Measuring the Relevance of Evaluation Criteria among Health Information Seekers on the Internet

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Abstract
This study identified the criteria that are valued among Internet users when rating and accessing health information on the World Wide Web. Participants (N = 578) successfully completed a Web-based survey by ranking 12 criteria for evaluating health information. Then, by applying those same evaluation criteria, rated the quality of three preselected health-related websites and indicated their preference for one of the three sites. Six criteria including content, design and aesthetics, currency of information and contact addresses were significant predictors for selecting high-quality health information on the Internet. However, compared to their perceived importance, participants’ perceptions about quality health information on the Internet were not consistent when selecting quality websites. This study identified the implications for evaluation criteria among Internet users, health professionals and website developers.

Keywords
eHealth, evaluation criteria, health communication, health professional
Introduction

The Internet is becoming a communication medium of unprecedented magnitude. It is estimated that 259 million individuals worldwide regularly use it, with 168 million (65%) of those users in the United States. Moreover, worldwide projections of Internet use are estimated to be over 765 million by the end of 2005 (Eng, 2001; Petska, 1999). The Internet facilitates access to an increasing array of health information and health-related support services, while extending the reach of health communication efforts (US Department of Health and Human Services, 2000). Weiler and Pealer (2000) identify that two-thirds of Internet users in the United States searched for health information in the past year, with 90 percent indicating they found the specific information they sought. Further, a recent survey published in the Journal of the American Medical Association, found that most Internet health information seekers (70%) rely on the information they find to make decisions and guide their actions (Berland, Elliott, Morales, Algazy, Kravitz, Broder, Kanouse, Munoz, Puyol, Lara, Watkins, Yang, & McGlynn, 2001).

Eng (2001) indicated that more health information is available today than ever before, and health information seekers can obtain support and advice from millions of online peers and professionals worldwide at any time of day. The Internet allows these information seekers to assess their health risks, consider prevention options, decide on treatment regimens, fill a prescription, manage a chronic condition and consult a health professional without leaving their home. Current and emerging information and communication technologies promise innovative solutions to current challenges in health promotion and health care, including quality, access, decision making and cost. Given the potential of the Internet and other technologies to improve health, the term eHealth is intended to describe how computer-mediated health communication can support the needs of health care consumers and providers. Specifically, ‘eHealth is the use of emerging information and communication technology, especially the Internet, to improve or enable health and health care. This term bridges both the clinical and nonclinical sectors and includes both individual and population health-oriented tools’ (Eng, 2001, p. 7).

Although the increasing volume of health information available on the Internet has great potential to promote public health, it is becoming increasingly difficult to discern which resources are accurate or appropriate for users (Eng, 2001; Eng, Maxfield, Patrick, Deering, Ratzan, & Gustafson, 1998; Kim, Eng, Deering, & Maxfield, 1999; Robinson, Patrick, Eng, & Gustafson, 1998). Because of the lack of published regulations related to the Internet there is growing concern that a substantial proportion of health information might be inaccurate, erroneous, misleading or fraudulent, and thereby pose a threat to public health (McLeod, 1998). A according to Eng, consequences of poor quality eHealth applications include ‘inappropriate treatment or delays in seeking appropriate health care, damage to the patient–provider relationship, and violations of privacy and confidentiality’ (2001, p. 12).

The perceived potential for harm from misleading or inaccurate health information on the Internet has resulted in many organizations and individuals creating, publishing and implementing criteria for evaluating the quality of this information (Adelhard & Obst, 1999; Kim et al., 1999; Silberg, Lundberg, & Musacchio, 1997; Weiler & Pealer, 2000). Proposed approaches to ensuring quality of eHealth resources include accreditation, certification, rating systems, public disclosure of key information about a site or product and posting of seals and logos indicating compliance with a set of quality standards (Eng, 2001). The primary purpose for creating these published criteria is to evaluate the expected quality and outcomes of health-related Internet sites (Science Panel of Interactive Communication and Health (SciPICH), 1999a).

A number of eHealth evaluation criteria can be found on the Internet (healthfinder.gov; HON, 1999; SciPICH, 1999b). However, these evaluation criteria differ in their methodology, reproducibility and relevance. Other common deficiencies include insufficient criteria for assessing content quality and faulty measurement mechanisms that produce misleading scores (Weiler & Pealer, 2000). The development of one set of simple, basic evaluation criteria oriented toward consumers is needed to correctly assess Web-based health information.
A recent study conducted by the US Department of Health and Human Services (USDHHS), reviewed criteria currently used specifically to evaluate health information on the Internet (Kim et al., 1999). USDHHS authors identified 165 criteria extracted from 29 evaluation tools for health information on the Internet from websites and scientific literature. Of the 165 criteria listed, 80 percent were grouped into 12 specific categories. These categories emerged as the top 12 quality criteria to be most utilized in current evaluation of health information on the Internet. These 12 criteria and definitions are found in Kim et al. (1999).

The questions that remain are whether these criteria truly measure the quality of available Internet health information and whether or not any of these criteria are important to those seeking reliable and accurate health information. To date, few developed standards have undergone rigorous testing for validity and reliability, and many of them have not been tested to determine how public audiences value or rely on these standards (Weiler & Pealer, 2000). Consumer-based research is needed to determine the value of the 12 evaluation criteria identified (Eng, 2001). Additionally, tools that integrate the criteria need to be developed and validated, and their ultimate impact and effectiveness in assisting consumers with health-related decisions should be monitored to ensure that they remain useful (Kim et al., 1999).

**Purpose**

The purpose of this study is to identify the level of use for the USDHHS 12 evaluation criteria among Internet health information seekers and to determine how these information seekers discern quality when comparing similar websites. This study intends to answer the general question: Do lay observers implicitly know how to use these criteria to judge the quality of websites for themselves? If so, does their behavior support their judgment, or does the perceived value of a site compel a person’s usage regardless of its quality? More specifically, we investigate the following:

1. What is the abstract importance (rank) of the USDHHS Internet evaluation criteria among respondents before being asked to review specific health sites?
2. Which criteria do respondents identify (rate) as being most effective in supporting their task of evaluating actual health websites?
3. How do respondents differ from each other in their use of evaluative criteria?

The importance and uniqueness of this study is four-fold. First, it defines the relevance of the key quality criteria identified by the USDHHS. Second, it compares consumers ranking of evaluation criteria to the rating of high-, medium- and low-quality health Internet sites. Third, knowing which criteria are most important to the target audience will help health professionals better refine the design of their messages for Internet users. Finally, the results will provide direction in evaluating and developing future quality health-related websites (Yuh et al., 2000).

**Methods**

**Instrument**

Twelve key criteria identified by the USDHHS formed the survey tool. The survey instrument was designed to measure the perceived value (importance) and effectiveness of the 12 key quality criteria: content; design and aesthetics; disclosure of authors, sponsors or developers; currency of information; authority of source; ease of use; accessibility and availability; links; attribution and documentation; intended audience; contact addresses or feedback; and user support.

The instrument underwent a content validity review by a panel of health communication and statistical experts. The panelists evaluated each specific question within categories to confirm the appropriateness of wording, understandability and measurement of response options. Questions were revised using revise/retain/delete decisions for each criterion question. Most panelists suggested the combination of two categories into one because participants may not easily distinguish the differences (contact addresses, user support). A Cronbach’s alpha was calculated on collected data for each criterion to assess internal-consistency reliability. A Cronbach’s alpha coefficient was conducted on the data from the evaluation subscales...
of the three websites. Each subscale produced coefficients (A = .95, B = .94, C = .95, overall standardized = 0.95) indicating a high degree of item consistency.

An interactive Web-based instrument was designed to allow immediate Internet connection, to control for errant entries and to provide immediate participant feedback at completion. The instrument was presented in two sections (Table 1). The first section explained terminology and assessed the value (abstract importance) of each of the 12 criteria when looking for health information on the Internet. Each participant was asked to identify which of the 12 criteria was the most important or of highest value and which was the least important or of lowest value when looking for health information on the Internet. Participants then ranked each of the listed criteria in order of their abstract importance (1 being the most important to 12 being the least important). The purpose of the second section was to identify the perceived effectiveness of the criteria by considering each as a measure of quality for the three predetermined health Internet sites. Participants were directed to the same three websites in random order and were asked to examine the content and quality of each site as it relates to one of the most sought after health issues among Internet users, flu and colds (Guttman, 2000). Following the review of each site, participants then assessed the quality of the information presented by rating each Internet site. Quality was measured by a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1) to reflect each participant’s agreement with a statement describing the Internet site for each quality criterion (Table 2).

A thorough search was conducted for websites containing flu/cold information. A total of 161 ranked websites were found containing flu/cold information, of which three were purposively selected. The websites were categorized and ranked by the Medical Matrix (http://www.medmatrix.org). Medical Matrix is a nationally recognized organization that ranks health-related Internet resources from high quality (five stars) to low quality (one star) based on the following characteristics: quality; peer review; full content; multimedia features; and unrestricted access (Medical Matrix, 2000). Using the same point system utilized by Medical Matrix allowed the researchers to identify high-quality, medium-quality and low-quality websites. The websites selected included ‘CBS health watch library’, ‘Guide to symptoms, solutions, and self-care’ and ‘Dr Koop medical encyclopedia’ (high-, medium- and low-quality, respectively). The researchers selected among options to represent government-sponsored, non-profit and commercial sector websites. These types are important because they represent the common variety of website distributors. Using preselected websites from Medical Matrix was important because: (a) they obtained sufficient variability between websites for

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### Table 1. Section one instrument: perceived importance of 12 criteria by ranking

<table>
<thead>
<tr>
<th>Statement</th>
<th>Criteria statement addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The date of publication is clearly posted and adequately updated</td>
<td>Currency of information</td>
</tr>
<tr>
<td>Sources of information are clearly labeled</td>
<td>Disclosure of authors, sponsors, developers</td>
</tr>
<tr>
<td>A contact is available for questions/comments/help</td>
<td>User support</td>
</tr>
<tr>
<td>Information is reliable</td>
<td>Attribution and documentation</td>
</tr>
<tr>
<td>Reliable source</td>
<td>Authority of source</td>
</tr>
<tr>
<td>Retrieved easily and in a timely manner</td>
<td>Ease of use</td>
</tr>
<tr>
<td>Information on an Internet site is easy to access</td>
<td>Accessibility and availability</td>
</tr>
<tr>
<td>All links are clearly labeled and function properly</td>
<td>Links</td>
</tr>
<tr>
<td>Contact information (e-mail, addresses and phone) for the author/editor are available</td>
<td>Contact addresses</td>
</tr>
<tr>
<td>The scope of the information on the Internet site is appropriate for the intended audience</td>
<td>Intended audience</td>
</tr>
<tr>
<td>Graphics/sounds/audio serve a clear purpose while being appealing</td>
<td>Design and aesthetics</td>
</tr>
<tr>
<td>The purpose of the site is clearly stated and information is accurate</td>
<td>Content</td>
</tr>
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purposes of analysis; (b) they allowed consistency in comparing the reactions of the health information seekers since all participants linked to the same three websites; (c) they reflect general health interests that most people can easily relate to; (d) they minimized selection bias by relying on Medical Matrix’s criteria for low-, medium- and high-quality websites. The website quality rankings were not revealed to any of the subjects; and (e) they allowed a control for an order effect. The order of the websites was randomly presented to the participants by the computer.

Participants
Research participants (N = 1290) were employees at the Idaho National Engineering and Environmental Laboratories (INEEL) who were currently enrolled in the INEEL Occupational Medicine Health Promotion Program. All subjects were either full- or part-time employees; had an assigned e-mail address from the company; and had access to the Internet. Subjects were selected from INEEL because its large population of employees was representative of a diverse group of users whose ages, gender and education reflect the evolving profile of Internet users (Eng, 2001; HON, 1997).

Procedures
Research participants were contacted by e-mail and invited to participate in the study. Participants accessed a cover page of the survey via a hyperlink included in the initial e-mail correspondence. The cover page introduced the study objectives and authors and included an informed consent form and a contact person from the Institutional Review Board of INEEL and the Committee on Human Research at the sponsoring university. After reading the informed consent and agreeing to participate, the subjects accessed the survey by supplying the correct access code (given to each subject in the initial e-mail), entering their e-mail address and clicking the ‘Submit Informed Consent’ hyperlink button. The subjects were asked to complete section one (criteria ranking portion) and then section two (rating websites using criteria) of the survey for each of the three designated websites. To assure consistency while searching through each website, each subject was asked to seek relevant flu/cold information. At the conclusion of the survey, the subjects were asked to indicate which of the three websites they would most likely use as a health resource.

The authors discovered while conducting the research that there was a technical error in the design in one of the website questions. The last question (identify best of the three websites) was in a pop-up window. The authors found that some subjects answered the question, but due to a design weakness associated with the use of one particular Internet browser, they were unable to see the submit button. As a result, these participants closed the window without submitting their final answer. This resulted in the subjects’
removal from the successfully completed population and a reduction in the overall response rate (from 67 percent to 45 percent); that is, by the number of participant ID numbers assigned, the authors concluded that 860 of the 1290 subjects accessed the Web-based survey, resulting in a 67 percent response rate. A total of 578 subjects successfully completed the survey, for an overall response rate of 45 percent.

There was no significant difference between those that responded to the survey and those that did not on the basis of age and gender. However, there was a significant difference in one education subgroup. There were significantly fewer PhDs that responded (7) than was expected out of the potential sample pool of 40. All other classifications of education were not significantly different between respondents and non-respondents.

The study is based on the following assumptions: (a) the criteria measured held some value to the participants; (b) the participants would understand the key criteria in context and would correctly utilize them while evaluating or ranking health information on the Internet; (c) the 12 criteria addressed characteristics of quality that participants value when searching for health information on the Internet; (d) the websites selected maintained their assigned categories of high-, medium- and low-quality websites for the length of the study; and (e) the study participants were competent in their Internet browsing skills to explore the three designated websites.

Analysis
Data were analyzed using binary logistic regression and descriptive statistics as calculated through the SAS and SPSS statistical systems. Means were calculated for each of the criteria in the first section of the survey. The respondents’ ratings from the second section of the survey indicating the Internet-site choice (dependent variable) were regressed on each statement representing one of the 12 criteria. Regressions were conducted for simultaneous analysis of all three outcome variables together (all websites together), and separate analysis of each outcome variable individually (each website separately). All criteria included in the regression model were significant using the 0.10 level for each binary logistic regression. Because limited research in this area has occurred, a liberal level of significance was selected, thus avoiding the probability of committing a Type II error (Isaac & Michael, 1990). Odds ratios, p-values and concordance values were reported for each regression.

Results
Aproximately 24 percent of participants had some college or an Associates degree, 40 percent of the subjects had a Bachelor’s degree, 20 percent a Master’s degree or higher and the remaining 16 percent had not attended college. Fifty-seven percent of the subjects were male and 42 percent were female, with an overall average age of approximately 44 years.

Ranking of the criteria
The first 12 ranked questions from section one of the survey were analyzed to determine their relative importance, as found in Table 3. Attribution and documentation, and authority of source were ranked as the most important by the respondents. Overall, issues of credibility where information is accurate and reliable and where sources are reliable were rated as important. Design and aesthetics were listed as least important to the subjects, followed by contact addresses, intended audience and content. Overall, the least important criteria appear to relate to ease of use, and design and appeal issues.

Rating websites using the criteria
From the second section of the survey instrument, respondents rated/evaluated three health websites using the 12 criteria. An overall regression of the significant variables associated with all quality selections was calculated analyzing the total data of the three websites (Table 4 and Table 5). Six of the criteria proved to be significant correlates/predictors from the overall regression (overall concordance was 66 percent) of all three websites including: content, design and aesthetics, currency of information, intended audience and contact addresses and user support. The criteria identified accounted for approximately 66 percent of variability relating to selecting all quality variables for websites A, B and C (Table 5). Unlike the results from the
ranking of criteria, design and aesthetics emerged as a significant predictor for overall website quality. This demonstrates that the respondents’ perceptions about quality health information on the Internet are not consistent with their actions when selecting quality websites.

The highest rated site was website A, CBS, with 222 respondents making this selection. There were 186 respondents who selected website B, Guide to symptoms and 170 subjects selected website C, Dr Koop. This was consistent with the quality rankings reported by Medical Matrix from high quality to low quality. Each of the three websites, analyzed both separately and then together, had at least one significant criterion that influenced decisions to choose that website.

Individual regressions were calculated for each of the three websites (Table 5). Five of the 12 criteria were found to be significantly associated with choosing website A (CBS—high quality). These correlates/predictors included, content, currency of information, authority of source, contact addresses and user support. The criteria identified accounted for approximately 67.4 percent of variability relating to selecting website A. One of the 12 criteria was found to be a significant predictor of choosing website B (Guide to symptoms—medium quality) which was ease of use. The criteria identified accounted for 71 percent of the variability relating to selecting website B. Four criteria were found to be significant predictors of selecting website C (Dr Koop—low quality): disclosure of authors, sponsors and developers; currency of information; ease of use; and intended audience. These four criteria accounted for 68.9 percent of the variability relating to selecting website C. These findings are consistent with and validate the rankings of websites from Medical Matrix.

Oravec (2000) and Medical Matrix observed similarly that quality websites are essentially determined by content, and design and aesthetics (Medical Matrix, 2000).

Select demographic variables were tested in relation to the resulting website choice using crosstabs in SPSS (Table 6). The subjects were
categorized by decades according to age. Subjects less than 50 years of age preferred the CBS website (high-quality ranked). Yet, subjects older than 50 preferred the Guide to symptoms website (medium-quality ranked) over the CBS website. There was a significant relation among age and propensity to select high-quality sites (Chi² of 31.784, p <0.000).

**Discussion**

The primary aim of this study was to identify the relevance of the 12 quality criteria used to evaluate health information on websites among Internet users. The three research questions explored: (a) the perceived relevance of the 12 criteria; (b) the actual criteria applied for...
evaluating websites; and (c) respondent differences in using the criteria. Five of the 12 criteria were found to be significant predictors for selecting high-quality health information on the Internet. However, compared to their perceived importance, participants’ perceptions about quality health information on the Internet were not consistent when selecting quality websites.

Perceived relevance of the criteria (research question 1)
The most important criteria identified by respondents prior to accessing the websites were attribution and documentation, authority of sources and ease of use. The least important ranked criteria identified were design and aesthetics, contact addresses, intended audience and content. In general, the least important criteria appear to revolve around design and appeal issues. This implies that the respondents highly value criteria that deal directly with credibility and will therefore utilize them when assessing health information on the Internet and selecting a reliable health-related web site.

Actual utility of the criteria to evaluate websites (research question 2)
Five of the 12 criteria including content, currency of information, authority of source, contact addresses and user support proved to be significant predictors for selecting high-quality health information among consumers. This suggests that the 12 criteria identified by the USDHHS may be important and relevant to consumers when selecting high-quality health information. However, the same criteria are not consistent for consumers when selecting medium- or low-quality health information. In any case, these results suggest that the selection of quality health websites is complex, and involves cognitive or rational and personal preferences to influence health-seeking information practices.

A disparity between the perceived and actual value of design and aesthetics is evident. Most notably, content is least valued from the ranking portion of the study, but content is the most highly valued predictor when rating the three websites. This demonstrates that the respondents’ perceptions about quality health information on the Internet are not consistent with their actions when selecting quality websites. This finding confirms Healthy people 2010 health communication objectives that focus on the importance of consumers learning to distinguish Internet quality.

Previous research has shown that less involved consumers (e.g. consumers who may not care about flu/cold information) are more likely to be influenced by design, aesthetics and appeal, while those who are highly involved are more likely to be influenced by content and currency of information (Solomon, Bamossy, & Askegaard, 1999). Such research may help identify the inconsistent perception and utilization of design and aesthetics. For example, a person who has diabetes and is searching for information on complications of diabetes will probably be less influenced by the visual design of the website and more influenced by the information. In contrast, a college student completing a research paper on diabetes will be more likely to visit websites that are visually appealing and designed for ease of use.

Another issue reflecting the discrepancy found in our study related to time. People bombarded with several websites to choose from may not have time to evaluate each site to determine whether the information is credible or valid. Health information seekers are willing to act on what they find to be most meaningful to them, yet if time limits their ability to search or compare between sites adequately, eye-catching designs or technology-pumped websites are likely to appear of higher quality. Thus, Internet consumers appear to judge quality by appearance, and despite the fact that important decisions need to be made, they are likely to be influenced largely by the design of the website. Those sites perceived to be user friendly are likely to be the ones they revisit or where they spend more time consuming the information because they believe time may be saved.

Respondent differences in using the criteria: the need for education (research question 3)
Persons younger than 50 may be more sophisticated in identifying websites that reflect the USDHHS quality criteria, and also are more prone to agree with the high-quality rankings of Medical Matrix. Although the reason for the discrepancy is unknown and not emphasized in the
literature, Web designers should take these preferences into account, especially if the website is targeted at older adult populations.

A n implication for Web designers is that the site needs to be appealing to initially attract the consumer. Web developers are under pressure to attend to messages, but also to deliver their products quickly and within budget. Web developers of eHealth resources are an extremely heterogeneous group with differing skills and resources. The need to keep ahead of the competition and remain financially profitable ‘may result in released products that are not fully bug-free or have not been completely tested and evaluated’ (Eng, 2001, p. 10). Clearly, a wide variety of individuals and entities are involved in eHealth development, and as a result, development efforts are often uncoordinated. Many developers may also have limited expertise in technical or topic-specific areas that are critical for product development and evaluation. Consequently, there is considerable overlap and gaps in eHealth content, and there is an increased need for developers and other stakeholders to exchange ideas and collaborate to improve the quality and effectiveness of eHealth applications (Eng, 2001).

The Internet, while providing a vast amount of information, is also contributing to the creation of a generation of consumers who lack the ability to evaluate this information and use it to make good decisions (Fornaciari & Roca, 1999). The results of this study confirm data identified in Healthy people 2010 that a disparity in consumer-minded knowledge among Internet users exists. Educational efforts are needed to assist Internet users when rating and retrieving quality health information on the Internet. However, simply teaching consumers how to be good Internet users is likely not enough—the message and the criteria must be personally relevant for information seekers to make the best selection.

Internet consumers must understand the criteria and know how to apply them. If the criteria are well understood and are reflected in how the website message is seen, it is reasonable to assume that the message becomes more motivating and meaningful. Health professionals can provide guidance for assessing quality health information on the Internet by educating the Internet user on the correct implementation of the users’ valued criteria. According to Oravec (2000) health professionals need to promote critical thinking and media literacy skills among consumers searching for Web-based health information. Enabling Internet users to correctly utilize their valued criteria when actively accessing quality health-related websites will help Internet users to think more critically. With educational efforts directed at the implementation and utilization of the users’ valued criteria, Internet users will move from appearance-based to credibility-based selection. This will better ensure relevant analysis of the quality of health-related websites (Oravec, 2000).

In the midst of an unparalleled information revolution, good communication, effective evaluation and educated decisions are more crucial than ever. If we fail to meet the current challenge and educate consumers properly, we may miss the opportunity to make accessing health information more efficient and relevant, moving instead to a health information environment ruled by confusion, differences of opinion, anxiety and unnecessary harm (Jadad & Gagliardi, 1998).

Potential consumer education perspectives for future research include: Does education begin with learning and applying established criteria? or Does education begin with learning where and how to search for quality information? or Does education begin with asking consumers what the valued criteria should be? Regardless of how each question may be answered, it is clear that practitioners must conduct formative research (pre-implementation) among a target audience of health seekers using the Internet. Such research will identify consumer preferences for health websites, help practitioners understand how quality is interpreted by consumers, and help developers produce appropriate health websites.

Limitations include the following: it is possible that the selected population did not share the same level of interest in seeking health information from flu/cold websites at that time (some may have recently had a cold while others may not have had a cold in months due to the season). However, as identified earlier, flu/cold-related websites are the most frequently visited as they relate to the most common type of generic health issue for which Internet users seek information.
Due to the non-random selection of subjects, generalizability is limited to the employees of INEEL enrolled in the health program. Limitations as reflected in the overall response rate include the constraints of Web navigation in Web-based surveys and the overall length of the survey. Unfortunately the pretest did not detect the limitation of a non-visible submit button in one of the Internet browsers used, which significantly reduced the number of qualified responses.

Conclusions

Researchers (Eng, 2001 and others) have called into question the quality of information posted on medically related websites. The same researchers have carefully articulated the criteria that should be used to judge the quality of different types of health sites. This study identified that lay observers generally know how to use the 12 key quality criteria to judge the quality of websites for themselves. Yet their final assessment of website quality did not always support their initial judgment. It appears that the perceived value of a site may compel a person’s usage regardless of its quality.

E-health consumers are influenced by the layout and appeal of websites. Not all appealing sites are low quality and not all high-quality sites are non-appealing. As expected, the respondents in this study revealed that simply identifying valid, consistent and concise criteria is not enough. In theory, the USDHHS published the 12 quality criteria to provide the skills necessary to distinguish between the quality of information presented in health-related Internet sites. This study emphasizes that providing the criteria alone is not enough to support their initial judgment. It appears that the perceived value of a site may compel a person’s usage regardless of its quality.

Additional specific conclusions include the following: (a) respondents identified that the ranked perceived importance of criteria and the application of those evaluation criteria for websites must be accurate and reliable. The information and source needs to be perceived as reliable, and the information needs to be accurate; (b) ease of use was consistently valued when comparing both portions of the survey data. When identifying quality websites, participants indicated that they wanted the information labeled and organized, and easy to use. (c) current, updated information is important. Although information may be current, it may not be reliable; and (d) visual appeal is important. A though information may be current, it may not be reliable; and visual appeal, as assessed through design and aesthetics, is the variable that elicits inconsistency between the abstract importance of the Web criteria and the application of those criteria while evaluating websites. Thus respondents rely more on design and aesthetics when actually working with a website than they might if considered alone in the abstract. One thought is that aesthetics is something that is difficult to put into context for assessment in the abstract. However, when its presence is detected in a website it is easier to identify its importance.

Quality health information on the Internet will likely always be mixed with low-quality health information. The creation of valid, consistent and concise evaluation criteria has proven to be a relevant guide for consumers when accessing high-quality health information. However, health information seekers need to be selective and consumer-oriented when selecting relevant eHealth information. Additionally, if health educators and other health professionals include Internet education as an important element of their overall responsibility and play an active role in consumers’ online queries, accessing websites of lower quality might be limited, while visits to worthwhile websites may be encouraged. Furthermore, those developers of Internet health resources must remain keenly aware of the consumers’ appeal to various health sites and create high-quality, reliable and relevant health-related websites according to the consumers’ need. Finally, more research should identify the most efficient and effective means of communicating the importance and relevance of the 12 evaluation criteria for health information.
information on the Internet among Internet users and developers.

References