Quality assessment and review of online information relating to third molar pain and removal

Précis

Dental information on the internet is unregulated and varies in quality, accuracy and readability. This paper aims to assess the quality of the information online relating to third molars.

Abstract

Statement of the problem: Dental professionals have embraced the internet as a means to enhance patient care and optimise access to dental services. However, dental information on the internet is unregulated and varies in quality, accuracy and readability.

Purpose of the study: This paper aims to assess the quality of the information online relating to third molars.

Materials and methods: Two key terms ('wisdom tooth pain' and 'wisdom tooth extraction') were entered into the Google, Yahoo and Bing search engines. Websites were assessed using the DISCERN and the HoNCode instruments.

Results: A total of 60 websites were assessed. Two websites were excluded in accordance with the exclusion criteria and 15 duplicate websites were excluded, leaving 43 unique sites. In the websites addressing 'wisdom tooth pain', the average HoNCode score awarded was 40% (range 13-72%), while the average DISCERN score awarded was 43 (range 24-70). In the websites addressing 'wisdom tooth extraction', the average HoNCode score awarded was 35% (range 15-75%) while the average DISCERN score awarded was 35 (range 25-69).

Conclusions: The overall quality of the websites assessed is fair. This result shows that the reasonable patient may be misinformed by internet sources on material risks. Clinicians should be aware of tools such as DISCERN and HoNCode, and utilise them in the development of online content for their own practice.

Introduction

Traditionally, clinicians have served a central gatekeeping role with respect to medical and dental information. Advice regarding diagnosis and available treatment options is discussed between clinician and patient at the consultation appointment.[1] The internet has upended this process.[1] Patients have instant access to health-related information, with virtually unlimited explanations of diagnoses and surgical procedures readily and abundantly accessible.[1,2] In fact, in one US study, 50% of patients reported going to the internet over physicians for specific health information, and a further 64% reported going online looking for specific health information in the last 12 months.[3] Examining the numbers in Ireland reveals a similar picture. When considering third molars in particular, 3,600 people search 'wisdom teeth', 1,900 search 'wisdom tooth pain', and 1,300 search 'wisdom tooth extraction' every month according to Google Keyword statistics.[4]

Undoubtedly, the internet can be an invaluable resource. It can be used by clinicians to direct patients to suitable animations of surgical procedures and guidelines from professional societies, all of which aid patients' understanding[5] and subsequent participation in treatment decisions. These benefits must be weighed against the potential negative impacts of receiving medical information without context. Difficulties lie in the lack of standardisation of health-related information available online.[6] The fundamental problem with online resources is that they are unregulated, with an inconsistent quality of

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information offered.[7] For example, patients are often directed to information in the form of hearsay – anecdotes about people who faced similar clinical situations. This can often be hyperbole, grossly inaccurate and the most extreme of operative outcomes.[2] Falsehoods are easily and rapidly propagated on the internet. As a result, our patients can either have an informed understanding of the risk–benefit balance or, conversely, they may be misinformed or subjected to bias.[6] This situation presents a challenge to the healthcare provider, and must be considered both at the initial consultation and during the course of obtaining informed consent.

A quality assessment and review of online information available to the dental patient is pertinent. In an attempt to snapshot a patient's online experience, a qualitative assessment of information relating to third molars on searchable websites was assessed. The working hypothesis was that many websites can be biased and contain inaccurate anecdotal information. This may prove problematic for clinicians, as patients may have unrealistic expectations or concerns as a result of online sources.

Objectives

To assess the quality of the information online relating to third molar symptoms and removal.

Materials and methods

A search strategy was created in an effort to recreate online searches by dental patients. The term 'wisdom tooth' was first selected as a layman's term for third molar. The search terms 'wisdom tooth pain' and 'wisdom tooth extraction' were then selected. These appeared as the two most common searches in relation to third molar teeth (**Figure 1**). The Google, Bing and Yahoo[8] search engines were used to search for these terms. It is widely reported that users view only the first page of internet search results.[9] Thus, the top 10 websites from each search were included for screening. Exclusion criteria included adverts, duplicates and websites that were not relevant to the search terms. The remaining websites were then evaluated using the DISCERN instrument[10] and the Health on the Net Code (HoNCode).[11] Two of the authors independently scored the websites and the results were collated. In case of a discrepancy, the score in doubt was evaluated and the heterogeneity was solved through discussion.

DISCERN

DISCERN[10] is a well-recognised quality criterion for consumer health information, which is funded by the National Health Service Executive Research and Development Programme (UK). It can be used to judge the reliability of a website as a source of information about treatment choices and rates the quality of the website in terms of its content. It consists of 16 questions, rated on a scale of 1-5, with three subsections: reliability; treatment choices; and, overall rating. Each question is scored 1 for a "definitive no", 2-4 for "partial yes", or 5 for a "definitive yes". The DISCERN items are grouped into three main groups: questions 1-8 relate to the reliability of information; questions 9-15 relate to the specific treatment choices; and, question 16 offers an overall quality rating of the information. The DISCERN scale scores range from 16 to 80 and are categorised as follows: 'excellent' denotes scores of 63 to 80 points; 'good' denotes scores of 51 to 62 points; 'fair' denotes scores of 39 to 50 points; 'poor' denotes scores of 27 to 38 points; and, 'very poor' denotes scores of 16 to 26 points.

FIGURE 1: Most commonly searched Google search terms related to wisdom teeth.

FIGURE 2: HoNCode Health Website Evaluation tool.

Health On the Net Code (HoNCode)

The Health On the Net (HON) Foundation[11] is a non-governmental, non-profit body that is endorsed by the World Health Organisation (WHO). The HoNCode is a widely accepted verification tool used by health information websites (**Figure 2**). Websites are evaluated based on eight core criteria: authorship; complementary information; maintaining privacy; appropriate referencing of information sources; claim policy; transparency; disclose funding source; and, clear advertising policy.
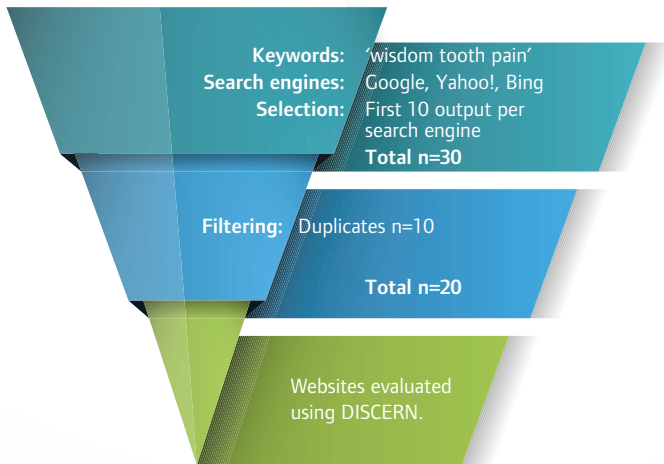
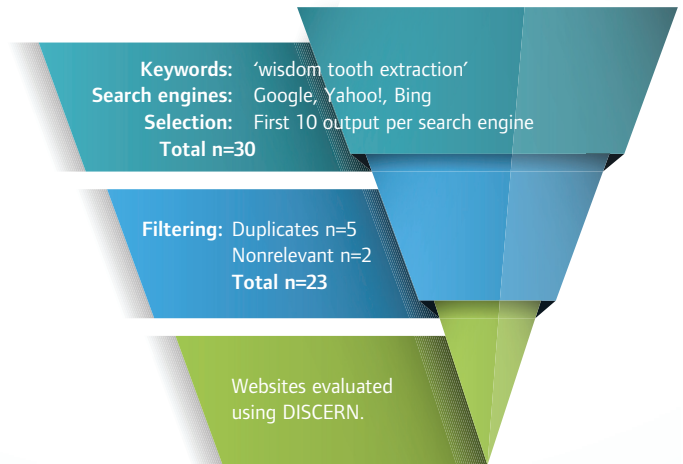*FIGURE 3: Website analysis flowchart for 'wisdom tooth pain'*

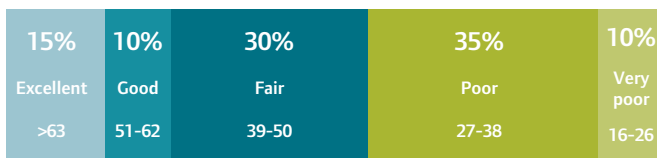*FIGURE 5: Website analysis flowchart for 'wisdom tooth extraction'.*

15% Excellent >63	10% Good 51-62	30% Fair 39-50	35% Poor 27-38	10% Very poor 16-26

FIGURE 4: DISCERN grading for websites relating to wisdom tooth pain.

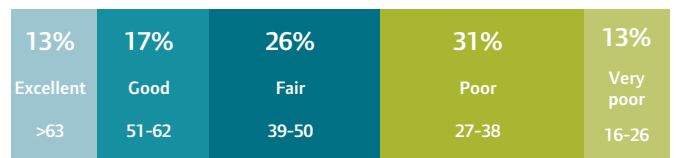| 13% Excellent >63	17% Good 51-62	26% Fair 39-50	31% Poor 27-38	13% Very poor 16-26

FIGURE 6: DISCERN grading for websites relating to wisdom tooth extraction.

**Table 1: DISCERN grading for websites relating to:
A. wisdom tooth pain; B. wisdom tooth extraction.**

Grades	A. Wisdom tooth pain N=20	B. wisdom tooth extraction N=23
Excellent (>63)	3 (15%)	3 (13%)
Good (51-62)	2 (10%)	4 (17.5%)
Fair (39-50)	6 (30%)	6 (26%)
Poor (27-38)	7 (35%)	7 (30.5%)
Very poor (16-26)	2 (10%)	3 (13%)

Results

Wisdom tooth pain

The initial search returned a large number of websites, with a total of 25,300,000 results for 'wisdom tooth pain' across the three search engines. Ten websites from each search engine were screened, totalling 30 websites. Ten duplicate websites were excluded and the 20 remaining websites were included for assessment (**Figure 3**). Both the DISCERN and HoNCode assessment tools were applied to each of the included websites. The average DISCERN score awarded was 43 (range 24-70, standard deviation 15), falling into the 'fair' category. The mean scores for each DISCERN question relating to the website associated with the search term 'wisdom tooth pain' are detailed in **Table 1**. The breakdown of DISCERN gradings is presented in **Figure 4**. The average HoNCode score awarded was 40% (range 13-72%, standard deviation 19).

Table 2: Mean scores for each DISCERN question relating to the website associated with the search term: A. wisdom tooth pain; B. wisdom tooth extraction.

DISCERN questions
A = Wisdom tooth pain 1-5 (standard deviation).
B = Wisdom tooth extraction 1-5 (standard deviation)

DISCERN questions	A	B
1. Are the aims clear?	3.8 (0.6)	3.4 (0.7)
2. Does it achieve its aims?	3.6 (1)	3.5 (0.7)
3. Is it relevant?	3.4 (1.3)	3.5 (0.8)
4. Is it clear what sources of information were used?	1.8 (1.4)	1.4 (0.9)
5. Is it clear when the information used was produced?	1.8 (1.2)	1.6 (1)
6. Is it balanced and unbiased?	3.3 (1.3)	3.3 (1.1)
7. Does it provide additional sources of support/information?	2.9 (1.2)	2.1 (1.1)
8. Does it refer to areas of uncertainty?	3 (1.4)	2.9 (1.4)
9. Does it describe how the treatment works?	1.9 (1.2)	2.4 (1.3)
10. Does it describe the benefits of each treatment?	2.3 (1.7)	2.5 (1.6)
11. Does it describe the risks of each treatment?	1.9 (1.5)	2.6 (1.6)
12. Does it describe what would happen if no treatment was used?	2.2 (1.4)	2 (1.4)
13. Does it describe how the treatment choices affect quality of life?	2.7 (1.3)	2.2 (1.3)
14. Is it clear that there may be more than one possible treatment choice?	2.6 (1.2)	2.7 (1.3)
15. Does it provide support for shared decision-making?	3.3 (1.3)	2.9 (1.2)
16. Overall quality of publication as source of information?	2.9 (1.1)	2.8 (1.2)

Wisdom tooth extraction

The initial search for 'wisdom tooth extraction' returned a large number of websites, with a total of 29,900,000 results across the three search engines. Ten websites from each search engine were screened, totalling 30 websites. Five duplicate websites and two non-relevant websites were excluded. The 23 remaining websites were included for assessment (**Figure 5**). Both the DISCERN and HoNCode assessment tools were applied to each of the included websites. The average DISCERN score awarded was 40 (range 25-69, standard deviation 14), which falls into the 'fair' category. The mean scores for each DISCERN question relating to the website associated with the search term 'wisdom tooth extraction' are detailed in **Table 1**. The breakdown of DISCERN gradings is presented in **Figure 6**. The average HoNCode score awarded was 35% (range 15-75%, standard deviation 21).

Discussion

The aim of this study was to assess the quality and relevance of online health information regarding third molars, using a scale developed for this purpose. An internet search of 'wisdom tooth pain' and 'wisdom tooth extraction' was found to lack sensitivity, and the results varied greatly with only minor differences in the search terms used. The quality of the information available is largely inconsistent: deemed only 'fair' for both terms according to one evaluation tool used. Indeed, of those websites that were graded 'excellent', these sites were found to be excessively lengthy, not reader friendly, and likely to deter the average patient.[7]

The websites that achieved the highest quality scores were concise; the content had clear aims and described the procedures with benefits and associated risks. The websites that were found to have a poor quality of information score failed to provide references for their content and failed to provide medically appropriate treatment options or patient prognosis. Of the sites included in this study, one website made no mention of 'dentist' and did not advise contacting any healthcare professional for medical attention. Two websites suggested cayenne pepper as a potential treatment for 'wisdom tooth pain', while another suggested "tapping" the tooth to alleviate symptoms. Furthermore, only one site made any mention of coronectomy as a potential treatment option. Many other websites failed to mention the quality-of-life-altering risk of paraesthesia associated with removal of the third molars.

Among the websites evaluated, the proposed treatment options were a reflection of the clinical ambiguity associated with asymptomatic third molars.[12] Despite the lack of clinical literature advising prophylactic removal of disease-free asymptomatic third molars,[13] there was an inclination in the websites studied to advocate for the removal of asymptomatic wisdom teeth to prevent potential problems. Additionally, many websites were not providing patients with evidence-based information; details on the sources of information used and when the information used was produced (questions 4 and 5) obtained the lowest scores overall.

A recent study[14] assessed the quality of information on YouTube relating to third molar extraction using a similar methodology described in this study. The DISCERN and HONcode tools were used to assess the quality of information and the standard was found to be of poor quality overall.

The wealth and diversity of information and opinions expressed across the internet make the expertise and experience of clinicians more essential. As clinicians, we must be increasingly vigilant that a patient has consented to a given treatment option for the right reasons, based on reputable information.

Clinicians should be aware of tools such as DISCERN and HoNCode, and utilise them in the development of accurate online content for their own practice. Health On the Net[15] is a non-for-profit organisation that is partnered with the European Commission and endorsed by the WHO. It is committed to promoting transparent and reliable health information online, and provides certification for trustworthy sources of information. It does so by evaluating the quality and reliability of online information. It also ensures the neutrality and transparency of the information, and is considered authoritative in the information quality algorithm used by Google. The eight principles of the HoNCode can be used as a tool by which clinicians can identify websites to recommend to patients. Equally, clinicians can use tools such as DISCERN and HoNCode as a basis for the development of their own online content for their professional practice. Clinicians can also apply for HoNCode certification for their professional websites. Doing so demonstrates compliance with the eight HoNCode criteria, improves users' level of trust in the site, and thus increases its visibility via the HoNCode label.

The major limitations of this study are as follows. There is a potential for both sampling bias and examiner bias by the first two authors when conducting data analysis. However, an attempt was made to decrease this influence by using predetermined assessment criteria. With regard to sampling bias, the websites evaluated were limited to the key terms that were entered into search engines on a certain day. Additionally, websites were assessed by the third author, a clinician with appropriate academic qualifications and clinical experience – a methodology that has been employed in prior studies.[16]

Conclusions

The results show that the internet is an unregulated forum with sources of information of varying quality, some of which may have their own agenda. Unlike an article in a peer-reviewed journal, information found via search engines does not equate to accurate evidence-based data. It is easy for patients to take at face value testimonials and attitudes towards particular treatment options. Clinicians should present accurate, high-quality information on their online sites, as this may become an integral part of the explained risks and benefits inherent in informed consent. This result shows that the reasonable patient may be misinformed on material risks by searchable, poor-quality internet sources.

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CPD questions

To claim CPD points, go to the MEMBERS' SECTION of www.dentist.ie and answer the following questions:

1. **What is the DISCERN instrument used for?**
   - A: It measures website readability
   - B: It checks website content for misinformation
   - C: It is a quality criterion for consumer health information

2. **What percentage of 'wisdom tooth extraction' websites achieved an 'excellent' DISCERN grade?**
   - A: 3%
   - B: 13%
   - C: 15%

3. **On average, how many google searches for 'wisdom teeth' are done in Ireland each month?**
   - A: 3,600
   - B: 1,900
   - C: 1,300