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Evaluation of Health on the Net seal label and DISCERN as content quality indicators for patients seeking information about thumb sucking habit

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ABSTRACT

Aims: The aim of this study was to evaluate the reliability of websites on the thumb sucking habit using DISCERN instrument and Health on the Net (HON) seal code at a single moment in time. **Subjects and Methods:** An Internet search engine (www.google.com) was used to identify websites comprising information on "thumb sucking habit." Of over 204,000 links for thumb sucking habit, the first 100 were analyzed in detail. After excluding discussion groups, news and video feeds, and removing carbon copy sites, only 36 relevant websites remained, which were then assessed using the DISCERN instrument and HON seal code. Using the 16 questions of DISCERN for assessing the reliability and quality of the consumer information which were scored from 1 to 5, an appropriate index of the quality of the information was generated. All the assessed websites were also checked for presence or absence of HON seal code. **Results:** The maximum score attainable for an outstanding website is 80. Of the 36 websites that were scored the highest score obtained by one of the websites according to the DISCERN tool was 55 of 80, and the lowest score achieved was 16 of 80. The websites achieving the maximum and minimum score were children.webmd.com and thebehaviorsolution.com, respectively. The HON seal was displayed only in three websites, which were medicinenet.com, righthealth.com, and children. webmd.com. **Conclusions:** By directing patients to validated websites on the thumb sucking habit, clinicians can ensure patients find appropriate information.

$\mathcal{T}$humb sucking is a common habit in the pediatric age group and is frequent at bedtime, during illness, and in times of emotional tension. It is usually related with oral pleasure and self-comforting behavior, persisting approximately into the 5th year.[1] From an oral health standpoint, traditional

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thinking has held that although nonnutritive sucking habits have adverse effects on orofacial development, such effects were thought to be "reversible" and of little consequence if the habit was halted by age 6 years. It is a concerned matter for parents to avail information regarding the thumb sucking habit, which they can browse through the Internet.

Communication between health professionals and patients is inherently difficult. From the perspective of a health professional, a number of barriers exist including the use of technical terminology, the volume of information to be delivered, time constraints, and lack of familiarity with the information on the patient's part.[2] The Internet has a number of advantages over other formats for communicating health information, which allows rapid and easy path to a vast store of medical knowledge, previously only available in specialist libraries. It is also able to provide links to related websites, expanding the speed and range of information acquired in a single search.[3]

With the advent of the Internet, medically related information is easily gained with the click of a mouse. The World Wide Web is potentially a very powerful and dynamic vehicle for providing patient education. Health information is one of the most sought-after topics on the Internet,[4] not as a means of replacing advice given by health professionals but for validation of the information given and to gather additional information.[5] The Internet allows increased access to health information and hence, from a patient's point of view, can be regarded as a tool for self-education. It acts as a source not only of information but also as an outlet for patients to search for support and advice.[6]

Many factors affect the quality of web-based information. Proprietors of health-care websites are competing for sales and market share, which can often lead to selective disclosure of evidence and the presentation of inaccurate information.[7] Regrettably, the reliability of information provided on the Internet has been called into question. Eysenbach, *et al.*[3] found that 70% of websites presenting healthcare information had significant quality issues. The greatest barrier to the Internet reaching its potential to inform health care is not the difficulty in finding information but, rather, finding valid, reliable information. Hence, in order to overcome these issues several instruments like DISCERN, Health on Net (HON) seal code and Journal of American Association (JAMA) benchmarks have been developed to assess the quality of information on the Internet.

This study aims to examine the quality of thumb sucking habit information presented on the Internet using DISCERN and HON seal as the validated instruments at a single moment in time.

Subjects and Methods

An initial search using three different search engines: Google (www.google.com), Yahoo (www.yahoo.com), and Ask Jeeves (www.ask.com) for the term "thumb sucking habit" was performed on 20th March 2014.

It was found that Google (www.google.com, mountain view, CA) incorporated the vast majority of the links to websites which the other two search engines produced and, therefore, the search for this investigation was conducted using Google. The search resulted in over 204,000 links for thumb sucking habit. As it is unlikely that patients will investigate beyond the first few pages of a search, the initial 100 links generated by Google were considered. Only 36 relevant websites which were suitable for the patients were then evaluated.

The websites and information contained within them were evaluated by one investigator. The nature of this study precluded institutional review board approval. Images of all websites in the study were stored for any necessary future analysis.

The DISCERN instrument was used to rate the websites. DISCERN is a validated rating tool that can be used by health professionals and the general public to assess the quality of health information contained on the Internet.[8] The DISCERN instrument asks 16 questions related to the quality of a medical information website Table 1. The first eight questions address the reliability of the publication. The next seven questions focus on the specific details of the treatment choices. Each question is given a score from 1 to 5, with 1 being "no," 2 to 4 being "partially," and 5 being "yes." The last question pertains to the overall quality of the website and is rated 1 (poor) to 5 (good quality).

We also recorded whether each website displayed the HON seal. This requires compliance with these eight criteria: Authority (give qualifications of authors), complementarity (information to support, not replace), confidentiality (respect the privacy of site users), attribution (cite the sources and dates of medical information), justifiability (ability to back claims), transparency (accessibility, provide valid contact details), financial disclosure (provide details of funding), and advertising (clearly distinguish advertising from editorial

Table 1: DISCERN instrument variables

Question number	What is investigated?
1	Are the aims clear?
2	Does it achieve its aims?
3	Is it relevant?
4	Is it clear what sources of information were used to compile the publication (other than the author or producer)?
5	Is it clear when the information used or reported in the publication was produced?
6	Is it balanced and unbiased?
7	Does it provide details of additional sources of support and information?
8	Does it refer to areas of uncertainty?
9	Question 9: Does it describe how each treatment works?
10	Question 10: Does it describe the benefits of each treatment?
11	Does it describe the risks of each treatment?
12	Does it describe what would happen if no treatment is used?
13	Does it describe how the treatment choices affect overall quality of life?
14	Is it clear that there may be more than one possible treatment choice?
15	Does it provide support for shared decision-making?
16	Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices?

content). The HON website was used to confirm the validity of each site presenting an HON seal.

Inclusion/exclusion criteria

The search was not restricted in terms of file format or domain. The search was limited to the English language. Websites were included in the investigation if they provided information pertaining to the thumb sucking habit. Websites that were unrelated to search term or only provided a list of website links were removed. Sponsored links and banner advertisements were excluded as they are normally ignored.[8] "For profit" websites were excluded: If their only intention was to sell a product, if the site promised quick and unrealistic dramatic results, made claims that one remedy will cure a variety of illnesses through some miraculous breakthrough, or used excessive sensational writing.[9] Journal articles, news, video feeds, academic press, abstracts listings, discussion group, and duplicate sites were also eliminated.

Results

Sixty-four of the 100 websites were excluded from the analysis as they did not meet inclusion criteria. Of the remaining 36 websites that were scored, DISCERN indicated the majority of websites fell well below the maximum score.

The maximum score achieved by one of the websites according to the DISCERN tool was 55 of 80, and the lowest score achieved was 16 of 80. The websites achieving the maximum and minimum score were children.webmd.com and thebehaviorsolution.com, respectively. The scores for individual websites are listed in Table 2. The five websites with the highest quality information in relation to thumb sucking was:
- children.webmd.com: 55
- healthmantra.com: 54
- medicinenet.com: 44
- users.forthnet.gr: 41
- ivillage.com: 37.

In relation to the HON seal, out of 36 websites only three had HON seal. They were medicinenet.com, righthealth.com, and children.webmd.com.

Discussion

As of today, there are no standards required for medical information on the Internet, taking advantage of this; some websites that appear to be educational are actually promotional in nature[10] while others may be inefficient, incomplete, out of date, difficult to understand, or contain conflicting information.[2,7]

This is the first study investigating the quality of information available on the Internet relating to thumb sucking habit, at a single moment in time. We used Google as the Internet search engine for this investigation after an initial search using Yahoo and Ask Jeeves as well found that there was considerable overlap among the websites that Google would find. The other search engines such as Bing (www.Bing.com) and AOL (www.search.AOL.com) are also available. Google was selected because is the most popular search engine, examines all aspects of a pages content and the content of the pages linking to it. No one can buy a higher ranking with their software, which makes it an easy way to find high-quality sites. In addition, it may find many pages that are off-line for many other search engines, it updates their index very often by recalculating the page rankings of each of the websites and the fluctuations usually occur toward the end of the month.[11]

The results of our study indicated that very few sites achieve high standards according to the DISCERN tool. In fact, none of the websites scored five points in all the 16 questionnaires. The DISCERN project is based at the Division of Public Health and Primary Care of the Institute of Health Sciences of the University of Oxford (United Kingdom), and is financed by the British National Health Service Executive Research and Development Program. It has been designed to help users to evaluate the quality of written information on treatment options, and to facilitate the generation of evidence-based data. The DISCERN is a validated and reliable instrument. In our study, the item "Does it describes how treatment choices can affect quality of life?" yielded a very low score in all the websites, which were assessed, which is in line with Lopez-Jornet and Camacho-Alonso.[12]

Although DISCERN has been criticized for not analyzing the quality of the information on websites in significant detail.[13] When compared to other tools such as the JAMA benchmarks, the DISCERN tool has been shown to have good internal consistency[14] and is user-friendly. In this respect, clinical teams can use the DISCERN tool to evaluate websites that patients may suggest to determine if the information they are likely to find is of use for other patients.

The DISCERN questionnaire is a valid and reliable instrument for analyzing written consumer health information. It is the first standardized quality index of consumer health information that can be used as a critical appraisal tool to evaluate health information by not only health professionals, but also by patients and the general population. This questionnaire was derived systematically with the input of an expert panel, health information providers and patients from a self-help group.[15] This study found that DISCERN score was highly rated among the initial search results displayed and was same with the HON seal.

The Health on the Net foundation criteria were developed by a Swiss-based nonprofit, nongovernmental organization that provides certification of websites based on an "ethical standard aimed at offering quality health information." Health on the Net is established in 1995 and is one of the first uniform resource locator to guide both lay people and those in the medical profession to reliable sources of healthcare information on the Internet. This seal is awarded to websites that comply with the HON code of conduct.[16] Sites may display the HON code seal if they agree to comply with the standards listed, and they are subjected to random audits for compliance.

■ Kiran, *et al.*: Quality indicators for thumb sucking habit information

Table 2: DISCERN scores for the 36 websites

Websites	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Total
www.healthmantra.com	4	3	4	5	1	4	4	5	5	4	3	1	1	5	1	4	54
www.medicinenet.com	4	4	4	1	5	5	1	4	2	3	1	1	1	2	2	4	44
www.ivillage.com	3	4	5	1	5	4	1	1	1	1	1	1	1	4	1	3	37
www.users.forthnet.gr	3	3	4	1	5	4	1	1	4	4	1	1	1	4	1	3	41
www.babytipz.com	2	2	1	1	4	1	1	1	1	1	1	1	1	1	1	2	22
www.ehow.com	3	3	2	1	4	2	3	1	2	1	1	1	1	3	1	3	32
www.parenting.kaboose.com	3	2	1	1	1	4	1	2	3	2	1	1	1	3	1	3	30
www.righthealth.com	3	2	3	3	4	3	3	3	2	1	1	1	1	2	1	3	36
www.endthumbsucking.com	2	2	2	1	1	2	1	1	1	1	1	1	1	2	1	2	22
www.surfnetparents.com	3	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	20
www.healthline24×7.com	3	2	2	1	1	3	1	1	2	1	1	1	1	2	1	3	26
www.mammakidszone.com	3	3	3	1	1	2	1	1	1	1	1	2	1	3	1	3	28
www.children.webmd.com	4	4	4	3	5	4	4	1	4	3	2	1	1	5	5	5	55
www.identalhub.com	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	19
www.milestonemom.com	3	3	3	1	1	2	1	1	4	2	3	1	1	3	1	3	33
www.kidsdr.com	3	2	3	1	1	1	1	2	1	1	1	1	1	3	3	2	27
www.motherandbabyblog.com	2	1	1	1	5	1	1	1	1	1	1	1	1	1	1	1	21
www.advice-for-new-parents.com	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
www.hypnosisforphobias.com	3	2	3	1	1	3	1	2	2	2	2	1	1	2	1	2	29
www.thebehaviorsolution.com	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
www.parents.com	3	2	3	1	2	2	2	1	2	1	1	1	1	2	1	2	27
www.goodparenting.co.in	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	19
www.parentingnation.in	2	2	2	1	1	1	1	1	3	1	1	1	1	2	1	2	23
www.themedguru.com	3	2	3	1	5	1	1	1	2	2	1	1	1	3	1	2	30
www.thumbusters.com	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	19
www.thumbuddytolove.com	2	1	1	1	5	1	1	1	3	1	1	1	1	1	1	1	23
www.betterparentingskills.info	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
www.dothealthclub.com	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	18
www.seasonsindia.com	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	18
www.a1articles.com	2	1	1	1	5	1	1	1	1	1	1	1	1	1	1	1	21
www.dadtothebone.com	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	18
www.indiaparenting.com	2	1	1	3	1	1	1	1	1	1	1	3	1	1	1	2	22
www.gracenglamour.com	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	18
www.revolutionhealth.com	4	2	3	3	3	3	3	1	2	2	1	1	1	3	1	3	36
www.articlesfactory.com	2	2	1	1	1	1	1	1	1	1	1	3	1	1	1	2	21
www.kidsandbibs.in	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	18

The external accreditation of quality of health-related websites is not an easy task as it would be an enormous and costly task requiring a large staff with expertise in varying fields to monitor thousands of medical sites. HON's mission is to guide Internet users to reliable, understandable, accessible, and trustworthy sources of medical and health information.[17] The HON seal was present in very few of the studied websites. Therefore, the Internet users do not have a way to identify the quality sites unless; they have a medical background or perform a scientific immersion in the topic.

In light of the results of the present study, the Internet is a potentially powerful tool for patients to search for health-related information, there are many sources that when encountered, may mislead them about their diagnosis, treatment, and potential outcomes. In the extreme, patients may feel a false empowerment to self-diagnose and treat, leading to disastrous results. Despite these concerns, it is likely that the use of the Internet by patients will continue to increase in the future. It is, therefore, important for the patients to exercise caution when relying on the Internet for health-related information. Patients should be counseled to avoid commercial websites, except for the most reputable sites and look for the HON code seal of compliance for transparency and accountability.

It appears that the principles of clarity and full disclosure of sources are still only practiced by a minority of the websites at this point. It is our hope that by raising awareness of the poor overall quality and content of the Internet information, better accountability may be active or, at least, that patients may become best informed that information on the Internet is not accurate or up to date.

Apart from the quality of health information on the web, patients also find many websites, presenting health information using highly technical language. Scientific presentations may be advantageous for researchers and clinicians; however, this specialized language can be overwhelming and confusing, especially if it is not properly explained.[18] Therefore, it is also imperative to systematically assess the presentation of online health information using readability algorithms to ensure that such information is easily assessable to lay audiences in their native language.

Conclusion

Patients seeking thumb sucking habit information on the Internet should be encouraged to exercise caution and to utilize only well-known sited and those that display the HON code seal

of compliance with transparency and accountability practices. By directing patients to validated websites on the thumb sucking habit, clinicians can ensure patients find appropriate information.

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Conflicts of interest

There are no conflicts of interest.

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