

Web-site Evaluation Tools: A Case Study in Reproductive Health Information

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Abstract. Background and Objective: Internet forms an opportunity to inform, teach, and connect professionals and patients. However, much information on Internet is incomplete, inaccurate, or misleading, and not only in the medical domain. Because of the potential for damage from misleading and inaccurate health information, many organizations and individuals have published or implemented scoring tools for evaluating the appropriateness or quality of these resources. The objective of this study is to identify and summarize scoring tools that have evaluated web-sites providing reproductive health information in order to compare them and recommend an overarching evaluation tool. **Methods:** We searched Ovid MEDLINE(R) (1946 to July 2013) and OVID Embase (1980 to July 2013); and included English language studies that have evaluated the quality of websites providing reproductive health information. Studies only assessing the content of websites were excluded. **Results:** We identified 5 scoring tools: 1-The HON (health on the net) Code of Conduct for medical and health Web sites, 2-Silberg scores, 3-Hogne Sandvik scale, 4- Jim Kapoun's Criteria for Evaluating Web Pages, and 5-The Health Information Technology Institute (HITI) criteria. We have compared these scales and identified 14 criteria: authorship, ownership, currency, objectivity/content, transparency/source, interactivity, privacy/ethics, financial disclosure, navigability/links, complementarity, advertising policy, design, quantity, and accessibility. We integrated these criteria and introduced a new tool with 10 criteria. **Conclusion:** Website evaluation tools differ in their evaluation criteria and there is a lack of consensus about which to use; therefore, an integrated easy to use set of criteria is needed.

Keywords: Internet, pregnancy, reproductive health, evaluation, quality measurement

Introduction

The number of health information resources and online services are constantly increasing, but it is difficult for health information consumers, such as the patients and the general public, to assess the quality of the information provided. More than one-third of Internet users are health information consumers (World Internet usage statistics and population statistics, 2004).

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The number of people accessing the Internet has also grown. According to Internet World Stats the number of Internet users increased by 528 % between 2000-2011, and there were more than 346 million websites in 2011 [1]. In 2011, more than 80 percent of adults reported using the Internet as a resource for healthcare decisions [2].

Health information on Internet may be from a leading expert with an excellent documentation and a complete bibliography, or it may be in the form of emotional support from a friendly support group. Unfortunately, the Internet can also deliver sales propaganda, the latest medical complaints, or even the most sophisticated, pseudo-scientific scams. The user finds it difficult to determine which information is usable and reliable; how it can be evaluated, critiqued, or verified; when it should be ignored, rejected, debunked, or erased [3].

Because of the potential damage from misleading and inaccurate health information, many organizations and individuals have published or implemented some criteria for evaluating the appropriateness or quality of these resources [4]. The Web is potentially a valuable resource for women with many health problems such as postnatal mental illnesses and reproductive health in terms of providing them with information, support and occasionally online interventions [5, 6]. Evaluations of information on the Internet have shown that in issues like abortion, the quality of information is low [5].

The objective of this study is to identify and summarize scoring tools that have evaluated web-sites providing reproductive health information in order to compare them and to recommend an improved integral one.

1. Methods

We searched all relevant studies in English but regardless of their peer-review/publication status, in Ovid MEDLINE(R) (1946 to July 2013) and Embase (1980 to July 2013) databases. Studies were included when their authors: (1) searched the World Wide Web systematically for reproductive health information (2) evaluated the quality of health information against certain criteria, for example; by judging the authority of source, assessing the accuracy of information, readability, or comprehensiveness. Studies were excluded if they only assessed the content of web sites or newsgroups.

2. Results

We screened 1777 citations and retrieved 25 potentially eligible full articles, finally 10 studies met our inclusion criteria. We identified five scoring tools. HONcode is the oldest and the most used ethical and trustworthy code for medical and health related information available on Internet. The HONcode is designed for three target audiences: the general public, the health professionals and the web publishers, actively involving the site owner in the process of certification. All the tools' criteria are shown and contrasted in Table 1.

We identified five scoring tools and extracted 34 criteria from them, then mapped these criteria and identified 14 general ones (Figure 1): authorship, ownership, currency, objectivity/content, transparency/source, interactivity, privacy/ethics, financial disclosure, navigability links, complementarity, advertising policy, design, quantitative report, and accessibility.

2.1. *The new scoring tool*

We integrated fourteen criteria in 10 categories and constructed our recommended tool for evaluating web-sites providing reproductive health information. This tool contains 3 “Who”s: Who is the author of the webpage, person or institution that has been published in the website and who are the sponsors of the website; 2 “What”s about the purpose of the website and the evidence or resources; 4 “How”s for clarifying the appropriate design, easy to use, regard to privacy and ways of interaction; and finally when was the site updated. (Table2).

3. Discussion

The identified evaluation scoring tools differed in their evaluation criteria. We found 34 criteria and summarized them in 14 general one and created a tool with 10 easily applicable criteria for evaluating web-sites providing reproductive health information. Limiting the number of criteria enhances the tool’s routine use [11].

Kim et al (1999) reviewed published criteria for specifically evaluating health related information on Internet. They found 29 published rating tools and extracted 165 criteria from those tools. 132 (80%) criteria out of them were grouped under one of 12 specific categories. They reported that the most frequently cited criteria were those dealing with content, design and aesthetics of the site, disclosure of authors, sponsors, or developers, currency of information (including frequency of update, freshness, maintenance of site), authority of source, ease of use, and accessibility and availability [4]. In the current study, all of the frequently mentioned criteria in Kim et al’s study have been identified. Finally they concluded the next step is to identify and assess a clear, simple set of consensus criteria that the general public can understand and use [4].

There are two ways to reduce the individual's risk of encountering an inadequate site on the Web. Increasing the ability of the individual to filter inadequate sites or reducing the proportion of inadequate information on the Web [12]. Since continuous review of thousands of websites offering health information is difficult and expensive, a better approach would be empowering patients to evaluate online content for themselves. But there is a lack of consensus about the best tools to use for web-site evaluation and instruments have many and differing criteria. Therefore, an effective and easy set of criteria is needed.

We have proposed a tool, which contains all key criteria for evaluating web-sites providing reproductive health information; further study is required to complete it by using in other health area. This tool has 10 easily understandable and applied criteria. Future research is needed to compare the effectiveness of our and other evaluation tools on satisfaction of users and rely to content of reproductive health information websites.

Our study was limited to reproductive health websites. However the criteria that were identified are similar to those reported in Eysenbach et al’s systematic review [12] suggesting the wider applicability of our findings.

Table 1. The five studied scoring tools

The HON (Health On the Net)	Silberg scores	Hogne Sandvik scale	Jim Kapoun Criteria	HITI criteria
Authoritative: It indicates the	Author’s name,	Authorship: Author’s	Accuracy: Page lists the author and institution	Credibility: Source, context, currency,

qualifications of the authors.	credentials and affiliations	name and qualification	that published the page and provides a way of contacting him/her.	relevance/utility, editorial review process
Complementarity: Information should support, not replace, the doctor-patient relationship.	Statement of site ownership	Ownership: Name and type of provider	Authority: Page lists the author credentials and its domain is preferred (.edu, .gov, .org, or .net)	Content: Accuracy, hierarchy of evidence, original sources stated, disclaimer, omissions noted
Privacy: Confidentiality of data relating to individual patients and visitors to a Web site	References	Source: References given to scientific literature	Objectivity. Page provides accurate information with limited advertising and it is objective in presenting the information.	Disclosure: Purpose of site, profiling
Attribution: It cites the source(s) of published information, date, medical and health pages.	Date first posted	Currency: Date of publication or update	Currency. Page is current and updated regularly (as stated on the page) and the links (if any) are also up-to-date.	Links: Selection, architecture, content, back linkages and descriptions
Justifiability: Sites must back up claims relating to benefits and performance.	Date last up dated	Interactivity: Clear invitation to comment or ask questions by an email address or link to a form	Coverage. It can view the information properly--not limited to fees, browser technology, or software requirement.	Design: Accessibility, logical organization, internal search engine
Transparency: Sites must provide information in the clearest possible manner and provide contact addresses for visitors that seek further information or support	Statement of site sponsorship	Navigability: Information easily found by following links from home page		Interactivity: Mechanism for feedback, chat rooms, tailoring
Financial disclosure: It identifies funding sources	Statement of a lack of conflict of interest	Balance: Balanced information, without bias in favor of own products or services		Caveats: Alerts
Advertising policy: Clearly distinguishes advertising from editorial content				

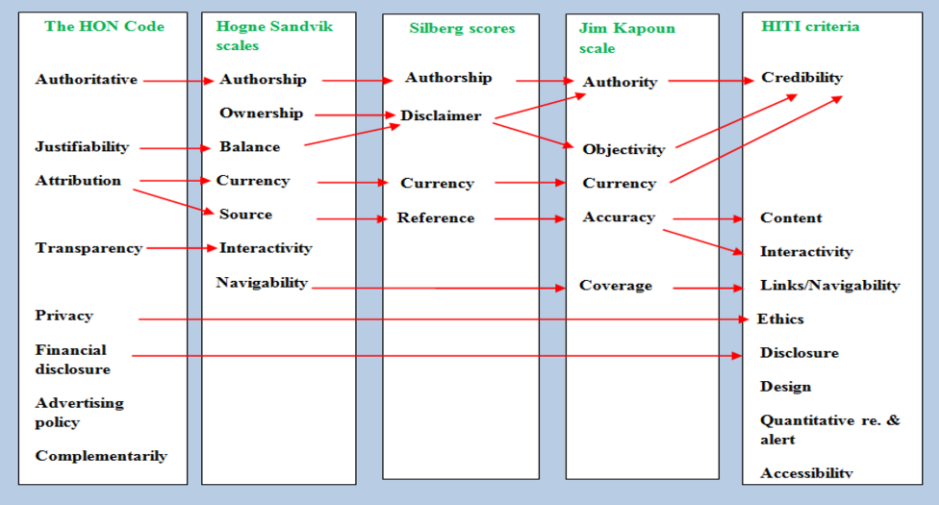


Figure 1- mapping of the five scoring tools

Table 2. Our recommended scoring tool for evaluation web-sites providing reproductive health information

Criteria	Description
Who writes/editorial board	Identifying who wrote the material, who are responsible for the professional and scientific edition and review of the web site materials
Who Runs	Clarifying who is responsible for the site and its information
Who Pays	Funding source of website and advertising policy
What Purpose	Presenting a clear statement of the purpose
What Evidence/sources	Clearly stating the original source of information if it is collected from other web sites or sources
How _ Design	Readability of text, use of image, graph, video and so on
How _ Ease of Use	Easily finding the information on the site or other sites by search engine or links
How _ Regard to Privacy	Describing web site liability and privacy statement
How _ Contact	Ways to contact the site owner, such as email, chat etc.
When	Date of update or review

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