Medical Information Retrieval Strategies: An Exploratory Study on the Information Retrieval Behaviors of Non-Medical Professionals

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ABSTRACT
Medical search engines are frequently used not only by people in the medical fraternity but also amongst non-medical professionals. It is likely that non-medical professionals and first time medical searches may find the activity of searching for medical information to be an overwhelming experience. The use of appropriate terminology is essential for a successful search. Similarly, the ability to comprehend presented search results is equally important. In this paper, the authors review information retrieval techniques used in medical search engines. The authors focus on their strategies and comment on their suitability. The authors then conducted an exploratory survey to provide real-life examples of how non-medical professionals perform medical based searches. Results of the study provide insight to the medical search behavior of non-medical professionals. Based on the study results the authors mapped search behavior of non-medical professionals against information retrieval strategies to determine how these strategies help improve a search session. Finally, the authors conclude the paper by providing innovate ideas for the development of better information retrieval strategies on medical search engines.

Keywords: Information Retrieval, Medical Information, Medical Search Engines, Non-Medical Professionals, Search Behavior

1. SEARCHING FOR MEDICAL INFORMATION
At some point of their life, most people have searched for medical information. If the search was not conducted for them, it was conducted for friends, family members or just out of curiosity. In a survey conducted by Pew Internet Project in the year 2009, 83% of Internet users have searched for medical or health information on medical search engines. These queries range from specific diseases or medical problems to experimental treatments and medicine. A recent

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online medical search behaviour survey reports people between the ages of 18-34 go online to find healthcare professionals while people above the age of 50 seek for medical information online after consulting their physician. Women tend to search for medical information for someone related to them while men searched for medical information for friends (“E-patients’ Online Search Behavior Influenced”, 2010). These findings clearly indicate medical information searching is popular amongst people from all walks of life.

Previously medical search engines were “exclusive to medical professionals and other types of users were only passively exposed to medical based information” (Coiera, 2004). Today, this is no longer true. Non-medical professionals are now actively searching on medical search engines. There are several reasons for this new trend. We broadly classify them into change in user behavior, external influences and the availability of technology.

Users want to be more informed before, during and after consulting their physician (Can & Baykal, 2007). Previously, medical based information used to be understood only by medical professionals; now non-medical professionals are able to comprehend and make sense of medical information. In some cases, users solely rely on the Web for healthcare diagnosis and treatment (Khoo, Bolt, & Babi, 2008, Wainstein, Sterling-Levis & Baker, 2006, Tuffrey & Finaly, 2002). As opposed to classical behavior where consultation with a general practitioner is required, today non-medical professionals turn to the easiest and fastest way to search for information using the Internet.

Besides the change in user behavior, external influences have also encouraged non-medical professionals to search for medical based information. “With doctors becoming more difficult to afford and consumers having to pay a lot for health care many people have become interested in searching for health information” (Wells, 2007). The United States Department of Health and Human Services reports 20% of the US population will be over 60 by 2030. An older population means more people suffering from chronic disease and more people needing information at their fingertips. Traditionally, non-medical professionals who require a second or third opinion on a diagnosis would visit other general practitioners and physicians. Today, they are more likely to use a cheaper and quicker alternative; using the Internet for unlimited and repeatable opinions.

Technology has made medical search engines easily available to non-medical professionals. Amongst them are: OmniMedicalSearch (http://www.omnimedicalsearch.com), WebMd (http://www.webmd.com), Medline Plus (http://www.nlm.nih.gov/medlineplus), Healthline (http://www.healthline.com), and HealthFinder (http://www.healthfinder.com). While medical searching can be performed on general search engines, Spink, Jansen, Nykanen, Lorence, Ozmutlu, and Ozmutlu, (2004) state over time medical and health queries have declined as a proportion of all web queries, as the use of specialized medical/health websites have increased. One reason for this is “medical search engines perform better than medically focused general search engines. Among reasons for this is: medical search engines sort results into categories, provide the ability to filter the search and provide tabs at the bottom of the results page to include additional search results. Searching on a medical search engine also provides greater confidence to the searcher as information returned is guaranteed to be relevant and accurate” (Bradley, 2007).

In this paper, we first present search challenges faced by non-medical professionals. Then we provide an overview and analyze several research prototype medical information retrieval strategies. We then conducted an exploratory survey to provide insight to medical search behavior of non-medical professionals. We compared results of our survey against our analysis of information retrieval strategies to discuss how these information retrieval strategies assist or hinder a search performed by a non-medical professional. We focused on non-medical professionals as we assumed that this category of participants would find performing a medical-based search to be challenging com-
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