

EDITORIAL

Additional Considerations When Evaluating Internet Marketing Accuracy



It was with great interest that we read “Online Information About the Effectiveness of Shoulder Surgery Is Not Based on the Best Available Evidence: A Content Analysis” by Andrew Robertson et al.¹ This author team has a long and distinguished record of advocating for evidence-based practice. Like others in previous studies,^{2–5} the authors evaluated the overall accuracy of internet websites against current available evidence. Their study summarized the proportion of consumer webpages (from an Australian-based search domain) on subacromial decompression and rotator cuff repair operations that make an accurate portrayal of the benefits and harms, alternatives to surgery, and additional recommendations.

This type of research is important because direct-to-consumer (DTC) advertising is often incomplete, inaccurate, or biased.⁶ Although traditionally associated with pharmaceutical industries,⁷ DTC advertising has markedly increased,⁸ especially among elective surgeons’ websites.⁹ DTC marketing is influential, especially to naive individuals who are more likely to judge a self-promoting orthopedic surgeon more favorably than non-self-promoting counterparts.¹⁰ As consumerism increases, patients will progressively seek information from a vast number of sources. Unfortunately, the most accurate sources are not necessarily the ones that are autopopulated during an internet search.¹¹ This further supports the necessity of accuracy of information on all sites, specifically those from surgeons who are considered to hold high knowledge of the procedures they perform and have authority over their domain of care. Surgeons that are rated as having the highest levels of trustworthiness are those who provide a more positive message regarding the treatment they provide and those who spend more time on social media.¹²

Robertson et al¹ identified a number of inaccuracies in website DTC advertising claims for the aforementioned shoulder operations. They¹ evaluated these claims using content analysis, which is a form of research methodology, in which the presence of words, themes, or concepts are quantified and analyzed for their meaningfulness and relationships.¹³ Concept analysis is an effective means of systematically describing and quantifying a particular phenomenon of interest.¹⁴ A prerequisite of this technique is the ability to reduce the phenomenon of interest to a specific concept (a conceptual system) that is measurable and meaningful.¹⁵ In their study,¹ those reduced concepts were associated with

accuracy of the website to 2 Cochrane reviews,^{16,17} which were extremely well defined in appendix 2 of their article.

A webpage made an “accurate portrayal” of the evidence if their information on these operations aligned with the evidence present in 2 recent Cochrane reviews.^{16,17} In other words, the webpage portrayal was considered accurate if it mentioned that subacromial decompression surgery was not superior to placebo or nonoperative management for subacromial pain syndrome or that rotator cuff repair surgery (with or without decompression) was not superior to nonoperative management for degenerative rotator cuff tears. They¹ also included secondary outcomes related to outcomes associated with pain, function, or quality of life vs other benefits or harms of surgery, outlined alternatives to surgery, and made a recommendation for surgery. To improve the openness of how they¹ evaluated the websites, the authors also provided direct quotes from each evaluated statement.

The authors¹ were deliberate, careful, and forthright in their study. Their definition of accuracy is evident, in-depth, and likely repeatable across examiners. The findings demonstrate a cause for concern among the selected websites they¹ evaluated. This begs the question, “why an invited commentary?” We feel there are 2 outstanding issues that are worth discussing for future evaluations of internet DTC marketing. The first involves a framework for future studies, and the second involves how we use evidence when evaluating internet-based statements.

Framework

There are a number of studies that have also evaluated the accuracy and content of online DTC marketing.^{2–5} Others have descriptively reported information but have not evaluated the accuracy of the information.^{3,11,18} As a whole, the most consistent component of each study is a *lack* of structure (ie, framework) in what information was gathered, why the information was gathered, and how the information was evaluated. Whereas Robertson et al¹ were forthright and comprehensive in building their concept map and outlining their areas of concerns (of which they evaluated), future researchers may be less clear, fair, or meaningful in their approach to evaluating the truth in DTC advertising. A structured framework that is anchored to a measurable purpose will allow transferability of findings and will also reduce the risk of biased reporting.

The good news is that frameworks already exist within the context of internet advertising laws of many countries. Most laws are designed to protect consumers within their own country and

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others,¹⁹ and are specific to the businesses that operate within that region. Most countries (all but the United States and New Zealand) ban any form of DTC advertising of prescription drugs. Other areas of advertising, such as the benefits of surgery or other orthopedic treatments, will fall within general guidelines for truth in advertising, which are generally consistent regardless if the platform is print, television, radio, or the internet.

Although the search domain originated in Australia, the study identified a number of websites that represented many different countries. Within Australia, the Australian Competition and Consumer Commission (ACCC)²⁰ is the regulatory body that oversees internet advertising. The ACCC is an independent Commonwealth statutory authority whose role is to enforce and promote fair competition and trading while regulating national infrastructure. With respect to truth in advertising, the ACCC²¹ assures compliance with the Australian Consumer Law, which is designed to protect consumers and ensure fair trading in Australia. To assure that businesses operate on a level playing field when selling goods and services to consumers, the ACCC outlines a framework of 5 specific areas: (1) misleading or deceptive conduct; (2) false or misleading claims; (3) consumer guarantees; (4) unfair contract terms; and (5) unsolicited consumer agreements. Of these 5 specific areas, Robertson et al¹ focus on 2: misleading or deceptive conduct and false or misleading claims (items 1 and 2). One could argue that items 4 and 5 are not appropriate for their research purpose, but item 3 would have been an interesting area to query.

We recommend that future studies follow a framework that is reflective of the country's consumer laws regarding truth in advertising. Using an anchored framework will improve the comprehensiveness of the evaluated content and should improve transferability across studies that evaluate the advertising within that country. Lastly, we feel that using a framework will reduce dubious evaluations and lessen the likelihood of profession-driven motives.

Evidence

Systematic reviews involve a detailed and comprehensive plan and search strategy derived prior to study initiation, with a goal of identifying, appraising, and synthesizing all relevant studies on a particular topic.²² Systematic reviews and meta-analyses have been used to shape public policy for several decades.²³ In many countries, systematic reviews have informed policy for public and population health by examining the effectiveness of selected interventions and changes within health systems.²³

Robertson et al¹ based their accuracy criteria on 2 Cochrane systematic reviews.^{16,17} Cochrane has long been recognized to advocate robust and accurate systematic reviews of the literature. Both systematic reviews^{16,17} included somewhat heterogeneous randomized controlled trials of varying levels of risk of bias. The reviews^{16,17} were performed well and were authored by experienced researchers. The rotator cuff surgery review indicated uncertainty on whether rotator cuff repair provides clinically meaningful benefits. The subacromial decompression review was particularly condemning of surgery's benefits, indicating that high-quality evidence suggests that surgery is no better than placebo for improvements in pain or function.

We appreciate the emphases on accuracy of current evidence but have some concerns about the application of the findings on

the original randomized controlled trials to the individual consumer who visits a website. Indeed, randomized controlled trials, which were the included design of choice in both Cochrane reviews,^{16,17} are useful in testing the efficacy and effectiveness of interventions between groups in an unbiased manner.²⁴ Randomized controlled trials indicate if there is a superior measureable effect in one intervention vs another specific comparative control. However, a randomized controlled trial does not indicate if a particular intervention in the allocated group with better outcomes works for *all* individuals in that group, for *future* groups, or for selected *individuals*.²⁵ Randomized controlled trials do not determine *who* benefits from an intervention nor do they indicate *why* individuals benefit.^{26,27} This is a critical distinction that is frequently overlooked or discarded. As the included studies in the systematic review demonstrated, a majority of individuals in *both* groups improved, whereas some individuals in both groups did not; randomized trials do not distinguish these individuals.

We feel that the limitations of extrapolating findings from randomized controlled trials are an important distinction when considering future website claims. In our opinion, it influences the interpretation of the evidence and the alignment of statements to the evidence that it is anchored to. Our understanding the design limitations would have influenced how we would have evaluated the accuracy of the findings. For example, in our opinion, a website claim quoted in the Robertson et al study¹ such as, "The surgical solution for this problem is an operation called an acromioplasty or subacromial decompression" is difficult to justify as aligning with evidence and is inaccurate. In contrast, a statement indicating the *possibility* of delayed surgery as an option, "Surgery is rarely needed but could be recommended if your condition doesn't improve" would not be considered inaccurate.

The majority of studies included in the Cochrane reviews included shorter-term results. Increasing evidence has suggested that rotator cuff tears treated conservatively are at risk for anatomic and functional deterioration, potentially effecting long-term outcomes of the recipients.^{28,29} One of the articles³⁰ included in the Cochrane review reported 10-year outcomes and was published after the Cochrane publication¹⁷ was completed. The authors found a continued progression in significant differences over time including 14 patients (27%) in the conservative group who crossed over to surgical treatment. This is not a criticism to the Cochrane review¹⁷ or Robertson et al¹ because the articles was published after Cochrane's search (which was completed on January 8, 2019), but it is an important message to consumers that evidence is fluid and can change with the inclusion of additional information. This is likely why other systematic reviews^{31,32} as well as the included Cochrane review¹⁷ that analyzed rotator cuff surgery vs conservative care have indicated that longer-term follow-up are needed to evaluate whether surgical and conservative treatment provide comparable long-term results.

Lastly, Robertson¹ only looked at DTC for shoulder surgery, likely because it is a more costly approach with the potential of harms. A more comprehensive look at this question should include the accuracy of DTC statements for less invasive treatment options, such as physical therapy or physical medicine and rehabilitation injections. We argue that they too will likely overstate the current evidence, suggesting this is not a singular issue with surgeons but a broader issue that involves the filtering of evidence base information through a marketing lens.

Conclusions

We appreciate the work of Robertson¹ and the opportunity to provide our thoughts regarding DTC advertising. Truth in DTC advertising is

List of abbreviations:

ACCC Australian Competition and Consumer Commission
DTC direct-to-consumer

governed by the same laws as any marketing platform. Statements (or absence of statements) involving the benefit or risks of surgical and any other interventions should be carefully evaluated. Using a standard framework that is anchored to marketing laws will increase transferability of findings and improve meaningfulness of results. An understanding of limitations of how selected study designs inform researchers is imperative, especially when using the information to compare accuracy results.

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