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The 'five star' fallacy: an analysis of online reviews and testimonials of dental practices in Northern England

Christopher C. Donnell,*^{1,2} Lorenzo F. Iafrate³ and Stuart W. Worthington⁴

Key points

Patient reviews of dental practices are finding a home much more commonly on the platforms of Facebook and Google than practice websites or the NHS website.

Practice websites promoted reviews with higher star ratings compared to the average ratings found on Facebook, Google or the NHS website.

Patients may consider Google the most 'trustworthy' online space due to high reviewer identifiability, the highest engagement levels and dental practices having no direct control over it.

Abstract

Aims and objectives To develop a greater understanding of how dental practices in the UK utilise and promote patient reviews and testimonials. To compare and contrast the star ratings, levels of engagement and levels of identifiability by comparing those placed by patients on social media, review websites and search engines, to those placed on providers' own websites. To provide recommendations for future advertising guidance.

Materials and methods All practices providing dental services in North East England and Cumbria were identified from the Care Quality Commission database. A web-based Google search for the respective dental practice websites, NHS listings, Facebook pages and Google results page listings was performed. The presence or absence of patient testimonials and reviews was recorded, alongside the total number of testimonials/reviews and the number of non-identifiable testimonials/reviews. Data were analysed using Microsoft Excel and SPSS Statistics.

Results Of the 401 practice websites, 19.7% (n = 79) contained at least one graded review, while 40.9% (n = 158) of the 386 NHS listings; 87.2% (n = 272) of the 343 Facebook pages; and 94.4% (n = 442) of the 468 Google listings also contained at least one graded review. All of the 1,798 testimonials observed on practice websites were positive in their sentiment. Further, 22 practices utilised video testimonials. Each of the online review locations showed overall mean scores above 4.5 out of 5 stars.

Conclusions Dental practice websites, the NHS website, Facebook and Google utilise testimonials and reviews in distinct and diverse ways. Unlike other jurisdictions around the world, the UK does not have guidance in this area. Electronic word of mouth is often replete with bias, and as such, patients need to be encouraged to seek out multiple sources before decision-making. Facebook and Google may be perceived to be more 'trustworthy' sources of information as they appear less curated and less susceptible to manipulation than practice websites, which the public may feel gives greater credence to the information they provide. In order to achieve the highest standards of integrity and honesty, advertising guidance surrounding reviews and testimonials would benefit from future revision.

Introduction and background

The increasing use of digital communication and social media has been highly influential in

making online reviews and testimonials some of today's most potent and influential forms of word of mouth (WOM).¹ Online reviews generally comprise voluntary, consumer-generated evaluations of products or services internet-users have experience of. In addition to their written opinions, a rating or grade of the experience is typically provided to indicate the level of user satisfaction, serving as a form of 'customer feedback'.²

The 'star rating system' is one of the most easily recognisable and universally adopted methods of grading a product or service. The use of repeated symbols to indicate a rating dates back to 1820, where travel guide Mariana Starke used one or more exclamation points to list 'objects best worth notice', according to their

merit.³ A system of one to five stars, one being the lowest and five the highest, was introduced in 1912 by the Automobile Association to rate amenities, such as hotels and hospitality and is now used across media, such as television, film and theatre, as well as restaurants and financial products.⁴ Ratings are collated and presented as an average out of five, allowing potential consumers to quickly assess other users' experiences, alongside written feedback in the form of reviews or testimonials.

The terms 'review' and 'testimonial' are often used interchangeably but there are distinct differences between the two (Table 1).⁵ A review is generally shorter than a testimonial and tends to focus on particular aspects of an interaction or product, whereas a testimonial

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Table 1 Key differences between reviews and testimonials.
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Review	Testimonial
A short snapshot of the individual's experience using the product or service	A longer, more detailed story about the individual's experience before and after using the product or service
Often provided to a third party	The individual gives the testimonial directly to the provider
Usually featured on another website or with another service	Might be used on a provider's website, in advertising, brochures and other promotional materials
Usually in a written format alongside a star rating	Can be written down or in a video
More impactful in larger quantities	More impactful with greater length or detail

is more in-depth as an individual is explaining more about their experience, why they chose it and how it improved their life.⁵ As testimonials are usually given directly by an individual to the provider, they tend to almost always be positive, whereas reviews tend to be given to third-party websites and can be positive or negative. Testimonials tend to have more impact with greater detail in the content, whereas reviews are more impactful in larger numbers.⁵

Acquiring and disseminating feedback is crucial for healthcare service providers to understand patients' views of the service they are delivering. The NHS introduced the Friends and Family Test (FFT) into dentistry in 2015 which was designed to be offered to all patients undergoing a course of NHS treatment;⁶ however, asking for patient feedback in dental settings existed long before the introduction of the FFT. Uniquely, dental practice exists as a complicated triptych where a person can enter the practice door as any mixture of 'patient', 'client' or 'consumer'.⁷ Fuelled by the immediacy and influence of online reviews and encouraged by the authority and power of Google, 'experience-led' culture has burgeoned over the last decade and providers are eager to know what users think about the quality of the service they provide.⁶

Reviews and testimonials are commonplace in everyday life, not just in healthcare. Review websites (for example, TripAdvisor), retailer websites (for example, Amazon), search engines (for example, Google) and social networking sites (for example, Facebook) are all examples of 'electronic WOM' (eWOM).^{1,8} In contrast to traditional WOM, from people known to the individual seeking information, eWOM has some unique and significant characteristics. eWOM often occurs between strangers who have little-to-no prior relationship, including the ability to share information anonymously.^{1,9} It is postulated that this anonymity permits individuals to share their opinions more

comfortably without revealing their identities; however, this non-identifiable nature of eWOM can make it difficult for individuals to determine the quality and credibility of the source, with a recent study reporting less than half of participants (44.8%) felt confident spotting a review not written by a genuine service user.^{1,8,10}

Gathering and sharing testimonials and reviews has been key to successful marketing and promotion for many years.⁶ In the UK, the use of testimonials and reviews is unregulated. Guidance on advertising and social media laid out by the General Dental Council (GDC) make no reference to the use of testimonials and reviews, simply advising professionals that publicity material should be 'legal, decent, honest and truthful' and thus should be displaying 'intellectual honesty'.^{11,12,13} The concept of 'intellectual honesty' pertains to any communication that is intended to inform or persuade; Guenin's¹⁴ description of the kernel of intellectual honesty is akin to that expressed by the GDC in Standard 1.3: 'you must be honest and act with integrity', that is, the connection between (intellectual) honesty and an influential model of integrity.¹³

Non-regulation is precarious as not only have testimonials been shown to mislead by overplaying positives and downplaying risks, but there has also been a rise in companies who, for a fee, are willing to create and disseminate fictitious testimonials and reviews online and on social media.^{15,16} Such non-regulation also creates a dilemma regarding with whom responsibility for policing any disputes or complaints lies, as well as which statutory body then enforces the subsequent outcomes. In a recent editorial, Lewis¹⁶ describes some of the measures introduced by various governments and dental councils across the world to counter the risks of non-regulation. Regulation of advertising is far stricter in other countries such as Australia, where national law across

15 separate healthcare professions prohibits any regulated health service, or a business that provides a regulated health service, using 'testimonials or purported testimonials about the service or business'.^{17,18} The testimonial ban also exists in Canada and some states in the USA.¹⁸ The Dental Council of Hong Kong prohibit not only the use of testimonials from patients, but also from colleagues and dentists who teach or train other dentists.¹⁹ Similarly, the Singapore Dental Council not only ban testimonials, but go one step further and prohibit the use of 'before' and 'after' pictures.^{16,19,20}

Patients in the UK have a plethora of choices when it comes to where they leave their practice review, with the top three choices being the NHS website (for applicable practices [formerly NHS Choices]), Facebook and Google. In addition, a patient might provide it directly to the practice, as is commonplace for testimonials.²¹

Previous research in Australia highlighted that while patients feel advertising of healthcare services is helpful, many found testimonials and reviews to be lacking in reliability,¹⁰ hence this research aims to:

- Develop a greater understanding of how dental practices in the UK utilise and promote patient reviews and testimonials by analysing those placed directly on practice websites by the providers
- Compare and contrast the star ratings, levels of engagement and levels of identifiability of other sources, by comparing those placed by patients on social media, review websites and search engines, to those placed on provider websites
- Provide recommendations for future focus in advertising guidance updates whereby dental practices can utilise patient reviews and testimonials whilst maintaining the highest standards of integrity and honesty.

Methods and materials

The Care Quality Commission provides a publicly available register of all providers of dental care in England, updated weekly (<https://www.cqc.org.uk/what-we-do/services-we-regulate/find-dentist>). The database accessed on 15 February 2022 contained a list of 11,216 providers.

Dental practices in North East England and Cumbria were identified by limiting the catalogue to providers in the 'North East' region and 'Cumbria' county zones. This produced a

list of 556 premises providing dental care; 80 of these were found to be either duplicates or to have ceased trading, so the remaining 476 practices were analysed. A web-based Google search for the respective dental practice websites, NHS listings, Facebook pages and Google search engine results pages (SERP) listings was performed. These media were selected as they are currently the four main sources of patient reviews for dental providers.²¹

The first section involved practice websites. The presence or absence of patient testimonials was recorded, alongside the total number of reviews/testimonials, the number of positive testimonials and the number of non-identifiable testimonials. A review or testimonial was deemed to be non-identifiable if it was not associated with a full first and second name, for example, 'John S' would be deemed non-identifiable. The presence or absence of patient reviews was then recorded, alongside the total number, average star rating and the number of non-identifiable reviews. The presence or absence of video testimonials was recorded alongside the total number, if present and the number of positive video testimonials.

The second section involved collating the reviews on the NHS website, Facebook and Google. The presence or absence of a listing on the three sources was recorded first. This was followed by recording the presence or absence of patient reviews, the total number of reviews, the average star rating and the number of non-identifiable reviews.

Data were collected by the research team (CD, LI, SW) and analysed using Microsoft Excel (Microsoft Excel for Mac Version 16.54). The data collection sheet was piloted using a sample of practice websites, NHS website pages, Facebook pages and Google SERPs for ten dental practices, with slight changes to the layout as a result. Inter-rater reliability scores were calculated using SPSS Statistics (Mac Version 26.0.0.0, SPSS Inc., Chicago) and Fleiss' kappa for three raters, scoring to two decimal places, with 0.61–0.80 representing 'substantial agreement' and 0.81–1.00 'almost perfect' agreement.²²

The number of reviews for each practice, in each online location, appeared to be strongly positively skewed, with numerous extreme outliers observed. It was thus determined that using mean and standard deviation as the respective measures of location and dispersion would not be appropriate and as such, the median with its upper and lower quartiles have been calculated instead.

The use of a five-star grading system is akin to a Likert-type scale and as such, can be considered ordinal categorical data. It is standardly more appropriate to summarise this type of data using median or mode rather than a mean. However, Facebook and Google both employ the use of mean to give an overall rating for the individual submitted reviews. We thus continued with the use of means to provide an overall average grade for each online location. Moreover, whilst acknowledging the restricted mathematical correctness, this is still the approach with which patients are most comfortable assessing.

Results

Of the 476 practices sampled: 84.2% (n = 401) had a website; 81.1% (n = 386) had a listing on NHS website; 72.1% (n = 343) had a Facebook page; and 98.3% (n = 468) had a listing on Google search (Table 2) (Fig. 1). A listing on the NHS website would not be appropriate for wholly private dental practices that do not provide NHS treatment but still there was seen to be a NHS listing for the vast majority of the practices. Similarly, it appears that the vast majority of practices had a website and to a lesser extent, a Facebook page. Most notable was the near-ubiquitous presence of a Google listing for those practices sampled.

When considering the presence of graded reviews that include a rating out of a maximum of five, then 19.7% (n = 79) of the 401 practice websites contained at least one of these graded reviews (Table 3). Likewise, 40.9% (n = 158) of the 386 NHS listings; 87.2% (n = 272) of the 343 Facebook pages; and 94.4% (n = 442) of the 468 Google listings contained at least one graded review. Moreover, 36.2% (n = 145)

of the 401 practice websites contained at least one ungraded, written testimonial displayed on their website (Fig. 2).

The percentages of Facebook pages and Google listings containing at least one review are notably higher than the corresponding percentages for practice websites and NHS listings. It appears that patient reviews for the practices sampled are much more commonly finding a home on the platforms of Facebook and Google than the other online locations.

The percentages of reviews identifiable by a clear first name and surname varied considerably between the different online review locations

Table 2 Online presence of 476 dental practices in North East England and Cumbria

Online location	Number	Percentage
Website	401	84.2 %
NHS listing	386	81.1 %
Facebook	343	72.1 %
Google listing	468	98.3 %

Table 3 Each type of online location that contained at least one review

Online location	Number	Percentage
Website – testimonial (of 401 websites)	145	36.2%
Website – review (of 401 websites)	79	19.7%
NHS listing (of 386 listings)	158	40.9%
Facebook (of 343 pages)	272	87.2%
Google listing (of 468 listings)	442	94.4%

Fig. 1 Dental practices in each online location

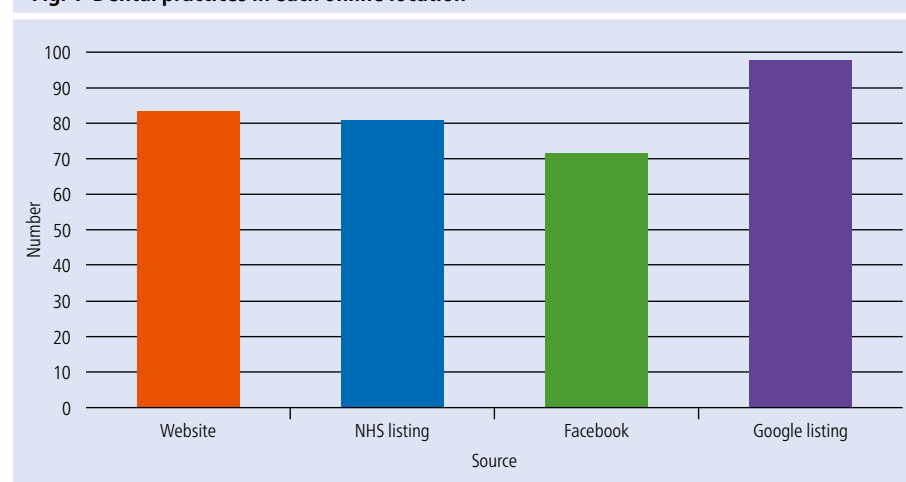


Table 4 Reviews for each type of online location that are identifiable

Online location	Number	Percentage identifiable
Website – testimonial	1,798	30.1%
Website – graded review	1,080	12.2%
NHS listing	1,228	22.4%
Facebook	7,600	98.3%
Google listing	14,091	89.2%

Table 5 Median number of reviews for each online location that contained at least one review

Online location	Median (Q1, Q3)	Maximum values
Website – testimonial	5 (2, 12)	97
Website – graded review	6 (3, 9)	103
NHS listing	2 (1, 5)	189
Facebook	12 (5, 32.3)	380
Google listing	16 (8, 34)	512

(Table 4). The authors of the graded reviews on practice websites were identifiable in 12.2% ($n = 132$) of the total 1,080 reviews observed in this study, whilst the reviewers on the NHS listings were identifiable in 22.4% ($n = 275$) of the total 1,228 reviews listed (Fig. 3). These percentages are in stark contrast to those seen for Facebook and Google, where reviewers on Facebook were identifiable in 98.3% ($n = 7,471$) of the 7,600 reviews and those of Google listings were identifiable in 89.2% ($n = 12,569$) of the 14,091 reviews.

Where there was at least one patient review present, then the median number of graded reviews on a practice website was six and the median number of testimonials on a practice website was five (Table 5). The corresponding value for NHS listings was just two, while Facebook saw a median of 12 and Google was the highest with 16 (Fig. 4). It is apparent that practices' Facebook pages and Google listings are currently much more popular repositories of patient reviews than the NHS listings. Similarly, where testimonials and graded reviews are hosted on the practice's own website, these are, on average, much smaller in number than the quantity found on Facebook or Google.

All of the 1,798 ungraded testimonials observed on practice websites were positive in their sentiment (Table 6). Only 22 practices

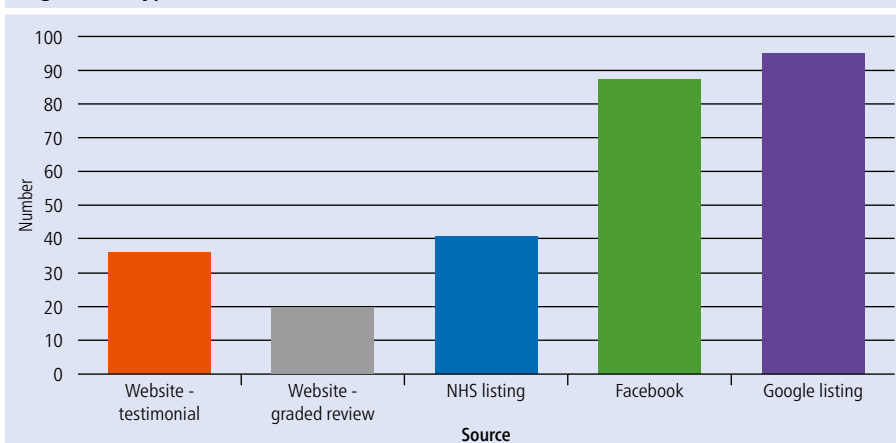
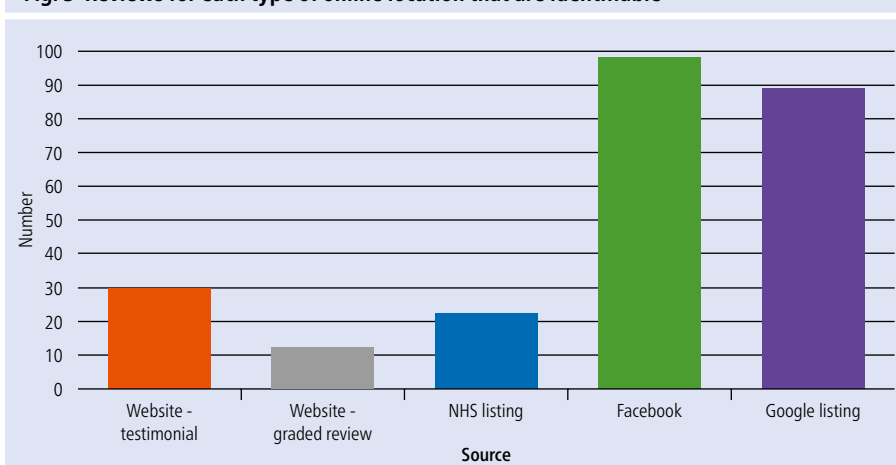
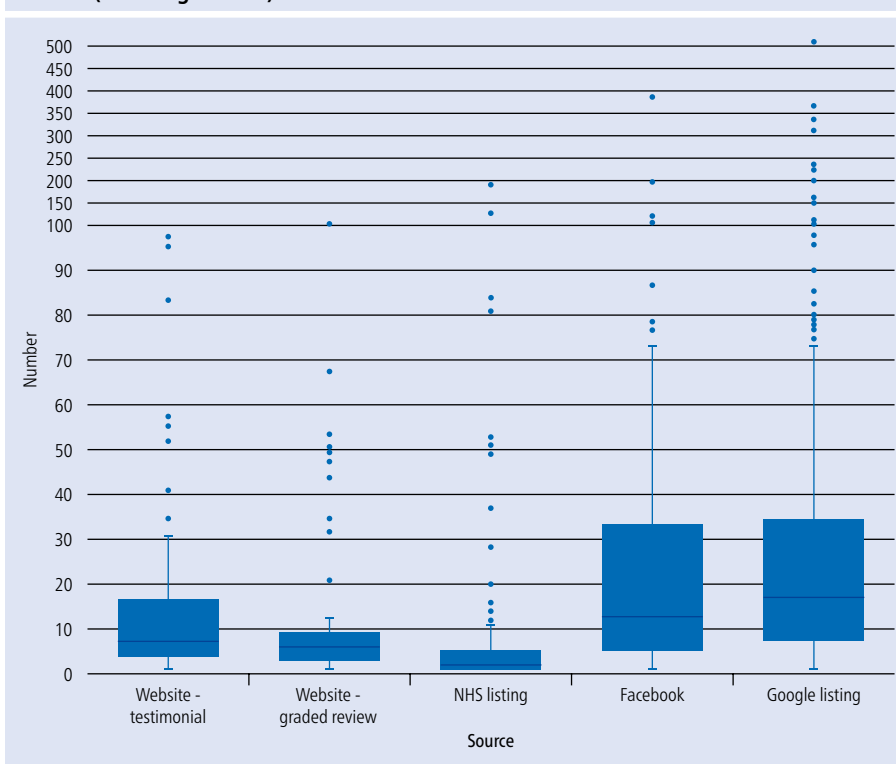
Fig. 2 Each type of online location that contained at least one review**Fig. 3** Reviews for each type of online location that are identifiable**Fig. 4** Box plot of number of reviews for each online location that contained at least one review (including outliers)

Table 6 Mean grade of all reviews for each type of online location

Online location	Weighted mean grade (SD)	Confidence interval
Website – testimonial	1,798 (100%) positive statements	
Website – graded review	4.94 (0.13)	(4.94, 4.95)
NHS listing	4.69 (0.59)	(4.66, 4.72)
Facebook	4.72 (0.63)	(4.72, 4.73)
Google listing	4.54 (0.53)	(4.53, 4.55)

(5.5%) utilised video testimonials on their website (range 1–96; mean 9.9; standard deviation 22.1) with none wholly identifiable. All video testimonials were positive in nature. Similarly, the graded reviews on practice websites were seen to have a high mean score of 4.94 out of 5 (Fig. 5). This was notably higher than the mean scores seen on NHS listings (4.69), Facebook pages (4.72) and Google listings (4.54).

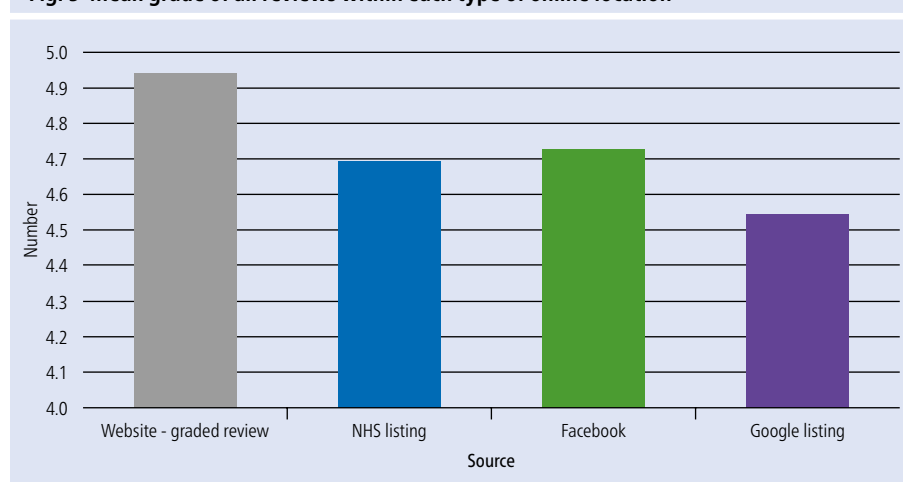
Each of the online review locations showed overall mean scores above 4.5. It is important to reflect on the high overall satisfaction that has been communicated in these online reviews. That said, there is still a marked difference between the mean scores seen in graded reviews shown on practice websites compared with elsewhere on the internet. It appears from these results that the grades seen on practice websites are not representative of the grades found elsewhere on the internet.

The Fleiss' kappa score was calculated and found to be 0.79, signifying substantial agreement between the three raters. This provides reassurance that the data collected in the study are correct representations of the variables measured, with near 'almost perfect' agreement between raters.²²

Discussion

This is the first study in the UK to explore how dental practices utilise and promote online reviews and testimonials. In addition, through this research, we were able to gain insight into how patients engage with various review platforms and directly compare handpicked reviews placed on practice websites with those placed by patients on the NHS website, Facebook and Google.

Google plays a key role in how patients and the public seek healthcare-related information.²³ In 2021, 97% of users used Google to find local businesses via their

Fig. 5 Mean grade of all reviews within each type of online location

'search' function and 86% via their 'maps' function, hence it would not be wrong to assume that patients are most likely using similar methods to find potential dental providers.² We found that the number of practices with their own dedicated practice website ($n = 401$; 84.2%) was lower than the near ubiquitous presence of dental practices with a Google listing ($n = 468$; 98.3%). Google gives patients the ability to find the location and perceived quality of a practice in a single search. Smartphones give patients instant information in the palm of their hands, hence having the correct online presence to ensure your business shows up in a SERP is crucial, further compounded by a recent study which found that most patients now choose dentists based on online reviews, proximity and rank in the SERP when searching their local area.²⁴

There is an increasing expectation that healthcare providers have an online presence in the twenty-first century.¹⁰ Despite the concomitant rise of online engagement and surge in online reviews and testimonials, a recent systematic review found that utilisation of healthcare review websites remains relatively low.^{23,25} Our results echo these findings as although over 80% ($n = 386$) of practices were listed on the NHS website, only 40.9% ($n = 158$) of these contained at least one review. Social media platforms increasingly allow users to publish their reviews alongside personal anecdotes, often used to demonstrate polarised viewpoints, which may influence other users' engagement with a product or service; 87.2% ($n = 272$) of practice Facebook pages contained at least one review.^{23,26}

In addition to writing an anecdotal tale of their dental experience, the NHS website, Facebook and Google all utilise a 'five-star'

rating system, providing a quick method of assessing the perception of users' overall experience.²³ Each star system accumulates and aggregates ratings over a period of time – on the Google review platform, the date of review has little effect if viewed purely quantitatively,^{23,27} whereas on the NHS website, reviews posted more than two years ago are automatically deleted. This may be one of the key reasons as to why the NHS website has the lowest number of reviews placed by patients.²⁷

Search engines use intricate algorithms to prioritise information and content in a process known as 'search engine optimisation' (SEO).²⁸ SEO is influenced by the reviews on Google, hence the Google star rating can decide where a practice appears on a SERP or in Google Maps.²⁹ A system driven by algorithms unguarded against manipulation can potentially be harmful to patients. eWOM is a powerful tool and as it is often littered with bias, may not be a true representation of patient experience.²³ This is just as true on practice websites, where practices have autonomy over the content of their webpages and are therefore also susceptible to manipulation. Despite practice websites being the least utilised for reviews ($n = 79$; 19.7%), they actually contained the highest mean score of 4.94 out of 5 when compared to the mean scores seen on the NHS website (4.69), Facebook (4.72) and Google (4.54). A study by Northwestern University found that consumer interest typically peaks when the average star rating is between 4.2–4.5 stars and starts to drop as the star rating approaches a perfect 5.0.³⁰

Previous studies show that consumers use testimonials as well as reviews to help

save time when decision-making.³¹ A recent Australian study on health service advertising found that not only were testimonials found to be lacking in reliability, but participants also felt they should not be used in the same way as other industries, as it is difficult for members of the public to engage with health service testimonials in an objective manner that translates the message into real meaning for other consumers.¹⁰ One hundred percent ($n = 1798$) of the testimonials in this study were positive in their sentiment and were only found on practice websites. The GDC advise that professionals must not exploit the 'trust, vulnerability or relative lack of knowledge' of patients through their marketing exploits and for today's sceptical patients, these 'perfect' testimonials may set off a sense of being 'too good to be true'.¹¹ A growing number of consumers are becoming aware of the marketing methods used to promote services and so the absence of negative information about a dental practice may make patients suspect an underlying manipulative intent.⁸ Nevertheless, given that practices have autonomy over their website content and tend to ask a patient directly for a testimonial, a practice is unlikely to ask an unhappy patient to write a testimonial anyway, nor would an unhappy patient be likely to provide one.

Trust and confidence are among the most powerful influences on patients and their readiness to seek out dental treatment.³² The unverified manner in which practice websites operate can undermine patient trust and force them to seek third-party arbitrage. When reviews and testimonials come from anonymous or non-identifiable sources, they make the entire review ecosystem harder to trust as readers are not able to assess the credibility of the source and/or determine if the information is accurate – patients don't know whether they are reading about real experiences and practices don't know whether they are reading reviews from real patients. Recent credibility research into review media suggests that limited knowledge of the source causes readers to seek 'message-inherent heuristic cues', such as the written language style and total number of reviews, to evaluate the information provided.³³ Our results show that the level of identifiability associated with reviews is much lower on both practices' own websites (12.2%; $n = 132$ identifiable) and NHS listings (22.4%; $n = 275$ identifiable) than on Facebook pages (98.3%; $n = 7471$ identifiable) or Google (89.2%; $n = 12,569$

identifiable). It might be the case that practices are concerned about maintaining their patients' confidentiality and thus have lower levels of identifiable reviews on their websites; however, as the vast majority of these reviews are not identifiable, such reviews may hold less credence than those from other online sources.

The NHS website actively promotes using pseudonyms and anonymous reviews; however, a user must be verified and prove they have provided a valid email address before the review is considered for publication. Google removed the ability to post anonymously in 2018, in addition to removing all previously posted anonymous reviews. This does not, however, prevent an individual from creating a Google account with a 'burner' email address and posting vexatious content.

Fake and vexatious online reviews are highly prevalent and increasingly relevant, as negative reviews which identify dental practices and professionals can sometimes risk legal cases of defamation. The recent rise in online reviews has correlated with increasing counts of legal action being taken against patients.^{23,34} Recent landmark cases in Australia have seen a patient successfully sued by a dentist for posting negative and defamatory Google reviews, where the reviews were said to have had a 'grapevine effect', as the impact of the comments spread beyond those people who actually saw them.³⁵ In addition, true 'anonymity' may not entirely exist, as a judge in a separate case ordered Google to identify an anonymous user behind a negative review of a dentist to allow them to sue for defamation, by providing any personal information, such as names, phone numbers, location metadata and IP addresses, linked to the account.³⁶

Our results indicate that when you get reviews from an online source, Facebook and Google displayed a much higher median number of reviews than the NHS or practice websites, that is, more of a range of voices for patients to take note of. Most reviews and testimonials posted online are in a written format but market research indicates that video testimonials are now becoming increasingly impactful for patients; however, we found only 5.5% ($n = 22$) of websites utilised this video medium, with none of these patients being identified by their full first and last names.³⁷ Numerous drawbacks to the credibility of video testimonials

exist. There is a growing trend of 'treatment reveal' videos being posted across social media outlets to drive patient recruitment, usually towards cosmetic dentistry; however, these videos often carry a stiff, unnatural atmosphere and the same level of perfunctory gratitude expressed when a haircut hasn't gone quite to plan. There are also a number of companies on the internet who are willing to create fictitious testimonials, hence with no identifiable patients in their videos, there is nothing to stop practices from hiring actors or scripting video testimonials.¹⁶ Furthermore, some outlets advocate ethically and morally questionable tactics to gain quick, favourable reviews and boost your star rating, such as offering incentives, including free check-ups, discount vouchers, electric toothbrushes and only selecting patients who they know will leave a favourable review.^{38,39,40}

Misleading advertising practices on websites and social media endanger the delicate balance between consumerism and professionalism in UK dental practice due to the unregulated nature of reviews and testimonials.⁷ With evidence from across the world suggesting that individuals are just as likely to rely on a review or testimonial from a stranger online as they are from friends and family,^{17,37} as well as many consumers being unable to evaluate many aspects of health advertising,¹⁰ we need to ensure patients are able to express their autonomy based on accurate and truthful information.

Advertising guidance from the GDC will be a decade old in 2023, hence given the considerable change to the landscape of online media since its inauguration, the profession is lacking direction on these popular emerging fields. Updated advertising guidance, which includes advice on the use of reviews and testimonials, would create a level playing field for all professionals and one that can thus be regulated against, especially if the update/production of any future guidance includes consultation with the profession and the public. The very introduction of GDC advertising guidance may itself have played a key role in the reduction of the number of fitness to practise cases relating to advertising misconduct, which fell from 10.8% in 2010 (when no guidance was available) to 1.1% in 2016.⁴¹ The consumer impact of updated guidance, however, may be negligible, as recent research has shown that advertising guidance is almost universally breached and therefore most likely not sufficiently

enforced.⁷ Despite this, the authors contend that although updated guidance may not have considerable consumer impact, it would be the first logical step towards tackling current advertising issues – the profession cannot be regulated against something for which no guidance exists.

Although the NHS website already provides a verified review platform for practices providing NHS dental treatment, it was found to be the least utilised of the available methods in our study. Interestingly, the NHS website also displays reviews collected by 'Working Feedback' – a fully managed, impartial feedback service, who gather both patient feedback and Google reviews which dental practices can then imbed into their own website. This study found a superior number of Google reviews compared with any other platform, in addition to a very high rate of identifiability. Google will undoubtedly continue to exist long into the future, therefore the way in which its reviews are promoted by practices compounds the need for wider, updated advertising guidance.

In order to increase online credibility and thus develop trust in such a system, the power to cherry-pick reviews on practice websites needs to be removed. As such, it may be more prudent to look at this as a commercial issue that may be solved more effectively through consumer empowerment by a creation of a third-party, all-encompassing verified feedback platform for NHS, mixed and private practice. Practices can then provide links to said third-party website or place QR codes in the practice waiting room when asking for patient feedback. Patients, practices and regulators would then also have the ability to view an unbiased, unmanipulated view of patient feedback.

The GDC need to follow the lead taken by other regulators around the world in how they are adapting their regulations in line with developments in technology as and when they occur.¹⁶ Areas for future focus should also include:

- Removing incentives and kickbacks in exchange for writing reviews and testimonials
- Utilising 'trust economy' whereby patient anonymity (if desired) is combined with a robust verification process to ensure not only that dental practices get the most authentic and helpful feedback from real patients, but real patients are able to make choices based on authentic and trustworthy feedback from other patients
- Improving the credibility of reviews by advising patients to exercise caution with regards to peer recommendations for dental services
- Introducing a standardised 'cooling off' period before video testimonials can be recorded and promoted, whereby patients have sufficient time to reflect on their treatment outcome and remove the coercive pressure they may feel on the day
- Encouraging patients to investigate multiple sources rather than making a decision based on a single, possibly biased and non-factual source.

Strengths and limitations

The authors recognise the limitations of this research; with this being the first study of its kind within the UK to investigate dental practice and patient use of reviews and testimonials, the methods employed are novel. To this end, the methodology employed was conceptualised based on previous work in the field that was adapted and piloted. This research utilised data collected from Google searches alone, thus limiting the external validity to other search engines that patients might use. The data collection process had the potential to introduce selection and interpretation bias; however, inter-examiner agreement was calculated and found to have the level of substantial agreement. In addition, a strict protocol was followed by all members of the research team. This research highlights implications of how dental practices recruit and promote reviews and testimonials and has highlighted important areas for future study. This paper serves as a baseline going forward and the findings should be generalisable to the rest of the UK.

Conclusions

This study demonstrates that dental practice websites, the NHS website, Facebook and Google utilise testimonials and reviews in distinct and diverse ways. Unlike other jurisdictions around the world, the UK does not have guidance in this area, with the most recent advertising guidance from the GDC almost a decade old. Facebook and Google may be perceived to be more 'trustworthy' sources of information as they appear less curated and susceptible to manipulation than practice websites, which the public may feel gives greater credence to the information they provide. The creation of new guidance in this sphere would necessitate the regulator to

consult with the profession and thus ensure a fair and level playing field for all. It might be at that point that more regulation is deemed necessary; however, we feel that updated guidance from the regulator would be the most logical first step to ensure the highest standards of integrity and intellectual honesty.

Author contributions

Christopher C. Donnell contributed to study conception and design; data extraction and interpretation; creation of figures and tables; drafting; and development and critical revision of the manuscript. Lorenzo F. Iafrate contributed to data extraction and interpretation; drafting; and development and critical revision of the manuscript. Stuart W. Worthington contributed to study design; data extraction and interpretation; creation of figures and tables; drafting; and development and critical revision of the manuscript. All authors approved the final version of the manuscript.

Ethics declaration

The authors have no conflicts of interest to declare. Ethical approval for this study was not required as it involved collection of data that was freely available in the public domain.

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