Published criteria for evaluating health related web sites: review

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Abstract

Objective To review published criteria for specifically evaluating health related information on the world wide web, and to identify areas of consensus.

Design Search of world wide web sites and peer reviewed medical journals for explicit criteria for evaluating health related information on the web, using Medline and Lexis-Nexis databases, and the following internet search engines: Yahoo!, Excite, Altavista, Webcrawler, HotBot, Infoseek, Magellan Internet Guide, and Lycos. Criteria were extracted and grouped into categories.

Results 29 published rating tools and journal articles were identified that had explicit criteria for assessing health related web sites. Of the 165 criteria extracted from these tools and articles, 132 (80%) were grouped under one of 12 specific categories and 33 (20%) were grouped as miscellaneous because they lacked specificity or were unique. The most frequently cited criteria were those dealing with content, design and aesthetics of site, disclosure of authors, sponsors, or developers, currency of information (includes frequency of update, freshness, maintenance of site), authority of source, ease of use, and accessibility and availability.

Conclusions Results suggest that many authors agree on key criteria for evaluating health related web sites, and that efforts to develop consensus criteria may be helpful. The next step is to identify and assess a clear, simple set of consensus criteria that the general public can understand and use.

Introduction

The large volume of health information resources available on the internet has great potential to improve health,[1–3] but it is increasingly difficult to discern which resources are accurate or appropriate for users.[3–8] Because of the potential for harm from misleading and inaccurate health information,[9–14] many organisations and individuals have published or implemented criteria for evaluating the appropriateness or quality of these resources.[15 16] Two published reviews of evaluation criteria for health related web sites did not present information on the range of criteria proposed by various authors, and included rating tools that were not developed exclusively for health related sites.[15 17] Our study reviews criteria currently proposed or employed specifically to evaluate health related web sites.

Methods

Databases and search engines

Between September 1997 and May 1998 we conducted a search of the web and peer reviewed medical journals for criteria for evaluating health related information on the web using Medline and Lexis-Nexis databases, and web search engines including Yahoo!, Excite, Altavista, Webcrawler, HotBot, Infoseek, Magellan Internet Guide, and Lycos. Medline searches (using PubMed) used variations of the following: "quality," "Internet," "World Wide Web," "computer communication networks/standards," "quality control," *and* "medical Informatics/standards." Searches with web search engines and Lexis-Nexis used "quality," "health information," "health," and variations of "rating," "ranking," "evaluate," "award," *and* "assess." Investigating references and hyperlinks from initial results gave additional resources. We ended the sampling period when searches produced similar results, and when previous search results became outdated.

Criteria

We included criteria when they were explicit, specifically used for evaluating health related web sites, and published in a peer reviewed journal or publicly accessible web site. We also considered peer reviewed journals not indexed by Medline. We included resources framed as "guidelines" because there was little difference between them and other criteria, and the intent of the authors was similar. When subcriteria provided details about main criteria, we included only the main criteria to prevent overrepresenting that author's perspective. Criteria were extracted and sorted into similar groups according to their wording and description. When a criterion seemed to combine several concepts and could fit in multiple groups, we considered the first mentioned concept.

To examine the reproducibility of the criteria groupings, four independent, naive coders assigned 40 randomly selected criteria to the 13 criteria groups. Overall, the coders' assignment of criteria agreed with us 76% of the time. The agreement coefficient, indicating "per cent agreement above chance" was 0.74 or 74%.[18]

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website *e*xtra

A description of the agreement coefficient appears on the BMJ's website

www.bmj.com

Table 1 Rating tools and journal articles with explicit criteria for evaluation of health related web sites

Source of rating tool or article	URL address*
AltiMed/PharmaLINKS	www.altimed.com/links/ratings.html
American Medical Association	www.ama-assn.org/med_link/med_link.htm
Biosites, Pacific Southwest Regional Medical Library	www.library.ucsf.edu/biosites/help/guidelines.html
British Healthcare Internet Association	www.bhia.org/public/reference/recommendations/medpubstandards.htm
Growth House	www.growthhouse.org/award.html
Health A to Z	www.healthatoz.com/aboutus.htm
Health Information Institute's Aesculapius Awards	www.hii.org/judging.htm
Health On the Net Foundation	www.hon.ch/HONcode/Conduct.html
Health Summit I Mtg/Mitretek Systems	www.mitretek.org/hiti/showcase/documents/criteria.html
Health Web	healthweb.org/wg/content/papers/guidelines.html
Healthfinder	www.healthfinder.gov/aboutus/selectionpolicy.htm
Kotecki JE, Siegel DE. Electronic notes: use of a critical thinking/questioning approach to evaluate WWW information. *Am J Health Behav* 1998;22:75-6.	Not available online
Larkin M. Health information on-line. *FDA Consumer* 1996;30:21-5.	www.fda.gov/fdac/features/596_info.html
McGill University Health Sciences and Osler Libraries, Canada	www.health.library.mcgill.ca/resource/criteria.htm
Medical Matrix	www.medmatrix.org/info/sitesurvey.html
Medsite Navigator, Guide to Digital Science and Medicine	www.medsitenavigator.com/mail/submit.html
Mental Health Net	www.cmhc.com/help/ratings.htm
Mountain and Plains Partnership	www.uchsc.edu/csa/areahec/home/mapp/8aWWW.html#public
Nutrition Navigator	navigator.tufts.edu/ratings.html
Organising Medical Networked Information	omni.ac.uk/agec/evalguid.html
Reference 16	Not available online
Physician's Choice	www.mdchoice.com/instruc.htm
Psych Central: Best of the Web in Mental Health	www.grohol.com/rateguid.htm
Reference 6	www.ama-assn.org/sci-pubs/journals/archive/jama/vol_277/no_15/ed7016x.htm
Sympatico's HealthyWay Health Links	www1.sympatico.ca/healthyway/GENERAL/info_2.html
The Six Senses Review	www.sixsenses.com/FAQ.html#rating
The Virtual Hospital	indy.radiology.uiowa.edu/Beyond/PeerReviews/01Introduction.html
The Wilton Library	w3.nai.net/~wla/eval.htm
Reference 8	www.bmj.com/archive/7098ip2.htm

*Because of dynamic nature of web, some URLs may have changed. URLs prefixed with http://

Results

Twenty nine rating tools and articles—24 web sites and five journal articles—had explicit criteria for assessing health related web sites (table 1). Of the 165 criteria identified, 132 (80%) were grouped under 12 specific categories (table 2). Thirty three (20%) criteria that lacked specificity or were unique were categorised as "miscellaneous." Frequently cited criteria included those dealing with content, design and aesthetics of site, and disclosure of authors, sponsors, or developers.

Discussion

Not surprisingly, "content" of the site, which includes concepts of information quality and accuracy, was the most commonly cited criterion group. Design and aesthetics of the site and ease of use were the second and sixth most frequently cited groups respectively, indicating that authors highly value good quality application design and user interfaces. Disclosure of authors, sponsors, or developers had the third highest frequency, highlighting the need for users to be able to consider a site's content in the context of who created or financed the site. It was somewhat surprising that disclosure was not more commonly cited given recent reports about misleading health information and fraud on the internet.[9 11 12] Most rating tools discriminated between content and the fourth most common criterion group, currency of information (includes frequency of update, freshness, maintenance of site), suggesting that

Table 2 Frequency of explicit criteria for evaluation of health related web sites by criteria groups*

Criteria groups	Frequency (%) (n=165)
Content of site (includes quality, reliability, accuracy, scope, depth)	30 (18)
Design and aesthetics (includes layout, interactivity, presentation, appeal, graphics, use of media)	22 (13)
Disclosure of authors, sponsors, developers (includes identification of purpose, nature of organisation, sources of support, authorship, origin)	20 (12)
Currency of information (includes frequency of update, freshness, maintenance of site)	14 (8)
Authority of source (includes reputation of source, credibility, trustworthiness)	11 (7)
Ease of use (includes usability, navigability, functionality)	9 (5)
Accessibility and availability (includes ease of access, fee for access, stability)	9 (5)
Links (includes quality of links, links to other sources)	5 (3)
Attribution and documentation (includes presentation of clear references, balanced evidence)	5 (3)
Intended audience (includes nature of intended users, appropriateness for intended users)	3 (2)
Contact addresses or feedback mechanism (includes availability of contact information, contact address)	2 (1)
User support (includes availability of support, documentation for users)	2 (1)
Miscellaneous (includes criterion that lacked specificity or were unique)	33 (20)

*Of five authors who assigned weights or priorities to their proposed criteria, four cited content and one cited peer review (categorised as miscellaneous) as most important criterion. Percentage total does not equal 100 owing to rounding-off.

Key messages

- Many organisations and individuals have published criteria to evaluate health related information on the world wide web
- A literature and world wide web search found that the most frequently cited criteria were those dealing with content, design and aesthetics of site, disclosure of authors, sponsors, or developers, currency of information, authority of source, and ease of use
- Criteria related to confidentiality and privacy were only cited by one author
- Consensus regarding critical criteria for evaluation of web based health information seems to be emerging
- Our results indicate that many authors agree on key criteria for evaluating health related web sites, and that efforts to develop a set of key criteria may be helpful

currency of information is nearly as important as the information itself.

Criteria related to confidentiality and privacy of information were only cited by one author despite widespread interest in this issue.[19] Some health related web sites are already collecting personal health information to "tailor" content, and as sites begin to integrate healthcare services and information, confidentiality and privacy safeguards will become increasingly important.[19–21]

Study limitations

Study limitations include the subjective variables around the scope of the criteria categories used. Testing of the category groupings, however, showed that they were reproducible by others. It is also possible that some authors used the same criteria terms to describe different concepts. Because subcriteria were not included, some concepts may not have been represented. Inherent limitations of web search engines and the dynamic nature of the web also prevented us from locating all existing published criteria.[22] Nevertheless, our review located more sources of criteria specifically for health related sites than did previous reviews.[15 17]

Conclusion

Given the evolving state of the internet, it may be difficult or even inappropriate to develop a static tool or system for assessing health related web sites. Our results suggest that many authors agree on key criteria, and that efforts to develop consensus criteria may be helpful.[6 16 23–25] The next step is to identify and assess a clear, simple set of consensus criteria that the general public can understand and use. Tools that integrate them need to be developed and validated, and their ultimate impact and effectiveness in assisting the public with health related decisions should be monitored to ensure that they remain useful.

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Endpiece

How to start

The last thing we find out when writing a book is what we must put first.

Blaise Pascal, *Pensées*