



Publishing Ethics and Predatory Practices: A Dilemma for All Stakeholders of Science Communication

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Publishing scholarly articles in traditional and newly-launched journals is a responsible task, requiring diligence from authors, reviewers, editors, and publishers. The current generation of scientific authors has ample opportunities for publicizing their research. However, they have to selectively target journals and publish in compliance with the established norms of publishing ethics. Over the past few years, numerous illegitimate or predatory journals have emerged in most fields of science. By exploiting gold Open Access publishing, these journals paved the way for low-quality articles that threatened to change the landscape of evidence-based science. Authors, reviewers, editors, established publishers, and learned associations should be informed about predatory publishing practices and contribute to the trustworthiness of scholarly publications. In line with this, there have been several attempts to distinguish legitimate and illegitimate journals by blacklisting unethical journals (the Jeffrey Beall's list), issuing a statement on transparency and best publishing practices (the Open Access Scholarly Publishers Association's and other global organizations' draft document), and tightening the indexing criteria by the Directory of Open Access Journals. None of these measures alone turned to be sufficient. All stakeholders of science communication should be aware of multiple facets of unethical practices and publish well-checked and evidence-based articles.

Keywords: Publishing Ethics; Science Communication; Quality Control; Periodicals as Topic; Research Management

INTRODUCTION

Adhering to ethical standards of publishing is critically important if science editors and publishers are to reach out to the global scientific community. Since its start in 2002, the open-access movement has provided ample opportunities for publicizing innovative research, distributing its results globally, and changing the whole paradigm of scholarly publishing (1, 2). Reputed publishers have chosen open access as a promising business model for traditional and newly-launched journals and offered easily-accessible, well-edited, and evidence-based information to the current generation of readers.

Bibliographic and archiving services upgraded their scientific and technical indexing criteria to selectively list best target journals (3). However, despite all good motives behind the open access movement and the complexities of indexing, a growing number of low-quality journals anchored their presence on the Internet and prestigious databases, 'polluting' scholarly information (4, 5).

The global scientific community was shocked, when several fast-expanding and indexed open-access journals, such as the *Life Science Journal* (Marsland Press/Zhengzhou University, China) and a number of the IDOSI (International Digital Organization for Scientific Information, Dubai, UAE) journals with certain impact indicators, were delisted from Scopus and lost their impact factors issued by Thomson Reuters (6, 7). Concrete reasons for such an unexpected turn in the indexing status remained unclear for most authors and readers since no related information was posted on the publishers' and the indexing services' websites. Suspicions were raised that these journals had exploited the gold open access and expanded their publishing capacities without proper peer review and quality checks. Hundreds of nonnative English-speaking authors, who published in these journals, and primarily those from Central Asia and Russia (main targets of these journals), were devastated as the punitive actions against these journals also affected their own reputation. And it became evident that similar incidents with damaging authors' reputation took place with non-Anglophone authors else-

where in the world (8).

The Directory of Open Access Journals (DOAJ), the main platform for open-access journals, tightened its indexing criteria after ten years of operating (9), and initiated a reapplication process in 2013, which left out some of the previously covered journals because of their failure to meet the new criteria. The ambitious goal of the DOAJ new initiative was to create the largest ‘whitelist’ of legitimate open-access publications, helping grant funders, librarians, and researchers choose better scholarly targets (10). The situation was reminiscent of the ‘self-cleaning’ of scholarly journals with the retraction of grossly incorrect, fraudulent, plagiarized, or otherwise unethical articles (11). Self-cleaning of journals is relatively new to scholarly publishing; it gained its momentum in the era of open access. Delisting journals is a serious correction measure, which is aimed at eradicating illegitimate publishing practices.

Jeffrey Beall, a librarian of the University of Colorado, first coined illegitimate publishers and journals as ‘predatory’ and blacklisted them on his notorious blog called Scholarly Open Access (12). Since his publication on “predatory publishers corrupting open access” in *Nature* in 2012, the number of related items on PubMed, the largest and well-organized platform for biomedical and allied literature, has increased to 26 (as of March 2, 2015).

The actual volume of sources on ‘predatory or illegitimate publishing’ or ‘vanity press’ can be much larger and be scattered across mushrooming articles on “publishing ethics”. In fact, a PubMed search using the term “Publishing/Ethics [MeSH]” allows retrieval of 1,334 items, most of which are published after 2002, the year of the launch of the open access movement (Fig. 1).

The number of ‘predatory open-access publishers’ on the Beall’s blog increased from 18 in 2011 to 693 in 2015, while the list of ‘predatory journals’ grew from 126 to 507 in 2013-2015

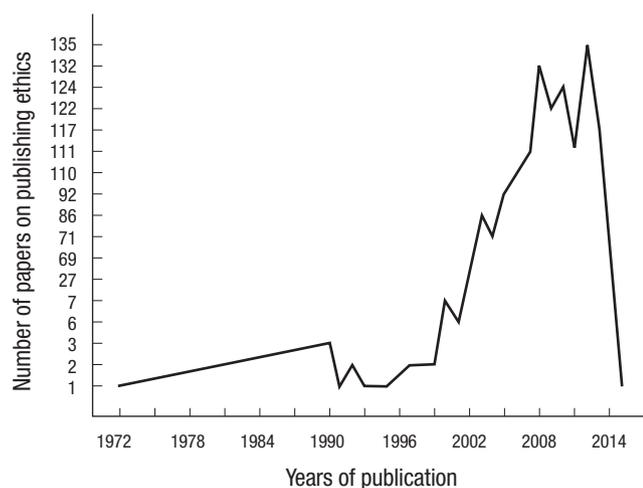


Fig. 1. The number of items on publishing ethics in PubMed (1,334 as of March 2, 2015).

(13). Beall presented a set of criteria for determining predatory publishing practices, with the latest, third revision published in January 2015 (14).

Opponents view the Beall’s list as reactionary, lacking evidence-base (15), and targeting almost exclusively start-up publishers from developing countries (16). Indeed, the list is far from being comprehensive and accurate. For example, there may be numerous predatory non-English open-access periodicals, which are not covered by the list. Not clear how predatory journals and publishers can be delisted if they become more transparent and improve publishing quality and ethics. The Beall’s list merely draws attention of all stakeholders of science communication to the instances of corruption in open-access publishing and teaches a lesson to those, who plan to launch new journals and publishing houses. Beall cannot and should not police publishers. Indexers may consult his criteria, analyze suspected unethical journals, and initiate cleaning of their databases by discontinuing indexing of the journals that repetitively breach publishing ethics.

Some editors and publishers recommended to expand the criteria of predatory publishing and to implement ‘punishments’ when a combination of ethical rules is ignored (17, 18). Sadly, predatory publishers victimize naïve authors and damage reputation of their institutions, primarily in the nonmainstream science countries, where standards of science communication are not established and researchers are not trained to distinguish reputable and “pseudoscientific” journals (19).

The aim of the current article is to present issues of illegitimate publishing that concern all stakeholders of scholarly publishing.

AUTHORS’ PERSPECTIVE

Authors, who publish their papers in widely visible journals, display their email addresses, which are aggregated on search platforms and used by editors and publishers for official invitations to review journal manuscripts and submit solicited articles. Editors of reputable journals carefully search for relevant and active reviewers, judging their recent publications on prestigious indexing services, such as MEDLINE, Scopus, Web of Science, and matching keywords of their published articles with those undergoing evaluation. Corresponding authors are primarily picked and invited to contribute because their emails are the main contacts for the post-publication communication. Most authors are honored to receive relevant invitations from high-impact journals in their subject category and try their best to donate their time for reviewing and writing assignments. Established publishers also consider inviting their best reviewers and influential authors, and particularly those who contribute to the growth of their journals, to join their editorial boards and take on responsible posts. While there is nothing unusual in such

honorable invitations, authors should be aware of a trend in email communications by unethical publishers, whose sole aim is to redirect flows of papers to their substandard journals. Annoying email invitations may promise fast peer review, publishing in journals with “impact factors”, and small processing fees, which are particularly attractive for early career researchers, PhD candidates, and academics from low-resource countries.

Early career researchers, representatives of rapidly-developing disciplines, and those from nonmainstream science countries are primarily targeted by ‘fishing’ emails from unethical publishers (20, 21). Not surprisingly, the same authors often publish in predatory journals (22).

To avoid confusion after publication, authors should be advised to comprehensively evaluate the target journal’s overall quality, indexing status, open access and archiving options, reputation of the publisher, and supporting professional societies and academic institutions. New journals with a broad scope of interests, design and format copied from established publishers, too ambitious and misleading titles, mimicking those of the top-ranked journals, such as *Science* and *Cell*, containing research and geographic terms such as “Advanced”, “Innovative”, “World”, “International”, “Global”, “American”, “European”, “Euro-Asian”, “British, and “Canadian” should be processed with a caution. Some of these ‘Western’ journals are actually published from India, Pakistan, Nigeria, and other low-resource countries.

Authors, who want to publish in influential journals, may choose their targets from Thomson Reuters’ Journal Citation Reports® and publish in legitimate and globally recognized journals with expanded scope and realistic titles, including those published from India, Pakistan, and other emerging scientific powers.

A set of criteria was recently proposed to help authors choose the best target journals (23). Also, JournalGuide, a free electronic tool, which was developed by US journal editors, researchers, and experts of Rubriq®, introduced an algorithm for matching manuscripts’ keywords and abstracts with appropriate target journals (24). The JournalGuide aggregates information about publishers, their open-access policies, journal metrics, and speed of publication to help the authors distinguish legitimate journals.

REVIEWERS’ PERSPECTIVE

The traditional peer review system is often criticized for its multiple drawbacks, but it still remains the pillar of science communication worldwide (25). Qualified reviewers face the challenge of evaluating an increasing number of journal submissions and selecting innovative and influential items. A recent analysis of 1,008 submissions to the *Annals of Internal Medicine*, *British Medical Journal (BMJ)*, and *The Lancet*, the leading biomedical journals, indicates that peer review generally main-

tains its gatekeeping role and adds value by selecting potentially citable items (26). The study, however, points to the rare mistakes in the leading journals that lead to the rejection of truly innovative and popular papers (2%), which eventually find their home elsewhere and attract many citations.

Increasingly interdisciplinary and multicenter research puts additional pressure on the filtering system and reveals gaps in the qualifications of referees, who tend to analyze some, but not all parts of the submissions (27). The leading journals attempt to overcome the problem by increasing the number of referees, who are invited to assess different aspects of research and statistical analyses (28-30). But even such ultimate measures are insufficient for securing the integrity and scientific merit of the peer review. Alas, a serious threat surfaced, when a hoax paper on a fictitious innovative drug therapy, submitted to 304 periodicals, including 121 open-access journals from the Beall’s list, was accepted by more than half of the journals, discrediting peer review and gold open-access publishing (31). The reviewers’ irresponsible behavior gave a ‘green card’ to a fictitious author and, once again, pointed to the threat of unethical publishing for the integrity of science and its evidence-base (32, 33).

The incidence with the hoax paper also reflects poor training of reviewers and editors on issues related to peer review and journalology (34, 35). Reviewer comments are essential for increasing the quality and readability of publications. Peers should be able to objectively evaluate submissions and point to the errors and limitations.

While ethical standards of peer review are widely accepted in developed countries, most nonmainstream science countries suffer from the lack of appreciation of the reviewer contributions that creates a fertile ground for breaches of publishing ethics (36). Providing fake reviews is one of the many examples of unethical review, with rampant cases being documented for open-access predatory journals (37). In nonmainstream science journals with poor (peer) review standards, authors may even be asked to submit their manuscripts along with the reviewer comments to ‘speed up the publishing process.’

EDITORS’ PERSPECTIVE

The editor-in-chief and responsible editors are the main guarantors of the integrity of the manuscript evaluation and processing in most traditional journals. The editors are authorized to select expert reviewers, critically analyze their reviews, and take decisions, balancing the needs of their authors and readers (38). They should possess skills in relevant fields of science, have records of previous and current research activities, reviewer and editorial accomplishments, and membership in editorial associations (39, 40).

While there are no globally accepted training courses for science editors, membership in the local and/or global editorial

associations can help them acquire credentials in research reporting, ethical conduct, and publishing quality journals. Importantly, responsible editors of most reputable publishers are members of and declare the adherence to the guidance of the Committee on Publication Ethics (COPE), the largest association with more than 9,000 editors from all over the world, mostly representing biomedical journals and having links to other editorial associations (41, 42).

The illegitimate publishers often ignore the importance of inviting experienced editors and educating them by maintaining ties with editorial associations. Their decision-makers do not possess professional and editorial skills to run the journals, which is often evident from poorly written or copied from elsewhere instructions for authors. The instructions may include formal links to editorial associations, but without specific references to and interpretation of the contents of ethical codes. The illegitimate publishers may install the same editorial boards for several journals, representing entirely different subject categories. They may also list eminent scientists as their editorial board members without their approval and any editorial or reviewer input.

Disturbingly, some highly profitable legitimate publishers, such as Hindawi Publishing Corporation, abolished the post of editor-in-chief and transferred the power of making decisions to the technical staff, relying on the reviewer comments and recommendations (43). Such a move transforms journals into repositories or mega-archives, where anything can pass through soft quality checks, be formatted, and displayed on the Internet for a fee.

PUBLISHERS' PERSPECTIVE

Publishers of gold open-access journals have strong financial interest in the quantity of published articles. Such interest is beset by a large number of submissions and rigorous peer review at journals of reputable open-access publishers (e.g., the Public Library of Science [PLOS], BioMed Central). Newly-launched journals exploiting gold open access have much stronger interest in accepting all submissions within a short term through soft or no peer review (44).

Publishers, who ignore the importance of quality checks, take the risk of accepting plagiarized papers and infringing the exclusive publishing rights (45). The lack of reliable editorial policies and tools to tackle plagiarism exposes the journals to serial breaches of publishing ethics (46). All publishers face plagiarism and other forms of misconduct, but, in contrast to illegitimate publishers, their legitimate counterparts properly define all such forms in their instructions for authors and follow regulations of the global associations such as the COPE. The adherence to ethical norms set by these associations allows the legitimate publishers to correct the literature and transparently

report reasons of mistakes and retractions (11).

SCHOLARLY ASSOCIATIONS AGAINST BREACHES OF PUBLISHING ETHICS

A good example of a campaign against illegitimate journals and downgraded values of science editing was set by the International Academy of Nursing Editors (INANE) in 2014. The INANE familiarized its members with the "red flags" of illegitimate publishing and suggested nurse authors to consult a whitelist of journals at the Directory of Nursing Journals (47). The Directory lists relevant and ethically sound journals that might be good homes for nursing papers (40).

Given the growing concerns over the illegitimate practices that threaten the viability of gold open access, BioMed Central founded the Open Access Scholarly Publishers Association (OASPA) in 2008 and expanded its activities to promote best practices. Many independent, society- and university-based publishers, information and copyright licensing services are now members of the OASPA. With joint efforts of OASPA, COPE, DOAJ, and the World Association of Medical Editors (WAME), it became possible to draft the main principles of transparency and best publishing practice. Sixteen points of the document highlighted acceptable standards of peer review, disclosure of conflicts of interests, copyright preservation, prevention of research misconduct, funding, advertising, and archiving (48). The draft, posted on the OASPA website and elsewhere in December 2013, is still open for public discussion and additions that may draw a hard line between legitimate and illegitimate open-access publishing.

Perhaps one of the key additions to the sixteen principles would be a missing point on the clarity and accuracy of reporting journal impact metrics, which are now calculated by different organizations. A recent global report on the role of journal impact indicators highlights the reliance of the global scientific community on trustworthy citation-based metrics, and particularly those issued by Thomson Reuters' Journal Citations Report (49). At the same time, inaccuracies of Google Scholar indicators that stem from the lack of quality control, inclusion of non-peer-reviewed sources and duplicate citations, diminish their use for bibliometric analyses (50, 51).

Remarkably, predatory journals often display deceptive journal metrics from bogus ('international', 'universal', 'global') agencies that often ignore citations as the key factor of the journal impact (52). Some of the bogus impact metrics are posted on the journal websites in a way to make naïve readers and authors believe that these are legitimate and citation-based indicators from Thomson Reuters. At times, values of the spurious impact metrics for illegitimate journals are even greater than those for their legitimate old counterparts (53).

EMERGING CHALLENGES AND A CALL FOR CONCERTED ACTION TO TACKLE UNETHICAL PUBLISHING PRACTICES

The ease of launching online journals in the Internet age creates short-cuts for illegitimate publishers and standalone journals, pursuing financial gain at the expense of the quality and validity of the publications. Papers in such journals may suffer from plagiarism and other forms of research misconduct that pass unnoticed due to the editorial negligence and lack of readers' attention. Readers tend to retrieve materials from prestigious and indexed media. And they process academic writings with an understanding that the textual and graphical materials, ideas, and facts are original and/or referring to validated primary sources (46).

Chances of indexing substandard journals are currently low, though the mounting pressure on prestigious databases to process the ever-increasing applications may pave a way to the desired databases, digital repositories, and search platforms for some illegitimate journals. The indexing status creates a window of opportunity for attracting more authors, increasing processing and publication charges, and posting unchecked and unedited articles on poorly designed websites of the illegitimate journals. Inexperienced authors, who naïvely respond to aggressive soliciting invitations of these journals, publish their potentially innovative, but unedited papers, and damage their academic reputation. Nonnative English-speaking authors from nonmainstream science countries are primarily targeted by predatory publishers, who dash prospects of science growth in these countries. At the other extreme, plagiarists and those who want to boost their profiles by publishing anything and anywhere 'pollute' the online media further.

New players in the market of predatory practices are unethical editing agencies that, again, operate from low-resource countries, target inexperienced authors from nonmainstream science countries, and promise quality reviewing and editing services by their paid agents from developed countries. Disturbingly, such editing agencies play a mediatory role, take part in the peer review of the target journals, and promise their clients publications in indexed journals. As a rule, their clients are not allowed to disclose to the third parties the agencies' and/or their agents' writing, reviewing, and editing contributions, violating the established authorship and contributorship norms. A recent series of retractions of 43 papers by BioMed Central because of fake reviewer comments, which were mostly fabricated by third-party editing agencies (54), point to the real threat of the involvement of unethical agencies in the editing and publishing processes.

Dodgy editing agencies often promise their clients publications in journals indexed by Scopus, Web of Science, or listed by their national agencies of excellence in science (e.g., Higher Cer-

tifying Commissions). The publishing costs usually depend on the rank of the target journals. Most authors, who turn to editing services, are busy nonnative English-speaking practitioners, lacking time and basic skills for correcting language, methodology, study design, or data analysis in their manuscripts (55). By entirely relying on the agencies' services they give up mastering ethical editing and proper research reporting that only adds to the commercial gains of various agencies.

Paid editing services may have their niche in the global science communication provided their agents put ethics and transparency high on their list of priorities (55-57). A recent survey of authors from European and North American countries, who referred to medical communication agencies, showed that even experienced authors value external editing support with formatting, conforming to reporting guidelines, and manuscript submission to journals (58). Such support is grounded on the management of timelines, guidance on ethical authorship, and good publication practice. It often helps authors to publish their research in high-quality journals. But what distinguishes ethical services from illegitimate practices is that reputable agencies do not guarantee the publication, and their pricelists are not linked to indexing status or impact factors of the target journals.

Research and development departments of academic institutions can play an important role in preventing 'wasted' or predatory publications by educating their authors. Regular science communication courses on proper writing, editing, journal evaluating, and publishing ethics can be a major part of the preventive strategy. Research managers can advise their employees to choose appropriate target journals with wide visibility, better impact indicators, and influence on evidence-base.

Reputable publishers themselves can effectively tackle the emerging predatory practices by decreasing their rejection rates and offering more space for publishable and thoroughly edited items. In line with this, Elsevier, Springer, and other traditional publishers are now expanding by launching open-access outlets of their established journals. Increasingly, authors of publishable items, failing to reach priority for the publishers' leading journals, are offered cascading peer review and a chance to publish in an open-access offspring journal (59). Reputable publishers are capable of ensuring the same infrastructure, quality, and ethical standards for their newly-launched journals. As a result, these journals are often get indexed by PubMed, Web of Science, or other prestigious databases within one or two years of the launch (e.g., open-access outlets of *The Lancet* and *BMJ*). Additionally, a flexible scheme of waivers and discounts operates to accommodate good papers from low-resource countries. Finally, authors of scientifically sound, but poorly structured and unedited texts are referred to ethical editing services, which are promoted by reputable publishers.

The self-cleaning and tightening of indexing criteria by prestigious bibliographic databases is yet another powerful mea-

sure against predatory publishing practices. The process has already started with delisting several open-access journals from Scopus, Web of Science, and DOAJ, but further actions are required to preserve ethical standards not only in open, but also in subscription journals, which are covered by the global evidence-based hubs (e.g., MEDLINE, PubMed Central).

As the landscape of distribution of scholarly information is gradually transforming and new publishing formats are increasingly used (60, 61), more scrutiny is warranted over the quality, evidence base, and ethics of information, which is posted on the web blogs, institutional repositories, digital archives, and search engines. All stakeholders of science communication should be encouraged to alert indexers of unethical practices in traditional and new channels of scholarly information to prompt the self-cleaning.

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AUTHOR CONTRIBUTION

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