

DOI: 10.21767/2171-6625.1000109

## Website and Headache: Assessment of The Information Quality using the DISCERN Tool

**Cerminara C, El Malhany N, Siracusano M, Roberto D, Coniglio A, Curatolo P and Galasso C**

Child Neurology and Psychiatry Division, Systems Medicine Department, Tor Vergata University Hospital of Rome, Rome, Italy

**Corresponding author:** Denis Roberto, Child Neurology and Psychiatry Division, Systems Medicine Department, Tor Vergata University Hospital of Rome, Italy, Via Montpellier 1, Rome 00133, Italy, Tel: 0039 0620900249; E-mail: denis.r@libero.it**Received:** Apr 21, 2016; **Accepted:** May 31, 2016; **Published:** Jun 03, 2016

### Abstract

**Background:** Headache is one of the most common disorders in childhood. Internet-based health resources are growing in popularity, as most of users resort to it in order to get health-related information. We evaluated the quality of information concerning childhood headaches provided by the Internet.

**Method:** Website quality was rated by a team of three paediatric neurologists (PNs), and by three lay subjects (LS) without any medical or neurological knowledge, using the DISCERN tool.

**Results:** With regard to the PNs evaluation: considering 39 websites, 7,7% proved to be fairly reliable, 2,5% was found to provide good quality information on treatment options, 7,7% showed good overall quality of the content. With regard to the LS evaluation: 7,7% of the websites proved to be fairly reliable, 17,9% was found to provide good quality information on treatment options, 7,7% showed good overall quality of the content.

**Conclusion:** Internet-based information about childhood headaches is not completely reliable considering both the opinion of expert and not professional subjects. Although the Internet may become a useful tool for health-related purposes, thus providing accessible, interactive and customized information, it should be enhanced by greater relevance, better description of treatment choices and more clarity of sources. Implications of these findings are discussed.

**Keywords:** Childhood headache; DISCERN tool; Internet; Migraine; Treatment; Website

cephalalgias and other primary headache disorders. On the contrary, secondary headache is the symptom of identifiable structural, metabolic or other abnormality [1]. Serious conditions such as brain tumours or intracranial haemorrhages are uncommon and, if present, accompanied by neurological signs.

Migraine is a frequent disease with a prevalence of 3-10% in children and adolescence [2,3]. Migraine is a heterogeneous disorder characterized by attacks varies in pain intensity, duration, pattern of associated features, frequency. It represents the second most common cause of chronic recurrent headache in school children [4].

Recurrent primary headache may have considerable impact on children and adolescents quality of life due to unpredictability of attacks and associated symptoms such as nausea, vomiting, photo and/or phonophobia. Moreover, headache in childhood is associated with several psychopathological factors such as maternal depression, depression in childhood, social disadvantage, family history of "painful condition" [5] and may also increase the risk for chronic headache later in life [6]. Headache in children and adolescents can lead to impaired psychosocial functioning in various areas of life including family, leisure, time activities, working capacity and productivity at school [4]. In addition, childhood headache is frequently cause of school absenteeism and, in adulthood, there's an increased risk of developing additional internalizing psychiatric problems (anxiety and depression disorders) [5].

An increasing number of health care consumers use the Internet as the first choice to search for health-related issues [7-10]. The new web-based technologies have transformed several aspects of culture, communication and education. Internet may become a useful tool for health-related purposes, providing accessible, interactive and customized information. In fact, being easily accessible at all times, such resources are growing in popularity among learners, professionals and patients [11,12]. Nevertheless, possible web-browsing issues, as well as inaccurate or deceptive information that were not subject to peer-review, may compromise its use [13,14]. In fact, the literature shows that people tend to make the least possible effort in verifying information sources [15,16].

### Introduction

Headache is one of the most common disorders in childhood, with almost 75% of children reporting significant headache by the age of 15 years old. The International Headache Society (HIS) divides headache disorders into primary and secondary. Primary headache, which is not attributed to any other disorder, comprise migraine, tension-type headache, cluster headache, other autonomic

The Web, nowadays, represents the first choice for health information search on childhood headaches' diagnosis and treatment.

This survey is aimed at analyzing the core subjects of content and evaluating the attainability, usability, reliability and quality of the information provided by a number of websites in the field of childhood headaches and the related treatment in English-speaking countries.

## Methods

We used the DISCERN instrument in order to assess the online health information on childhood headache.

On April 21, 2015, the English term "childhood headaches" was entered in the most commonly search engine Google.

From a total of 11.300.000 results obtained, we included in our study the first 50 links. We evaluated 39 websites, not connected to each other, excluding health forums, advertisements and personal experiences. We did not consider identical websites, as well as direct links to communities/blogs, video materials and scientific articles.

The evaluation of all 39 websites was performed by three paediatric neurologists (PNs), authors of this study and medical doctors of the same neuropaediatric unit, and by three lay subjects (LS) not competent in medical and neurological subjects.

The DISCERN tool is a trustworthy and well-founded tool for assessing the quality of health-related information about treatments, apart from previous knowledge of the field under research [17]. Thanks to DISCERN, consumers and information providers will be able to evaluate the quality of such information. Although it is unlikely that a publication alone may provide all the required information, this should be compliant with certain features necessary in order to be considered as functional and adequate for choosing treatments [17].

The instrument consists of 16 questions divided in three sections. The questions are rated on a scale ranging from 1 (low/poor; the information failed to meet all criteria) to 5 (high/excellent; the information met all criteria). The total score ranges from 16 to 80. Each question within each field is rated on a 5-point scale ranging from "No" to "Yes". A score of three or less of five on each individual item indicates that the website only partially meets the criteria for that item [17].

Section 1, composed of 8 questions, evaluates reliability, while Section 2, including 7 questions, deals with the quality of information about treatment options. Section 3 includes 1 question and provides an overall rating of the quality of the

websites, based on the responses to the previous question [17]. It must be noted that the DISCERN tool is not aimed at assessing the scientific quality of written information.

It is rather aimed at evaluating the quality of a publication without the need to resort to any kind of specialist knowledge and without referring to other publications or advisers [17].

As we had already done in a previous study on the DISCERN tool [18], a classification for each of the three sections and each of the three key questions was created: poor - if the total score was <40%, fair - if the total score was in the range of 40% to 79%, and good - if the total score was >80%.

## Results

**Tables 1** and **2** summarize the results concerning the websites evaluation of PNs (**Table 1**) and lay subjects (**Table 2**) respectively.

### Pediatric neurologist results

The evaluation performed by the PNs found that 3 (7,7%) of the 39 websites showed good reliability, that 28 (71,8%) showed fair reliability, and that 8 (20,5%) of them were unreliable during the evaluation period. Concerning information quality of treatment options, only 1 (2,5%) website showed good quality, the majority 23 (58,9%) failed or met poorly this aim. As far as clarity of sources is concerned, in 36 websites (84,6%) the information given couldn't be verified, and just in 6 (15,4%) the information source was clear and defined.

Moreover, 32 sites (82%) were partially or completely biased.

A good accessibility to further sources of information was provided only by 7 (17,9%) of the websites examined.

Concerning the overall quality of the websites, it was found to be good only in 3 (7,7%) of them, being fair in 30 (76,9%) and poor in 6 (15,4%).

### Lay subjects results

In terms of publication reliability, Lay subjects showed the same results as the PNs (**Tables 1** and **2**). With regard to the quality of information on treatment choices, only 7 websites (17,9%) were found to provide good information, unlike the remaining 32 (82%) providing low quality contents. The 61,5% of the websites were not biased. In terms of clarity of sources, only in 4 websites (10,2%) the information source could be verified. The access to additional sources was considered good just in 6 websites (15,4%).

As far as overall quality is concerned, it was considered good in 3 sites (7,7%), fair in 19 (48,7%), poor in 17 (43,6%).

**Table 1** Paediatric neurologist (PNs) results.

N = 39	Poor (Score = <40%)	Fair (Score = 40% - 79%)	Good (Score= >79%)
Section 1 (Q. 1 to 8) Reliability of publication	8 (20,5%)	28 (71,8%)	3 (7,7%)
Section 2 (Q. 9 to 15) Quality of information on treatment choices	23 (58,9%)	15 (38,4%)	1 (2,5%)
Section 3 (Q. 16) Overall quality	6 (15,4%)	30 (76,9%)	3 (7,7%)
Information bias (Q. 6)	8 (20,5%)	24 (61,5%)	7 (17,9%)
Clarity of sources (Q. 4)	9 (23,1%)	24 (61,5%)	6 (15,4%)
Access to additional sources (Q.7)	10 (25,6%)	22 (56,4%)	7 (17,9%)

**Table 2** Lay subjects results.

N = 39	Poor (Score = <40%)	Fair (Score = 40% - 79%)	Good (Score= >79%)
Section 1 (Q. 1 to 8) Reliability of publication	8 (20,5%)	28 (71,8%)	3 (7,7%)
Section 2 (Q. 9 to 15) Quality of information on treatment choices	26 (66,6%)	6 (15,4%)	7 (17,9%)
Section 3 (Q. 16) Overall quality	17 (43,6%)	19 (48,7%)	3 (7,7%)
Information bias (Q. 6)	6 (15,4%)	9 (23,1%)	24 (61,5%)
Clarity of sources (Q. 4)	16 (41%)	19 (48,7%)	4 (10,2%)
Access to additional sources (Q.7)	16 (41%)	17 (43,6%)	6 (15,4%)

## Discussion

We attempted to objectively assess the quality of information concerning childhood headaches provided by Internet.

The majority of instruments designed to evaluate the quality of health information on the Web haven't undergone rigorous validation. Amongst them, some show good validity and reliability [19-22] while others are characterized by poor validation measures including poor Internet agreement [19-25]. Although investments in health-related information have been increased, the quality of such information persists in being unsteady. The DISCERN tool has been conceived as a useful tool for health consumers and information providers in order to evaluate the quality of written information about treatment for health-related issues.

Websites should give complete information in terms of reliability, treatment options, source of data, in order to be considered acceptable. This is the reason why we have chosen the DISCERN tool in order to assess the quality of websites concerning childhood headache.

Concerning our study, the overall quality of the websites evaluated was considered good in 7,7% by both PNs and LS.

According to the DISCERN tool, a website may be considered reliable in so far as its purposes are well defined and achieved, the information provided is relevant, the sources are clear and

it is specified when the information reported was produced [17].

Considering our results, in terms of reliability we obtained the same percentage in the PNs and LS group: poor reliability in 20,5% of the websites, fair in 71,8%, good in 7,7%.

A good quality publication may be defined as such, in so far as it provides fair and unbiased information. Information on treatment choice or choices must be put forward in order to enable patients choosing the best therapeutic solution. Furthermore, a publication should be truthful and informative.

With reference to our study, only 17,9% of the websites analyzed by PNs were considered unbiased, but 61,5% according to LS. This discrepancy may be due to the difficult identification of a bias, especially in treatment options, by someone without any competence in that specific field [25].

With regard to the quality of information on treatment choices, only 1 website was considered as good by PNs (2,5%), as against 7 by LS (17,9%).

Previous scientific literature showed that health-related information provided by the Internet (evaluated with DISCERN tool) was lacking in quality and reliability.

Cerminara et al. [25] found that online information about childhood epilepsy still lacks reliability, accuracy and relevance as well as fails to provide a thorough review of treatment options. Grant et al. [26] found that Autism-related websites

were lacking of information necessary for making informed decisions about interventions, such as supporting research evidence, and details of expected benefits, risks, and the option of no treatment.

The authors concluded that improved website content with information that is grounded in quality research evidence will assist parents of children with autism to make better informed decisions about interventions [26].

At the present time, Internet is considered by most of people as the main source to get health-related information. The easier access to information and the opportunity for social support are clearly the main advantages. On the other hand, the difficulty of verifying the websites' content is a point of weakness. Adolescents turn to the Internet in order to gather any kind of information, including health-related issues [27].

Furthermore, gathering information and seeking social support by young people in pain were found to be common approaches, according to a number of studies on adolescent coping strategies [28]. With the growth of detailed information on diagnosis, prevention, and treatment options online, the communication dynamics between healthcare professionals and patients are changing. The Internet may also have a role as a treatment tool for headaches in general [29]. Internet intervention (cognitive-behavioural self-administered program) associated with chats proved to be efficient just as face-to face treatment [30]. Although controlled trials demonstrate the efficacy and cost-effectiveness of face-to-face behavioural therapy, most headache sufferers have limited access to these treatments. Delivery of behavioural interventions using Internet technology has the potential to reach a large number of patients suffering with headache and reduce the burden of disease.

With the increasing use of the Internet to get health information, there's an urgent need to have good-quality website which can be used by both medical doctors and patients.

Information accuracy is the main problem due to which healthcare professionals are reluctant to the use of websites over the traditional information sources [31].

Our results were not favourable for online searches concerning childhood headaches. Quality and reliability still have to be improved. Some discrepancies emerged between specialists' evaluation and those done by non-specialist, probably due to PNs major knowledge.

The DISCERN instrument is not suitable for evaluating the scientific quality or validity of the evidence put forward by a publication, as this would require check against other sources [17] and this is its main limit.

In our opinion, specialists should guide the patients to trace the correct information on the internet. Since many users surf the Web without having consulted a specialist, much more scientific information should be of free access to the patients so to extend the accessibility of correct data.

It would also be useful to promote the availability of web pages, forums and chats apt to provide the patient with the correct scientific information on the pathology.

## Conclusion

In conclusion, internet-based information about childhood headaches is yet not completely reliable considering both the opinion of expert and not professional subjects.

As Carlson et al. [32] maintained with regard to the online information about congenital heart defect, difficulties in getting relevant information sources using web search engines and quality deficits in websites should urge health professionals to provide suitable and reliable internet-based health information, in our case in the field of childhood headache.

Despite the fact that the Internet has the potential to provide highly accessible, interactive and tailored information, there's a need of more relevance, better description of treatment options and more clarity of sources.

## References

1. Ozge A, Termine C, Antonaci F, Natriashvili S, Guidetti V, et al. (2011) Overview of diagnosis and management of paediatric headache. Part I:diagnosis. *J Headache Pain* 12: 13-23.
2. Ozge A, Bugdayci R, Sasmaz T, Kaleagasi H, Kurt O, et al. (2002) The sensitivity and specificity of the case definition criteria in diagnosis of headache: a school-based epidemiological study of 5562 children in Mersin. *Cephalalgia* 22: 791-798.
3. Sillanpaa M, Piekkala P (1984) Prevalence of migraine and other headaches in early puberty. *Scand J Prim Health Care* 2: 27-32.
4. Wober BC, Wober C, Karwautz A, Auterith A, Serim M, et al. (2004) Clinical features of migraine: a cross-sectional study in patients aged three to sixty-nine. *Cephalalgia* 24: 12-17.
5. Antonaci F, Voiticovschi IC, Di Stefano AL, Galli F, Ozge A, et al. (2014) The evolution of headache from childhood to adulthood: a review of the literature. *J Headache Pain* 15:15.
6. Lu SR, Fuh JL, Wang SJ, Juang KD, Chen SP, et al. (2013) Incidence and risk factors of chronic daily headache in young adolescents: a school cohort study. *Pediatrics* 132: e9-e16.
7. Fox S, Duggan M (2013) Pew Research Center. 2013 Jan 15. Health online 2013 URL: [http://www.pewinternet.org/files/old/media/Files/Report/PIP\\_HealthOnline.pdf](http://www.pewinternet.org/files/old/media/Files/Report/PIP_HealthOnline.pdf).
8. Kummervold PE, Chronaki CE, Lausen B, Prokosch HU, Rasmussen J, et al. (2008) eHealth trends in Europe 2005-2007: a population-based survey. *J Med Internet Res* 10: e42.
9. Larsson M (2009) Descriptive study of the use of the Internet by women seeking pregnancy-related information. *Midwifery* 25: 14-20.
10. Papen U (2013) Conceptualising information literacy as social practice: a study of pregnant women's information practices. *Information Research* 18: 280.
11. Allahwala UK, Nadkarni A, Sebaratnam DF (2013) Wikipedia use amongst medical students - new insights into the digital revolution. *Med Teach* 35: 337.

12. McLean R, Richards BH, Wardman JI (2007) The effect of Web 2.0 on the future of medical practice and education: Darwinian evolution or folksonomic revolution? *Med J Aust* 187: 174-177.
13. Cline RJ, Haynes KM (2001) Consumer health information seeking on the Internet: the state of the art. *Health Educ Res* 16: 671-692.
14. Eysenbach G, Powell J, Kuss O, Sa ER (2002) Empirical studies assessing the quality of health information for consumers on the world wide web: a systematic review. *JAMA* 287: 2691-2700.
15. Field A (2009) *Discovering statistics using SPSS (3rd edn)*. London: SAGE.
16. Samy AA (2015) Is Wikipedia a reliable learning resource for medical students? Evaluating respiratory topics. *Adv Physiol Educ* 39: 5-14.
17. Charnock D (1998) DISCERN online. University of Oxford and The British Library. The DISCERN handbook: quality criteria for consumer health information on treatment choices. Retrieved from <http://www.discrim.org.uk/discrim.pdf>.
18. Alyusuf RH, Prasad K, Abdel Satir AM, Abalkhail AA, Arora RK (2013) Development and validation of a tool to evaluate the quality of medical education websites in pathology. *J Pathol Inform* 4: 29.
19. Kim P, Eng TR, Deering MJ, Maxfield A (1999) Published criteria for evaluating health related web sites: review. *BMJ* 318: 647-649.
20. Bernstam EV, Shelton DM, Walji M, Meric BF (2005) Instruments to assess the quality of health information on the World Wide Web: what can our patients actually use? *Int J Med Inform* 74: 13-19.
21. Charnock D, Shepperd S, Needham G, Gann R (1999) DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. *J Epidemiol Community Health* 53: 105-111.
22. Ademiluyi G, Rees CE, Sheard CE (2003) Evaluating the reliability and validity of three tools to assess the quality of health information on the Internet. *Patient Educ Couns* 50: 151-155.
23. Breckons M, Jones R, Morris J, Richardson J (2008) What do evaluation instruments tell us about the quality of complementary medicine information on the Internet? *J Med Internet Res* 10: e3.
24. Hanif F, Read JC, Goodacre JA, Chaudhry A, Gibbs P (2009) The role of quality tools in assessing reliability of the Internet for health information. *Inform Health Soc Care* 34: 231-243.
25. Cerminara C, Santarone ME, Casarelli L, Curatolo P, El Malhany N (2014) Use of the DISCERN tool for evaluating web searches in childhood epilepsy. *Epilepsy Behav* 41: 119-121.
26. Grant N, Rodger S, Hoffmann T (2015) Evaluation of autism-related health information on the web. *J Appl Res Intellect Disabil* 28: 276-282.
27. Suzuki LK, Calzo JP (2004) The search for peer advice in cyberspace: An examination of online teen bulletin boards about health and sexuality. *Journal of Applied Developmental Psychology* 25: 685-698.
28. Reid GJ, Gilbert CA, McGrath PJ (1998) The pain coping questionnaire: preliminary validation. *Pain* 76: 83-96.
29. Devineni T, Blanchard EB (2005) A randomized controlled trial of an internet-based treatment for chronic headache. *Behav Res Ther* 43: 277-292.
30. Trautmann E, Kroner HB (2010) A randomized controlled trial of Internet-based self-help training for recurrent headache in childhood and adolescence. *Behav Res Ther* 48: 28-37.
31. Podichetty V, Penn D (2004) The progressive roles of electronic medicine: benefits, concerns, and costs. *Am J Med Sci* 328: 94-99.
32. Carlsson T, Bergman G, Karlsson AM, Mattsson E (2015) Content and quality of information websites about congenital heart defects following a prenatal diagnosis. *Interact J Med Res* 4: e4.