

Usability of Health Websites: What Have We Learned?

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Abstract

More and more adults are using the Web to find health information. This presentation summarizes key findings and lessons learned from recent health Website usability studies conducted at American Institutes for Research (AIR). The presentation will also include practical recommendations for developers of health Websites, as well as for usability specialists evaluating such sites.

Problem statement

The use of health Websites is exploding. Consumers, as well as health care professionals, are relying more and more on electronic information to make decisions regarding health care. A recent Harris Poll estimates that roughly 100 million adults go online to find health information.¹ Another study found that 70% of consumers reported having made a health care decision based on information they found online.² As we all know, Websites offer information on any topic imaginable 24 hours a day, seven days a week. Thus, health Websites have a great appeal to consumers without health insurance who do not have regular access to a health care provider. According to a 2000 Census Bureau report, over 41 million Americans do not have health insurance.

Given the widespread and growing use of the Internet as a major provider of health information, and given that one poorly made decision about one's health can have catastrophic consequences, it is crucial that health Websites are of the highest quality. Poorly designed or misleading health Websites that prevent consumers from accessing accurate, understandable, credible information could have minor consequences for consumers, such as frustration, or major consequences, such as choosing the wrong treatment.

¹ Taylor, H. Explosive growth of "cyberchondriacs" online. Available at: http://www.harrisinteractive.com/harris_poll/printerfriend/index.asp?PID=229. Accessed November 5, 2003.

² Fox, S. & Rainie, L. (2000). The online health care revolution: How the Web helps Americans take better care of themselves. Washington, DC: Pew Charitable Trusts.

A number of other researchers have evaluated the quality of health Websites. A study conducted by RAND for the California HealthCare Foundation evaluated 25 health Websites, some in English and some in Spanish.³ RAND found that while the material contained on the Websites was accurate, many Websites paid only minimal attention to providing important information to consumers.

This presentation summarizes several recent studies of health Websites and information technology-based approaches to providing health information to consumers. We discuss key findings and lessons learned so that developers of health Websites may learn what pitfalls to avoid, and evaluators of health Websites may learn how to best serve their clients who are developing Websites.

Methods: Summary of studies

Our findings are based on several studies completed recently (some of our clients require us to keep their names confidential).

Study A: We evaluated a federal health Website that provides health content to consumers and health professionals, in English and in Spanish. A total of 32 health professionals and health consumers from the Washington, DC metropolitan area participated in the study. Participants who evaluated the English site were native English speakers. Participants who evaluated the Spanish site were either native Spanish speakers or bilingual health professionals who typically help native Spanish-speaking clients to find health information in Spanish.

Study B: We evaluated a state health Website and several prototypes with 16 health consumers and health professionals. The Website provides access to state and local health-related resources and health information. The client is a federal agency that will be providing the architecture for health Websites to be developed by the states themselves.

Study C: We conducted an heuristic review of a federal health Website. The heuristic review also included a review and comparison to four other health Websites.

Study D: We conducted an 18-month project to redesign and iteratively test a health Website for a federal client. Testing included three usability tests with 8 participants each, including consumers, researchers and health professionals. Sessions were conducted in Washington, DC and Boston, MA. We also authored and implemented an online survey to determine the site's primary user groups and to establish whether the current site was meeting their needs. Over 700 users responded to the online survey.

Study E: We conducted a study to evaluate an interactive software tool designed to present key medical information to patients. The first phase of the study included 12 participants and focused on usability issues. The second phase of the study included 61 individuals, half of whom were determined to have low health literacy levels (8th grade or lower). We examined whether users could learn the software's content, even with low health literacy. While not a Website, this interactive software tool has relevant implications for health Websites.

³ RAND Health and California HealthCare Foundation. (2001). Evaluation of English and Spanish health information on the Internet. Santa Monica, CA: Authors.

Study F: We conducted a study to determine the effects of five different text formats on the experience of reading health content on-screen. We compared five different formats with respect to their effects on reading speed, comprehension level, fatigue, and user satisfaction. Our sample included 44 individuals from the Boston metropolitan area.

Study G: We conducted a usability study of a Website designed to provide advice, support, and medical information to children with learning disabilities and their families. The study involved 12 parents and 13 children from the greater Palo Alto, CA area.

Study H: We conducted a remote usability study for a federal client to access the ease-of-use of an online training course. The study involved six bilingual participants from the Southwest. The training course instructs lay health educators in Latino communities to teach others about the heart and helps them develop skills for leading education sessions. The training course offers a wide variety of educational materials that lay health educators can print out and give to their students. The course also incorporated interactive tools, music files, and video files to aid instruction.

We have the following caveats: The lessons learned and presented in this discussion are based on eight different studies conducted for seven different clients. The usability evaluations were conducted with varying sample sizes, from six to 61. While many of our studies had sample sizes large enough to analyze the data with inferential statistics, we cannot make any claims about the representativeness of the samples with respect to the population of health Website users as a whole. This presentation represents our best attempt to summarize key findings across a number of different studies.

Findings

Credibility was key to health consumers and health professionals looking for accurate information online. Across our studies, we have found that health Website users looked for indicators of the quality of the content by seeking out publication information for each piece of health information they read. In other words, they wanted to know who published the information and when it was last updated. Users were especially trusting of information provided by federal agencies, such as the Centers for Disease Control, National Institutes of Health, National Cancer Institute and the Department of Health and Human Services.

While users wanted credibility, health Website **users also expected online health information to have a lively, cheerful look and feel.** Many users indicated that when they are searching for health information on a serious medical condition, they do not want to sift through Websites with drab, depressing colors and images. While they expected credibility and professionalism, they also expected the look and feel to be cheerful and lively; much like hospitals that paint their walls bright colors in the intensive care or pediatric units. Moreover, a small number of Spanish-speaking users we've studied indicated they expected Spanish Websites to contain colors and images that appeal to their community, rather than using the English site as a template and simply translating the content.

Most health Websites provided access to pages and pages of health content. These sites were information-dense. One of the major usability issues found across the health Websites we evaluated was that **most Websites could do a better job of organizing the massive amounts of content they contain**. Users did not want to scroll through pages and pages of links to find what they need.

Health Websites can provide their own content, or they can act as portals to the information contained in a number of other health Websites. **When users were searching portal sites, they expected to search for information by topic, rather than by source of the content**. For example, users looking for information on melanoma on a portal site expected to see a top-level menu that contained a general list of health issues, rather than having to choose from a list of federal agencies that may provide relevant information, such as the National Cancer Institute.

In our studies, **users preferred to have the ability to access content through multiple targeted pathways**. In other words, health care providers wanted to enter a pathway on the homepage that would contain more technical information than if they had chosen the consumer pathway. Across our studies, health consumers both wanted and expected this type of option.

Some health sites presented a “homepage,” or topic screen, that compiled all of the links, articles and information relevant to a particular topic on one screen. Other sites organized topics into health centers. These centers provided consistent types of summary information, facts, news and articles across the different topics. **Compiling information into one area unified the site, and may serve to reassure users that they successfully located all of the relevant content**.

We also found that **users did not pay attention to navigational features or content contained on the right-hand sides of Web pages**. Users have become conditioned to expect advertising on the right-hand side, and overwhelmingly across studies, have indicated they ignore the content contained on the right. Users were drawn to the text and navigational features located in the body and left-side of the screen, rather than the right side.

Consumers enjoyed using interactive tools but some had concerns about entering personal data. We found that many consumers liked using interactive dosage calendars and interactive tutorials. However, some consumers expressed privacy concerns about entering any personal information, and wanted the option of seeking information from charts as well [e.g., BMI (Body Mass Index) charts versus an interactive BMI calculator].

Of course, most people using health Websites were seeking information. When users completed their search for information, and arrived at the content they were seeking, the presentation and readability of the content was important to ensuring that users could quickly and easily understand the information. Most health Websites provided the actual health content in a typical one column, HTML fashion. In one study, we found that **users preferred a two-column presentation of dense health information** when they were reading it on-screen, over the traditional one-column format. In fact, the two-column format helped users read the information significantly faster, but did not appreciably enhance comprehension of the material.

Beyond formatting issues, the **actual reading-level of the health content is a crucial indicator of Website quality**. What good can a health Website do if more than half of all consumers cannot understand the information? In fact, it could do more harm than good. Current estimates indicate that the average reading level for adults in the U.S. is at the 8th grade level.^{4,5} This means that the average health consumer experiences some trouble reading and acting on information contained in prescription labels, health insurance forms or medical history surveys, instructions for diagnostic tests and other medical materials.

Most of the health Websites we reviewed contained terminology and jargon that made the content difficult to comprehend (e.g., using acronyms like OCD rather than obsessive compulsive disorder or using the phrase “cardiovascular disease” rather than “heart disease”). **Most health Websites contain content that is too difficult for the average consumer to read and understand**. Our study of an interactive software tool designed to provide medical information to consumers found that when low and high literacy consumers were presented with interactive information written at a grade level lower than 7th grade participants demonstrated statistically significant increases in knowledge of how to use the medication.

In addition, **many health Websites we evaluated had usability problems that prevented users with disabilities from fully accessing content**. This is a major problem, considering that individuals with existing health problems may be even more inclined to want to seek health information online than other individuals.

Most users in our studies preferred to be able to print, download or email information so that they, or someone they were helping (e.g., parents, friends, family), could use the information at a later date. In most of our studies, we found that many **Websites could improve the ways in which they facilitate the process of printing or emailing health information**. Users had difficulty understanding whether print functions would produce text-only versions or would include graphics and images. In addition, some print and email features were just simply difficult to locate.

Finally, while our research is informative, there are other organizations and associations that have established guidelines and ethics for health Websites, like the Health on the Net (HON) Code of Conduct, the American Medical Association, Health Internet Ethics (Hi-Ethics), and the eHealth Ethics Initiative.⁶

Recommendations

Based on our study findings, we offer the following recommendations. Health Websites should:

- Assure users that the information is updated regularly and is culled from credible sources.
- Contain professional, yet lively, colors and graphics.

⁴ Andrus, M.R., Roth, M.T. Health literacy: A review. *Pharmacotherapy* 2002; 22(3):282-302.

⁵ Kirsch, I., Jungeblut, A., Jenkins, L., & Kolstad, A. *Adult literacy in America: A first look at the results of the National Adult Literacy Survey*. Washington DC: U.S. Department of Education National Center for Education Statistics: 1993.

⁶ Burr, C. & Deering, M.J. (September 26, 2000). Proposed frameworks to improve the quality of health Web sites: Review. *Medscape General Medicine*, 2(3). Available at: http://www.medscape.com/viewarticle/418842_print. Accessed on November 5, 2003.

- Consider the incorporation of a specific “look and feel” if designed for a particular user group (they should appeal to the audiences they hope to serve).
- Offer consumers the ability to drill down from a high-level list of topics rather than presenting a long list of topics and sub-topics with links to choose from.
- Offer several different ways of searching for information (e.g., search fields, search by letter of the alphabet, search by drilling down through major topics to sub-topics).
- Provide the ability to search for information by source (e.g., federal agencies), but this should not be the default option.
- Offer an option to search the site using multiple pathways (e.g., pathways for consumers or health professionals) and should ensure that the appropriate content is available for each pathway.
- Ensure that searches for information end with a familiar format, containing information within consistent headings and subheadings no matter what the topical area (e.g., general summary information, facts, images, sub-headings, recent research, current news, and detailed articles or links to information).
- Avoid placing important navigational features or other important information on the right-hand side of pages.
- Consider offering interactive tools as a way of engaging users and helping them learn to apply information.
- Address users’ privacy concerns by offering the option of using non-interactive charts and graphs to get the same information available from interactive tools.
- Consider presenting dense text in a two-column format to facilitate reading.
- Provide content written at a 6th grade reading level or lower.
- Be evaluated using evaluation methods typically used outside the field of usability, like those used by educational researchers and psychologists studying readability and comprehension.⁷
- Ensure complete accessibility for users with disabilities.
- Contain easy-to-find and easy-to-understand print and email features.
- Adhere to guidelines established by the Health on the Net (HON) Code of Conduct, the American Medical Association, Health Internet Ethics (Hi-Ethics), and the eHealth Ethics Initiative.

⁷ Paulsen, C. (in process). Ensuring that all users can comprehend the health information they need: A multi-method approach. Concord, MA: American Institutes for Research.