How to dissect surgical journals: II – The publishing enterprise*

Thank you for sending me your manuscript. I will lose no time in reading it.

Sir Benjamin Disraeli (1804–1881)

Every type of endeavour has its own culture. Publishing used to be seen as a Dickensonian venture where pedantic gnome-like editors scribbled away surrounded by piles of books. Some publishers still push this type of image. My copy of Chambers ‘Dictionary of Quotations’ has a dust jacket showing an inquisitive ‘bookworm’ balanced precariously on top of a library ladder. But the world of e-journalism with the push towards open access is changing the face of surgical journals.

Peer review

The editorial process includes the peer review of manuscripts submitted for publication. Editors have the power to make discretionary judgments about the extent that they seek advice from reviewers. Some articles will be fast-tracked, others will be immediately rejected because of poor scholarship or failure to comply with the journal’s guidelines. Table 1 outlines the main reasons why manuscripts fail to get accepted for publication. No journal has an obligation to waste time on shoddy manuscripts. Editors and reviewers are usually busy surgeons who provide their services pro bono. They are a valuable resource that journals manage with care.

Editors allocate manuscripts to reviewers. Reviewers are responsible for maintaining the confidentiality of the authors’ work and must disclose any relationships that could be viewed as presenting a potential conflict of interest. Conflicts of interest arise because of financial dealings, personal relationships, academic competition, and intellectual passion.

The editor stands between the reviewers and the aspiring contributors. It is the editor’s role to filter out the biased reviews, the minor quibbles from nitpickers, and the slapdash reviews. Some editors act in a judicial manner – they just weigh up the reviewers’ comments – others are interventionists who inject their own opinions into the process.

Quality is not the sole determinant of publishability. Other factors, such as the topicality of the content and the track record of the authors, influence editors’ decisions. There is also a bias towards the acceptance of manuscripts that come to positive results – the ‘positive publication bias’. The burden of proof is lower for good news that mirrors the wisdom of the crowd. This can be advantageous. In the early days of renal transplantation there was a general impression that cyclosporin was a useful agent; but at that time it was too difficult to perform a clinical trial. The problem was solved when a highly respected surgeon reported a series of 34 patients undergoing renal and liver transplantation in the Lancet and commented that ‘Cyclosporin A is effective on its own and is a very potent immunosuppressive drug’.1

Any belief that peer review is a fair and consistent process is utopian. Smith et al.2 sent 221 reviewers for the British Medical Journal a paper that contained eight serious flaws. The median number of flaws identified by reviewers was two – none spotted more than five. Jefferson et al.3 performed a systematic review and failed to identify convincing evidence that peer review improved the quality of manuscripts markedly, either in content or readability. Nevertheless, the peer review process does tend to select the better articles for publication; and, flawed as it is, there is no better alternative.

Sooner or later authors are subjected to ignorant or prejudiced reviewers’ comments. The effect is magnified by the frustration that authors feel about a perceived waste of time, lack of acceptance of their studies into the best journals, or delays that may influence the funding of their research. As Lamont4 has commented about academic endeavours in general: ‘Criteria for assessing quality or excellence can be differentially weighted and are the objects of intense conflicts’. Sometimes, to the amusement of many, these conflicts spill over into the letters section.

Uniform requirements

There used to be a lack of uniformity in the way that articles were formatted in medical journals. This started to change in 1978 with a meeting of editors in Vancouver; and, over time, the ‘Vancouver Recommendations’ grew in stature and evolved into the ‘Uniform Requirements for Manuscripts Submitted to Biomedical Journals’, which is available at the International Committee of Medical Journal Editors’ website (www.ICMJE.org). Besides the expected comments about reference styles and formats, it addresses a wide range of publishing and editorial issues. It is a key reference for serious readers of surgical journals.

Identifiers

An identifier is a reference tag. Identifiers should be unique, permanent, and lead to useful information. A well known identifier is the International Standard Book Number (ISBN) method of identifying books (www.isbn-international.org). Another familiar identifier is the ISSN (International Standard Serial Number), which is used to identify journals. Both the ISBN and ISSN tags can be incorporated into bar-codes that contain basic information (title, author, publisher, dates, price, location) as well as programmable content.

In his intriguing book about the recent history of publishing, Strighas5 describes how ‘ISBNs, bar codes, and related back end
Citation indices

It all began in 1955 when Eugene Garfield published ‘Citation Indexes for Science: A New Dimension in Documentation through Association of Ideas.’ He envisioned information tools that would allow investigators to evaluate the impact of their work, spot scientific trends, and document progress. Three years later, he borrowed $500 from Household Finance and laid the foundations for establishing the ISI (Institute for Scientific Information). It was, and still is, a commercial activity with the results only being available to subscribers. It now monitors more than 5,600 journals spread over more than 150 scientific disciplines.

Citation curves are derived from the number of citations that an article, or a collection of articles, receive over a period of time (a citation occurs whenever an article is referred to in another article). The shape of citation curves depend upon the nature of the article and the discipline (Figure 1). The ISI calculates a number citation indices, the most popular is the ‘impact factor’. Publishers link impact factors to the cost of advertisements, librarians use them to decide which journals to subscribe to, and academics use them to impress grants and promotions committees.

A number of citation indices can be derived from citation curves to reflect aspects of knowledge creation and dissemination. They are of great interest to editors and publishers who eagerly await the release of new figures each year. However, numerous concerns have been raised about the limitations of the impact factor: self-citations can account for up to a third of all citations, articles about methods are cited for reasons other than quality, review articles are cited more often than other types of original articles, ‘best practice’ papers are well read but are not cited very often, and authors often cite from the abstract without reading the article. 6,7

The impact factors favours highly specialised publications. Especially if their format consists of a small number of original research articles, frequent editorials and reviews, and an extensive letters section. Hence, it is best to compare discipline-specific journals with one another.

In 1982, the Journal of the American Medical Association (JAMA) sought to identify the best 50 articles from their first 100 years as ‘landmark articles’. A Delphi process – a consensus reached

Table 1 Reasons for rejection of manuscripts

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<th>Reason for rejection</th>
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<td>Failure to comply with the ‘Instructions to Authors’</td>
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<td>Trivial topic</td>
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<tr>
<td>Poorly written</td>
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<tr>
<td>Too long</td>
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<tr>
<td>Anecdotal content</td>
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<tr>
<td>Deficiencies in design and execution</td>
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<tr>
<td>Sample size too small</td>
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<td>Unjustified conclusions</td>
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<tr>
<td>Poor literature review</td>
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<tr>
<td>Lack of a useful message</td>
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Fig. 1. Citation curves: Topical articles and scientific papers (curve A) tend to be assimilated into the literature faster than clinical articles (curve B).
by comparing the anonymous views of experts – was used to select the best articles. Only 13 of the 50 landmark articles were included in the top 100 JAMA articles based on their citations – missing were the articles by Salk and Sabin about oral vaccination against polio/myelitis. Such subjective analyses always attract interest and conjecture – it’s like selecting the best sporting team from the past.

Citation Classics are papers that have been cited 100 times or more. Paladugu et al. reviewed the 100 most frequently cited articles about general surgery that were published between 1945 and 1995. They found 1,500 citation classics and selected the top 100 articles for analysis. The articles were classified as clinical (n = 80), basic science (n = 14), and reviews (n = 6). Eighteen articles reported a new surgical technique. They comment that an article is ‘more likely to resonate loudly if it originates from a North American or British “ivory tower”’. Also, Fenton et al. used citation classics to gain an insight into advances in otolaryngology. Their review of citations between 1900 and 1999 found that 11 articles were cited on more than 200 occasions. Four authors were each associated with three classic citations. They concluded that ‘analysing citation classics reveals a partial insight into advances and historical developments in the specialty during the last century’.

Ethics

A ‘publish or perish’ mentality is unavoidable in systems that use publication records to evaluate requests for promotion and research grants. The resulting types of misconduct include:

- Duplicate publication of the same material in two journals (redundant publication).
- Dividing a study as thinly as possible into ‘minimal publishable units’ without referencing the other publications (‘salami-slicing’).
- Cutting and pasting whole sections from one manuscript to another (plagiarism).
- Listing authors who have not made a substantial contribution (gratuitous publications).

Large publishers provide ethical guidelines with flow-charts indicating appropriate actions for each type of suspected misdemeanour. These may be accessible via either the home page of the journal or the home page of the publisher. Just type ‘ethics’ and the publishers name into a search engine.

Richard Smith, editor of the British Medical Journal between 1991 and 2004, has given a lucid account of the ethical problems encountered when publishing medical research. He commented that ‘it would be misconduct on our part to turn a blind eye to misconduct in authors’. Smith refers to research misconduct as ‘the poisoning of the well’ and makes it clear that research misconduct does not include honest mistakes or differences of opinion.

Judson has detailed the history of fraud in science. Some famous names may have taken shortcuts – Gregor Mendel’s data are too perfect, Charles Darwin modified photographs when illustrating the expression of emotions, there are discrepancies in Louis Pasteur’s notebooks, and Sigmund Freud reported bogus cases. It seems that many eminent scientists have made departures from our conventional view of the scientific process to press their claims. Surgeons have not escaped Judson’s attention. When discussing the unraveling of some dubious transplant experiments in 1974 he quotes a review committee who found that a senior laboratory assistant ‘noted that the appearance of the supposed black grafts on two white mice were unusual. On applying alcohol, he discovered black material that could be washed away’.

Plagiarism is using another person’s ideas, work or words without giving appropriate credit. It has become easier to detect with the advent of software scanning programs (www.plagiarism.org). Unfortunately, it has been very common and often goes unreported. Several high profile cases of research misconduct in the U.K. led to the formation of the Committee on Publication Ethics (COPE). It provides anonymous advice to editors and these issues are outlined in their annual reports; which are available, along with their guidelines for good practice, on the COPE website (www.publicationethics.org.uk). The commonest problems are falsification, plagiarism, redundancy, inappropriate authorship, and lack of consent from institutional ethics committees.

The cases of research misconduct that see the light of day are just the tip of the iceberg. The forces against disclosure are personal timidity, the adverse effects of being a ‘whistle-blower’, editors who bury their head in the sands, publishers who are fearful of litigation, and institutions that wish to protect their image. Readers who have concerns about the integrity of a publication should notify the editor; and, if there is no action, the head of the institution where the work was performed.

Commercial influences

Pharmaceutical companies act in their own interest. Lexchin & Light discussed the consequences of publishing articles that are critical of drug companies. The Annals of Internal Medicine did so in 1992 and the estimated lost income from advertisements was more than a million dollars. It is an unfortunate reality that commerce has persistently sought to influence the content of journals. I was offered a considerable sum by a company to use their device in a clinical trial, that had already been publicly funded, providing they controlled the data analysis and had the right to veto any publication.

Journals can generate income by publishing supplements. Sometimes, these supplements are just marketing exercises e.g., they may contain articles about a single drug based on papers presented at a symposium. I attended a symposium about a new antimicrobial agent where the first speaker, who was under contract to the pharmaceutical company, read his talk at a ridiculously fast pace so that the content could be included in a mass mail-out of the symposium proceedings. It was an overtly cynical exercise and, at the end of the session, one of the audience asked whether this symposium was part of the official congress or an advertising session. On a more general level, Cho & Bero found that the quality of drug studies published in symposium proceedings were inferior to original articles published in peer reviewed journals.

Pharmaceutical research in the USA is shifting towards the private medical sector. Fisher notes that: ‘Before 1990, over 80 percent of all pharmaceutical research was conducted in academic medical centres. By 2005, only about 25 percent was conducted in these settings.’ This is part of the trend towards the rapid and cheap
development of drugs. Patent protection, and hence the zone of profitability, applies from the start at clinical research (not from the time of release into the market). The pharmaceutical industry has enhanced profitability through contract research where physicians in private practices that contain ‘ready-to-recruit’ patients enact predefined protocols and play no role in data analysis. Some physicians have converted their private practices into ‘contract research organizations’. Involvement in such research is attractive for non-insured patients because of free consultations, diagnostic tests, and medications.

This trend should raise concerns. Clinical trials sponsored by the pharmaceutical industry consistently favour new therapies. A systematic review found a strong association between commercial funding and positive results – the odds ratio when compared with not-for-profit funding was 5.3 (95% confidence interval 2.0 to 14.4). There is also evidence of biased evaluations of surgical items. Momeni et al. evaluated the relationship between sponsorship and outcome in clinical trials about plastic surgery. They found that industry-funded trials were more likely to be positive, and that the conclusions of the studies were positively associated with sponsorship. Other general concerns are that manufacturers promote the use of biased study designs, interfere in the conduct of studies, and suppress negative results. It is therefore important that authors declare commercial funding. Okike et al. investigated disclosures made by authors of articles about total hip and knee prostheses. They found that the rate of non-disclosure was 21% for directly related payments and 50% for indirectly related payments.

eJournalism

In Norman Jewison’s futuristic film Rollerball (MGM Home Entertainment Inc.), the library has no books, only a computer. The elderly librarian loses everything from the thirteenth century and notes with a shrug that it wasn’t much of a century anyway, ‘just Dante and a few corrupt popes’. Whilst it is premature to forecast the end of paper journals, the tide is turning.

Universities and libraries now purchase banks of electronic journals from publishers. The days of paying high subscription rates for individual paper journals has almost gone – the survivors are the high-end weeklies that are still retained because of their ‘browsing value’. Costs are not the only issue. The rise of digital media has de-cluttered and de-populated libraries. The library has no books, only a computer. The library has no books, only a computer. The library has no books, only a computer.

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Key Points

- Manuscripts are subjected to peer review.
- Any belief that peer review is a fair and consistent process is utopian.
- There is uniformity in the way that articles are formatted in medical journals.
- Identifiers are used to tag books (ISBN), journals (ISSN), and digital content (DOI).
- Citation indices are used to assess the characteristics and quality of publications.
- Unethical conduct is commoner that most readers suspect and includes duplicate publication, ‘salami-slicing’, plagiarism, gratuitous publication, and fraud.
- Commercial influences have a tendency to ‘pollute the well’.
- eJournalism is changing the face of medical journals.
- The Boston Declaration contains basic principles that apply to both traditional and open-access publications.

References