Cosmetic facial surgery: are online resources reliable and do patients understand them?

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Abstract

Our aim was to assess the quality and readability of online resources regarding common cosmetic maxillofacial procedures. We searched Google for "rhytidectomy", "rhinoplasty", "orthognathic surgery", "genioplasty", "malar implants", "blepharoplasty", "otoplasty", and related terms. In each case we assessed the top 50 results for quality and readability. Quality was measured using the DISCERN questionnaire, benchmark criteria published by the Journal of the American Medical Association (JAMA), and accreditation by the HONcode (Health On the Net code). The Flesch-Kincaid reading grade, Flesch reading ease score, Gunning's fog index, and the Coleman-Liau index, were used to measure readability. A total of 350 sites were assessed and 200 were included in the study. The mean (SD) JAMA and DISCERN scores for all included websites indicated poor quality (0.49/4 (1.07) and 32.77/80 (10.57), respectively). Only eight sites (4%) were certified by the HONcode. There was a significant association between low DISCERN scores and Google Ads (p = 0.009) and between low DISCERN scores and the websites of private clinicians or hospitals (p < 0.001). The mean (SD) Flesch reading ease score and Gunning's fog score both indicated poor readability that required a moderately high level of literacy (50.59 (11.82) and 13.83 (2.76), respectively). The Flesch-Kincaid and Coleman-Liau scores indicated similar results. Adherence to the JAMA benchmark, certification by the HONcode, and relevant selection on Google Ads would improve quality. The avoidance of medical jargon and use of shorter sentences would improve readability and provide patients with comprehensible explanations that would allow them to have realistic expectations and take responsibility for their own health.
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Introduction

Cosmetic facial surgery is within the remit of maxillofacial surgery in the UK.[1] Despite a reduction in the number of cosmetic procedures in 2017, there has been an overall boom in the past decade,[2] and the General Medical Council has recently issued new guidance on cosmetic interventions[3] with endorsement from the Royal College of Surgeons.[4]

More and more patients are using the Internet as an initial source of information on cosmetic surgery,[5] and evidence indicates that the credibility of a site has little bearing on the decisions they make.[6] Resources that provide credible and comprehensible information can encourage patients to have realistic expectations, whereas those that are deliberately misleading or unreadable because of aggressive selling techniques or conflicts of interest, do not.[7]

Published reviews have previously assessed the quality of websites on rhinoplasty,[8] orthognathic surgery,[9] and blepharoplasty,[10] but we know of no such publications on sites about malar implants, rhytidectomy, genioplasty, or otoplasty, or on their readability (apart from those on

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Table 1
The readability formulas used and interpretation of their scores.

Index	Formula	Score
Flesch reading ease score	$206.835 - 1.015$ (total words/total sentences) $- 84.6$ (total syllables/total words)	90–100 (very easy) 80–89 (easy) 70–79 (fairly easy) 60–69 (standard) 50–59 (fairly difficult) 30–49 (difficult) 0–29 (very confusing)
Gunning's fog index	0.4 [(words/sentences) + 100 (complex words[*]/words)]	5–9 (readable) 10–14 (hard) 15–19 (difficult) 20+ (very difficult)
Flesch-Kincaid reading grade	0.39 (total words/total sentences) + 11.8 (total syllables/total words) $- 15.59$	Score gives a US school grade
Coleman-Liau index	5.89 (characters/words) $- 29.5$ (sentences/words) $- 15.8$	Score gives a US school grade

* Words with more than 2 syllables.

rhinoplasty).[11] This study therefore was designed to assess the readability and quality of websites that relate to these procedures.

Method

We used Google to search for the websites, as it accounted for 85.74% of all search engine use in the UK in April 2017.[12] The search location was London, UK, and all filters were inactive. On 14 May 2017 we searched separately for "rhytidectomy" or "facelift"; "rhinoplasty" or "nose reshaping" or "nose job"; "orthognathic" or "jaw surgery"; "genioplasty" or "chin surgery"; "malar" or "cheekbone implants" or "cheek augmentation"; "blepharoplasty" or "eyelid surgery"; and "pinnaplasty" or "otoplasty" or "ear correction surgery". In each case we then reviewed the top 50 results.

Websites were excluded if they were inaccessible, irrelevant, in a language other than English, a video only, or were repeated. Those included were assessed for Google Ad status,[13] target audience, type of website, country of origin, and the presence of images or video.

Quality was assessed by the presence of accreditation by the HONcode (Health On the Net code)[14] and other health-related seals of approval, the Journal of the American Medical Association (JAMA) benchmarks,[15] and the DISCERN questionnaire.[16] HONcode certification is achieved through adherence to eight core policies that include transparency of authorship and sponsorship, attribution, justifiability, confidentiality, and authorship.[14] Other health-related seals of approval have similar standards. The JAMA benchmarks give a total score of four based on evidence of authorship, attribution, disclosure, and currency, whereas the DISCERN tool gives each website a maximum score of 80, which is based on 16 questions that assess the reliability of the publication,

quality of the information, and an overall rating. A DISCERN score of 63-75 is considered excellent, 27-38 is poor, and 15-26 very poor.[16]

We assessed the readability of the websites on an online program,[17] and used the Flesch reading ease score, Gunning's fog index, the Flesch-Kincaid reading grade level, and the Coleman-Liau index, which are commonly used to assess the comprehensibility of health resources (Table 1).[7,18] The Flesch reading ease score assesses the length of sentences and words to give a score out of 100 (90–100 = very readable; less than 30 = very difficult or confusing). Gunning's fog index and the Flesch-Kincaid reading grade are based on the number of syllables, whereas the Coleman-Liau index assesses the number of characters.

The data were recorded and analysed using Microsoft Excel and the chi square and *t* tests used where appropriate.

Results

Fig. 1 summarises the inclusion process. Of the 150 websites excluded, 123 (82%) were Google Ads. Table 2 summarises the classification of the 200 websites included, of which only 22 (11%) were Google Ads. Of the 194 websites (97%) that targeted the public, 102 (51%) included relevant images, and

Table 2
Classification of included websites.

Classification	No (%) (n = 200)
Private clinician, hospital or healthcare company	132 (66)
Other (including NHS website, Wikipedia, WebMD)	34 (17)
Social media (including RealSelf.com)	14 (7)
Professional body (including BAAPS, BAOMS)	11 (6)
Academic (including PubMed, JAMA)	7 (4)
Commercial	2 (1)

BAAPS: British Association of Aesthetic Plastic Surgeons.