Abstract. The Web is being increasingly used by health consumers to search for health information. In this domain, the quality of the retrieved contents is crucial to avoid healthcare hazards. To address this problem and help the user identify reliable and credible contents, initiatives have appeared that certify the compliance of health websites to quality standards. In this work we explore the impact of medical certification on several aspects of health information retrieval performance. Moreover, we analyze the usefulness of certification categories to the personalization of the search experience. Our findings suggest that medical certification might be incorporated as a ranking criterion. We conclude that the medical accuracy of the resulting knowledge is enhanced by the use of certified information and depends on the users' comprehension of the document. In general, we also conclude that there is space for personalization in search by health consumers.

Keywords: Medical Certification, Health Information Retrieval, Context, Health Consumers, User Study.

1 Introduction

The use of the Web to search for health information is gaining popularity among patients, their family and friends. A Harris Interactive poll reported, in 2010, that 88% of the US online population has searched for health information on the Web, the highest percentage and year-over-year increase since the first study of this type [6]. The characteristics of the Web make it a medium where publishing is easy and accessible to everyone. This, allied with the impact that online health resources have on people’s life and well-being, emphasize the importance of mechanisms that help identify the quality of online health information. A 2009’s Pew Internet report [4] found that “about one in ten online health inquiries have a major impact on someone’s health care or the way they cared for someone else”.

The problem of finding quality information exists since the first developments on information retrieval. Health domain specificities have triggered research
initiatives parallel to the general ones. A systematic review of studies that assess
the quality of health information for consumers on the Web has been done by
Eysenbach et al. [2]. To address the problem of health information quality, ini-
tiatives like the Health on the Net Foundation Code of Conduct (HONcode) cer-
tification or the URAC’s Health Web Site Accreditation Program have emerged.
They both intend to help the user identify reliable and credible content through
a seal that identifies the sites that satisfy their code of conduct or quality stan-
dards. HONcode certification is considered the most successful initiative [1].

Typically, a search session starts in a generalist search engine instead of health-
specific websites [3] and Google is commonly the chosen search engine [8]. Studies
that compare the performance of generalist and health-specific search engines
mostly conclude that the former outperform the latter. Regarding the quality
of information, some studies report that health-specific search engines provide
higher quality contents while fewer conclude that quality is the same in both
types of search engines [5].

With this context in mind, we conducted a user study to analyze the impact of
limiting the collection of a search engine to certified health documents, having the
HONcode certification as a base. This impact is measured in terms of precision,
medical accuracy, documents’ comprehension by users, documents’ readability
and users’ motivational relevance. In the end, our findings may indicate how
medical certification can help generalist search engines provide a better service
to their users in consumer health retrieval. A second goal of our study is to
evaluate how useful are the HONcode categories for personalizing the search
experience in a generalist engine. For example, we want to know if sites “for
patients” are preferred to sites “for professionals” or if sites “for women” are
actually more valued by women.

This paper is structured as follows. After briefly explaining health information
certification in Section 2 we describe the user study in Section 3. Results are
presented in Sections 4 and 5. The study’s findings, along with their implications,
are discussed in Section 6 and the conclusions follow in Section 7.

2 Health Information Certification

As previously said, health websites may be certified by external entities that
assure that every site that has a certification seal respects a certain code of
conduct. There are two widely known certification programs, one promoted by
the Health on the Net Foundation (HON) and the other promoted by URAC.
They are both non-profit organizations and they differ in scope. URAC intends
to promote health quality in a global way, not only through the quality of online
information as is the case with HON.

The URAC Health Web Site Accreditation Program evaluates websites
against 48 quality standards [3]. A search of URAC accredited companies on their

\[\text{Available at http://www.urac.org/docs/programs/URACHW2.1factsheet.pdf}\]