

Study of online information for anxious patients requiring dental extractions

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Key points

Demonstrates the variance in quality, readability and depth of information on websites when patients search for health information online.

Supports the NHS self-care initiative in encouraging anxious patients to learn active relaxation techniques.

Encourages all dentists to signpost patients to quality websites using digital methods.

Abstract

Introduction Standard practice for dental extractions is to provide treatment under local anaesthesia (LA) without additional sedation or general anaesthesia. Even in oral surgery departments, the majority of patients receive this anxiety-provoking treatment under LA alone. All patients undergoing extractions could benefit from information on relaxation and anxiety management. This study aims to perform an in-depth analysis of the quality of websites that provide information on dental extractions and anxiety.

Materials and methods Key phrases were searched on Google. The content, reliability and readability of the top ten websites for each key phrase were qualitatively evaluated using three tools: DISCERN, Flesch-Kincaid, and a specialised oral surgery website checklist (OSWC).

Results Patient education was limited, with 70% of websites being either advertisements, forums or articles for healthcare professionals. The majority of websites poorly described treatment such as sedation and only 16% provided methods for relaxation. Readability was poor, with 92% above average UK adult literacy ability.

Conclusion Extraction patients should be signposted to effective resources before treatment or referral. Dental anxiety advice can easily be incorporated into all treatment plans, with recommended website links included in digital communication, such as text messages or practice websites.



Listen to the author talk about the key findings in this paper in the associated video abstract. Available in the supplementary information online

Introduction

Dental extractions are an anxiety-provoking experience for patients. General dentists can refer National Health Service (NHS) patients to oral surgery departments in the UK when the teeth are more difficult to extract, if the patient has a high risk medical history or when the patient's fear renders them unable to be

treated in primary care. Once assessed by the oral surgeon, the patient is still more likely to be treated in hospital under local anaesthetic (LA) alone than with any additional medicaments. An in-house audit of oral surgery treatment modalities conducted at Epsom and St Helier University Hospitals NHS Trust resulted in only 19% of patients receiving either general anaesthesia (GA) or intravenous sedation (IVS), after an average 2–4 months on the waiting list.

Sedation can facilitate treatment for the more anxious patient, but it does not necessarily address the underlying anxiety and is only performed at the treatment appointment. A lengthy referral process could potentially result in increased anxiety while

waiting for an appointment. With this in mind, supporting anxious patients throughout the referral process is key to providing effective patient care, with guidance provided by both the general dentist and specialist.

Dental care is adapting to a digital environment; from the simple dental appointment text reminders to supportive medical health apps easily accessed on a mobile device. Smartphones have superseded magazines in dental waiting rooms and provide information to patients outside the clinical setting. Ofcom's 2018 report on UK adult media literacy identified half of all UK internet users (49%) use it to search for information on health-related issues, therefore quality is paramount.¹

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Literature on the quality of internet-based education for dental patients highlights the difficulty in quality assurance of online dental resources.^{2,3,4,5,6,7,8,9} The general public are one click away from accessing highly valuable forums, where patients openly discuss their experiences and support each other, to forums where scaremongering occurs. The General Dental Council (GDC) offers guidance on ethical advertising in the UK,¹⁰ however dental information online is not universally regulated. To ensure patients in primary and secondary care are receiving effective advice on how to prepare for dental extractions, particularly if they are anxious, an analysis of the quality of oral surgery online resources available to the public was required.

Materials and methods

In order to imitate a layperson searching for advice before dental extraction treatment, five key phrases were selected: 'tooth extraction', 'tooth extraction anxiety', 'tooth extraction fear', 'oral surgery anxiety' and 'oral surgery fear'. Each of these phrases were searched separately through Google and the first ten links of each of the five searches were assessed in the study. The majority of oral surgery patients receive treatment without any form of pharmacological agent, therefore 'sedation' and 'general anaesthesia' were not used as key words, as these did not align with the aim of the study.

The position of a website link on the Google search results page, influences the average share of activity it receives.¹¹ The number of clicks to view a website reduces dramatically with each step down the page, where the 11th website only receives 1% of clicks and the top three ranking websites capture 61% of clicks.¹² It cannot be guaranteed that the general public will dismiss advertisement websites that are often at the top of the page. With these statistics, it was decided that the first ten links would be analysed from each key phrase search and adverts would not be excluded.

Data were collected on internet browsers using a virtual private network (VPN), where all search history had been erased. Exclusion criteria were kept minimal in order to replicate a layperson searching for information on the internet. Two exclusion criteria were applied to the 50 websites collated: duplicates and websites that required logins or membership. Although a UK search engine was used,

international websites were not excluded. After application of the exclusion criteria, 43 websites remained.

Each website was analysed using three evaluation methods: DISCERN,^{13,14} Flesch-Kincaid,^{15,16} and a specialised oral surgery website checklist (OSWC) created by the author in order to gain a greater in-depth evaluation of website content.

DISCERN is a recognised quality analysis checklist consisting of 16 questions for the evaluator to grade out of five. Questions aim to assess reliability, treatment information and overall content quality of the website. Two researchers were used in order to reduce bias: one oral surgeon and one research scientist. Flesch-Kincaid is a simple online tool which assesses the readability of the website, using the number of syllables in a word and the number of words in a sentence. A reading age is provided, which can be used for comparison with the target audience.

As there is currently no specialised checklist in order to assess the content of oral surgery information online, a new evaluation tool was created: the OSWC, which consists of 11 questions that require a yes or no answer. Questions aim to confirm the presence or absence of either positive or negative features of oral surgery websites that can affect anxious oral surgery patients before treatment. Website features with positive connotations included: relaxation advice such as acclimatisation; breathing techniques; distraction with music or cognitive behavioural therapy; authorship from a dental or medical professional; target audience is the dental patient; links to further information; preoperative advice; and presence of a glossary. Website features with potentially negative or neutral effects on a patient's anxiety levels included: mention of sedation without explanation; referral to specialist care; authorship from a non-medical perspective; forum or advertisement; target audience is not the dental patient; and the presence of a simple list of postoperative advice without further information.

During data collection it was acknowledged that some of the websites were subsidiary pages of patient education websites and if homepages were reviewed then the analysis could score higher. However, it was decided that only the landing page would be analysed, as it could not be confirmed that a patient would click further links on each website.

Results

Table 1 shows the average DISCERN results for the 43 websites, where the first eight questions addressed the reliability of the website, the following seven centred on treatment and the final question assessed the overall quality of the website as a source of patient information. Average reliability score of the websites (51%) was higher than the information on treatment (35%), however the overall quality score was lower than both of the evaluation components (34%).

The OSWC identified that 63% of websites mentioned sedative agents to deal with anxiety, but half gave no further depth of information and only 7% of all websites provided links to further information. Active relaxation advice was only provided by 16% of websites. Half of the websites suggested referral to a specialist, where a common phrase 'if you're extremely nervous, ask your dentist to refer you to an NHS sedation clinic' was observed.¹⁷ A regular finding was that websites contained lists of instructions without any further information or advice to address the reader's concerns. Only 40% of the websites that contained postoperative advice gave any information on preoperative preparation or relaxation techniques. Four forums were discovered, including one of the few dental anxiety specialised and accredited websites.¹⁸

Only 8% of websites had a reading age of nine years or below, when assessed using the Flesch-Kincaid evaluation tool. The average reading age was ages 13 to 14, with the most difficult to read website scoring a reading age of 20–21.

Discussion

This study discovered poor quality and depth of online information available to patients searching for advice on how to manage anxiety regarding dental extractions. Website information predominantly focused on patients being referred to specialist care for sedation and contained lists of standard extraction advice. This does not actively address techniques to manage fear and does not correlate to patients' realistic experience in both primary care and oral surgery departments in the UK.

The quality of a health care website is difficult to objectively analyse. A limitation with the DISCERN checklist was highlighted when the specialist non-profit dental anxiety organisation Dental Fear Central received a

Table 1 DISCERN results

Variable	Mean score	Range
Website reliability score	21.35 (51%)	8 to 34 (max 40)
Website content score	12.17 (35%)	7 to 29 (max 35)
Website overall quality	1.69 (34%)	1 to 4 (max 5)

Table 2 Reliable online oral surgery information for anxious patients

Organisation	Patient information	Summary
NHS Choices	Audioguides: Moodzone - 'Mental wellbeing audio guides'	Excellent 6–7 minute podcast on anxiety control, unhelpful thinking and more
	Webpage: Healthy body - Head - Teeth - 'Fear of the dentist'	Easy to read, does not address extractions
Dental Fear Central	Webpage: 'Relaxation'	Excellent extensive information, links, podcasts and diagrams, high school reading age
	Webpage: 'Is dental sedation right for me'	Excellent thorough information and links to other active relaxation techniques, reading age above national average
British Association of Oral Surgeons (BAOS)	Leaflet: 'Oral surgery'	Three-page A4 document, university-level readability, covers oral surgery commissioning and referrals, no images
	Leaflet: 'Conscious sedation'	Four-page A4 document, university-level readability, covers expectations, techniques, patient instructions, no images
Royal College of Surgeons (RCS)	Leaflet: 'Get well soon: wisdom teeth extraction'	Excellent 13-page thorough postoperative instructions leaflet, traffic light recovery tracker
Oral Health Foundation	Webpage: 'What to do following an extraction'	List of postoperative advice, easy to read, link to helpline
	Webpage: 'My fear of the dentist'	Excellent anxious patient FAQs, easy to read, link to helpline

low score of only 28%, lying within the overall websites range of 23–72%.¹⁸ The link led the reader to a landing page, which was an old forum and not the homepage which is in fact highly informative. Forums featured in 9% of the websites; although it is recognised that acknowledging and talking about fear is a beneficial step in managing anxiety, forums can vary in quality and relevance and in some cases can lead to increased anxiety with scaremongering. This highlights the variability of content patients can access when searching for health care information online using search engines alone. Patients should therefore be encouraged to access original website content for informative and reliable advice.

The DISCERN treatment information questions identified that a high proportion of websites poorly describe treatment such as sedation (average score 1.44/5) or the benefits of treatment (1.74/5). The provision of sedation reduces anxiety during the patient's appointment but it does not completely eliminate dental

fear. Although the OSWC results also found that a high proportion of websites included information on pharmacological agents to manage anxiety, few discussed methods of active relaxation techniques to enable patients to manage their own anxiety before appointments. As previously established, low numbers of UK NHS patients receive any form of sedation for oral surgery procedures, therefore it would be highly beneficial to educate patients on active relaxation advice, such as breathing techniques and distraction with music or acclimatisation, so that patients can prepare themselves before treatment.

A recognised technique in enabling patients to reduce and manage their dental anxiety is cognitive behavioural therapy (CBT).¹⁹ Although predominantly provided in an environment with a trained therapist, computerised CBT for anxiety management is becoming a reliable intervention and, since 2006, has been recommended by the National Institute for Health and Care Excellence (NICE).²⁰ Although CBT principles can be

adapted to the dental environment, the OSWC found that it was only mentioned in one of the websites in this study. As technology evolves, links to effective dental websites are likely to include computerised dental CBT delivered via websites or through smartphone apps.

Postoperative advice could be argued as beneficial for anxious patients; reducing the fear of the unknown. However, this information is always provided by the dentist or oral surgeon verbally, along with additional leaflets at the consultation and treatment appointments. Providing a list of instructions online does not tackle the issue of alleviating patients' anxiety. Enabling patients to feel prepared with preoperative, intraoperative and postoperative advice encourages ownership of their treatment plan and potentially increases confidence and reduces anxiety.

The readability of online patient education is easily overlooked, but it is an important factor. The UK Government recommends web content to be written at a reading age of a nine-year-old child.²¹ This age was used as the baseline for comparison in this study and, on analysis of the websites, 92% had readability scores higher than the average UK adult literacy ability. Along with difficult readability, the use of dental jargon can potentially confuse patients and evoke anxiety. From the OSWC results, only 2% of websites included a glossary of dental terminology. These findings indicate that the dental community may be pitching their patient education high above the ability of the average reader.

Specialist knowledge is not required to signpost patients to recommended websites; patients can be directed before treatment or referral by both general dentists and oral surgeons. Website links can be distributed to patients on paper leaflets or on waiting room posters. However, digital methods are becoming more effective, with links sent in appointment reminder text messages, emails, incorporated into dental clinic homepages or into mobile phone applications. In response to an increase in mental health smartphone apps,²² a new NHS self-care support app designed for students has been created.²³ The app is easy to navigate, uses reliable resources including Anxiety UK,²⁴ Mind²⁵ and NICE,²⁶ and covers a great breadth and depth of information, with specific information on warning signs, self-care and treatment. Signposting to reliable dental anxiety online resources (Table 2) should improve the patient's journey and correlates well with the NHS's self-care initiative: encouraging people to choose self-care for life.²⁷

Conclusion

Website information predominantly focused on patients being referred to specialist care for sedation and contained lists of standard extraction advice. This does not correlate with patients' realistic experiences in both primary care and oral surgery departments in the UK, where the majority of patients have extractions without any additional sedation. Prior to treatment or referral, both general dentists and oral surgeons should signpost patients to further information on managing dental anxiety by recommending specific websites, podcasts or apps. Digital methods of recommending websites are encouraged, through text message appointment reminders, emails or practice homepages. To ensure all patients receive effective advice, it may be beneficial for oral surgery departments to communicate preferred websites and online patient education leaflets with local general dentists. Authors of online dental information should ensure they follow the GDC ethical advertising guidance and ensure that the readability of patient education is aimed at the target audience.

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