi and Ahmed (2012a) as predecessor information retrieval strategies. This is because these information retrieval strategies only remain as research prototypes and are not used by the public. Then, we introduce new generation information retrieval strategies used in current research prototype systems and publicly available medical search domains. In our earlier research study (Inthiran, Alhashmi and Ahmed, 2012a) we focused on information search behavior from a generalist perspective. In this research study, we specially explore how varying levels of task difficulty influence the search behavior of non-medical professionals. The aspect of task difficulty was investigated in our earlier exploratory small scale setting study (Inthiran, Alhashmi and Ahmed, 2012b), however in this research study a large scale explanatory approach is utilized.

The rest of the paper is structured as follows. In Section 2 we review predecessor medical information retrieval strategies. In Section 3 we introduce new generation information retrieval strategies. In Section 4 we analyze new generation information retrieval strategies. In Section 5 we demonstrate how new generation information retrieval strategies address common challenges faced by non-medical professionals when searching for medical

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