

Predatory journals and conferences – why fake counts

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ABSTRACT

Purpose of review - Predatory publishing poses a serious educational and ethical threat to the credibility of science. The aim of this review is to discuss the main features of this deceptive open-access model, its potential consequences and relevance for the whole scientific community.

Recent findings - Recent reports showed that scholars and clinicians from all research fields, including anesthesiology, are facing an alarming invasion of predatory journals and, more recently, fake conferences. This review discusses key elements of these phenomena and proposes countermeasures to tackle the problem.

Summary - Predatory journals and conferences are two sides of the same coin. As here reviewed, their deceptive practices have negative implications for scientists and clinicians, both educational and ethical. These range from publication of experimental data that are unreliable and poorly verified to inflated curricula and 'doped' academic careers. Because clinical practice is heavily based on research data, a solution is needed to ultimately ensure patients' safety.

Keywords

Predatory open-access; Publishing ethics; Fake conferences; Scholarly databases; Publish-or-perish

Abstract word count: 156

Main text word count: 2486

INTRODUCTION

In the last two decades, scientific community has faced one of the most serious threats to its integrity and credibility since the initiation of scientific publishing, which is conventionally thought to start in March 6, 1665 with the publication of the issue *Philosophical Transaction of the Royal Society* [1]. Since then ahead, although including business elements, scientific publishing has been inherently driven and supported by respectful entities (e.g. scientific societies, publishers) following well established rules and ethics codes, with the ultimate goal to advance knowledge. These principles apply to both the typical forms of scientific publication, namely articles in scientific journals and presentations to conferences, as a form of guarantee.

In 2012, the term *Predatory* appeared in a brief article published in *Nature* journal by Jeffrey Beall, a librarian from the University of Colorado Denver, who referred to publishers “*which publish counterfeit journals to exploit the open-access model in which the author pays*” [2]. A recent consensus among experts and stakeholders held in Ottawa, Canada, ended up with a shared definition of predatory publishers as “*entities that prioritize profit at the expense of scholarship and are characterized by false or misleading information, deviation from best editorial/publication practices, lack of transparency, and/or use of aggressive and indiscriminate solicitation practices*” [3]. More recently, similar (or even the same) entities started to invite scholars to dubious conferences as speakers or delegates, with the same flattering and tempting emails seen for article submission invitations. By these bogus practices, the tacit gentleman agreement between scholars, who are supposed to divulgate original scientific data, journals/publishers and organizers, who should applied the quality control, and readers and attendees, who should receive genuine scientific products, is seriously flawed [4*].

The aim of this review is to discuss the overall reach of predatory journals and conferences and their potential consequences, why these phenomena are so relevant (and

risky) to the scientific community, and potential countermeasures to tackle such an educational end ethical issue.

HEADINGS

‘We would be pleased to receive your article...’: The honey trap of predatory journals

The phenomenon of predatory journals has grown exponentially in the last decade, but the exact number of journals is difficult to determine, possibly due to their unstable nature and the inability to keep track of them. In 2014, 420.000 articles were counted from approximately 8000 presumed deceptive journals, demonstrating an eight-fold increase in 5 years [5]. The estimate of the profit was about \$75 million [5]. Recently, a federal judge in United States accepted an allegation for deceptive business practice against the well-known predatory publisher OMICS Publishing Group, which handles 700+ journals and organizes several predatory conferences [6]. The judge based the judgment on the publisher total revenues from 2011 to 2017, for a total of \$50.1 million [6].

All scientific disciplines seem to be involved, including biomedical fields [7-12]. In 2017, a study by Moher et al. demonstrated that a sample of 1907 articles contained data on more than 2 million individuals and 8000 animals [13**]. Recent data showed that the broad field of anaesthesiology is deeply affected, with a number of potential predatory journals (n=212) more than double the number of legitimate journals in the SCIMAGO journal rank for this category [9*]. The total number of articles published in these journals was high (n=12.871) for median article processing charges per article of \$634.5 [9*]. This involvement poses a substantial risk for patients’ safety because readers may consider applying the information retrieved from predatory journals in clinical practice [14,15]. Indeed, due to low or even absent editorial control, the quality, ethics and authenticity of the data may not be checked [14,15].

Predatory journals may leak into common scientific databases used for evidence-based literature search (e.g. PubMed) and/or scholarly metrics evaluation (e.g. Scopus) [9*,16, 17*, 18]. Under the pressure of the *publish or perish* rush, scholars can be tempted to submit papers to and publish in predatory journals to increase their metrics, following the submission invitations [19] [20*], the promise of quick and easy “peer-review” and the claim of bogus impact factors and metrics [21]. Data showed that young researchers from low- and middle-income countries are interested at most [22] but the phenomenon involved also prestigious institutions and scholars from high-income countries with high-rank universities, such as United States, Germany and Italy, to name a few [13**,15] [23,24**]. A recent analysis of the applications to qualify for associate or full professors in Italy demonstrated that 6% of the applicants published at least one article in a potential predatory journal [24**]. Similarly, scholars can apply for editorial board member positions in predatory journals, responding to email invitations to join the editorial board [20*]. While young scholars can be unaware victims of the false promises and detrimental practices of predatory journals, they can also be conscious and knowledgeable consumers [25,26] [27*,28*]. In fact, given the clear interest that both parts have (i.e. financial profit for publishers, career advancement for scholars), the general idea that naïve, unaware inexperienced scholars are the preys does not seem to tell the whole story, as provocatively depicted in Figure 1.

A landmark sting operation in 2015 demonstrated that many predatory journals (randomly selected from Beall’s list, a popular blacklist of presumed predatory journals discontinued in 2017) accepted as editorial board member a fictitious scientist profile, created *ad hoc*, sometimes against payment of a fee [29**]. Indeed, it has been widely demonstrated that predatory journals can also cite and advertise among their editorial board members opinion leaders and important scientists who never agreed to serve or who are not fully aware of the quality of the journal [9*,30*]. On the other hand, scholars with poor research knowledge and/or incongruent affiliations considering the scope of the journals can

be frequently encountered [9*,30*]. Indeed, the same names can be often spotted in the editorial board of dozens of presumed predatory journals [9*]. Dubious practice of selection of the editorial board members can lead to low quality peer review process, including reviewers' selection and manuscript evaluation. The result is publishing poor research products. Given that clinical practice relies heavily on the experimental data originated from scientific studies poor, unreliable and unchecked or loosely reviewed works pose a serious threat to patients and clinicians. Again, both journals and scholars can make profit from this bogus selection practice: journals can make profit from editorial board membership of scholars from different countries, since this is a criterion for potential indexing in legitimate database, such PubMed and Scopus; scholars can easily add an "editorial board membership" to the curricula [26].

Although the term "predatory journals" is widely used worldwide by researchers, institutions and social media, the original concept evolved overlapping the practice of 'low quality' journals. These encompass two entities (and the 'grey zone' in between): 1) clearly deceitful journals that aim only to make profit by exploiting the open-access model in a "pay-to-publish" scheme (rather than pay to make scientific contents freely available); 2) emerging journals, which may not have the full spectrum of core and ancillary competences (due to their young) to follow the international regulations of scientific editorial practice (e.g. the Committee on Publication Ethics, COPE; International Committee of Medical Journal Editors, ICMJE) but are in need to publish a least number of articles to secure indexing in legitimate databases. However, in both cases, the scientific products can be characterized by low quality and lack of editorial expertise. This makes it often difficult to identify if a journal is *predatory* or not. Nowadays, the identification should be based on the ability of scholars to check the main features of journals and publishers [31*] and on "quality indexing". Studies have identified several features that should be evaluated at both journals' and publishers' level, using information reported in the websites or in the emails [31*,32]:

not credible reported locations of the editorial office (as checked by Google Street View); poor English form; similarity between journals' name with those of well known ones; interest on a too broad spectrum of scientific disciplines (i.e. ranging from clinical ones to biochemical); unclear or lacking description of the article processing charges; constant invitation to submit manuscripts, to join as reviewer or editor; promotion of fake 'metrics (Global impact factor, Index Copernicus, CiteFactor), improper use of the terms "impact factor" [21]; no Editor-in-chief or not credible editorial board members; lack of information on manuscripts handling policy and ethics rules.

Thus, choosing the journal to submit an article is a critical, demanding task that should be done consciously. As noted, the indexing in scientific databases such as PubMed or Scopus is not a guarantee *per se* of the quality of a journal, as they may leak in under open-access policies in spite of the high level of control that are out in place [9*,16-18]. Other relatively new "backlist" (updated Beall list) and "whitelist" (e.g. Cabells Scholarly analytics) have been proposed to recognize predatory journals, but none should be used as standalone tool [33*]. Recent studies demonstrated that the Directory of the Open Access Journals (DOAJ) is now standing as a reliable reference to judge the quality and legitimacy of open-access journals and publishers. DOAJ is a 'community-cured online directory that index and provide access to high quality, open access, peer review journals" [34]. Funding is provided via donations, from both sponsors and members, which include several respectful publishers, universities, organizations. The service is free of charge, including being indexed. Users can easily survey the user-friendly website looking for the names of open access journals or publishers or even articles. To date, 13.835 journals are listed [34]. A thorough, multi-step assessment process (approximately fifty quality control checks) guarantees the quality of the included journals: applicants must provide structured general information about the journal (e.g. title, publisher, editorial office location, article processing charges etc.), information about the editorial process quality and transparency, copyright

license and open access statement. All the information is checked and re-evaluated constantly.

Scholars can also find help in identifying reliable journals by the *Think. Check. Submit.* campaign, which is an international initiative aiming 'to educate researchers, promote integrity, and build trust in credible research and publications' [35,36]. The campaign was created with the support of several trustable organizations, such as COPE, DOAJ, Open Access Scholarly Publishers Association (OASPA) and legitimate publishers. It consists of simple checklists that guide the researchers through a step-by-step process for assessing the credentials of a journal or publisher.

A potential solution to reduce the *publisher or perish* pressure (and, relatedly, the shortcut through predatory journals) may exist at the institutional level: the San Francisco Declaration on Research Assessment (DORA) developed in 2012, aims to improve the ways in which the outputs of scholars are evaluated [15,37]. The DORA recommendations include ground-breaking concepts:

- journal-based metrics should not be used as measure of the quality of individual research articles to assess an individual scientist's contributions, or in hiring, promotion, or funding;
- Especially for early-stage researchers, the scientific content of a paper is much more important than publication metrics or the identity/standings of the journal in which it was published. To date 1553 organizations and 15.006 individuals signed the DORA.

‘You are invited to speak’: the surge of predatory conferences

A relatively more recent and less known development of predatory publishing is the organization of presumed fake/bogus conferences, which fail to be conducted with the standards of quality, transparency and integrity that characterize legitimate and reputable conferences [38*]. As a result, scholars and academics but also clinicians, chief medical officers and corporates are being targeted via aggressive e-mail invitations not only to submit manuscripts for publication in predatory open-access journals but also to attend dubious, ground-sounding, pseudo-scientific meetings, i.e. predatory conferences [20,39*]. A distinctive element of these events is that they are generally promoted by companies rather than proper organizing bodies, such as scientific societies and institutions, committees, universities or professional associations. Among the main red flags of predatory conferences, the name overlap with conferences organized by scholarly associations seems one of the most misleading elements that make unaware scholars fall prey to this model. Another prominent feature that seems to border on deception is the use of names and photographs of speakers and organizers, often leading scientists from the field, without their knowledge or permission for advertising purposes [40], thus hijacking their identities. Scholars and clinicians at their early career stage are, of course, those being more vulnerable to this phenomenon. However, as stated in Part I for predatory journals and provocatively outlined in the artwork in Figure 1, there seems to be another side of the coin. On one hand, due to knowledge gaps about predatory conferences (but this holds true for journals, of course), unaware scholars are easily caught in the trap as the inherent flattery and obsequiousness of the invitations (“*We would be honored by your Eminent presence*”) may make them feel important and proud of being invited as plenary/keynote speaker. On the other, given the importance of conference attendance for academic careers, scholars may also profit from ‘doping’ their curricula demonstrating speaker/chairman services in prestigious-sounding conferences or symposia [39*]. In this perspective it may be hard to

distinguish prey from predator, as allegorically portrayed in Figure 1. Regardless of whether scholars are lambs or wolves, academia is, again, called out to institute specifically devised courses to increase publishing ethics awareness and practical knowledge among the naïve and the experienced researchers, as well. Until then, the following considerations may prove helpful to the heterogeneous community of scholars, clinicians and students that is potentially targeted by scam invitations:

- Legitimate publishers and organizers do not invite scientists to serve as speakers/chairmen against a charge for registration fees;
- They don't delegate conference organization to business companies. If private companies are involved/hired to handle the event organization and logistics, which is the case of modern scientific conferences, the event patronage is clearly and undoubtedly retained by an institutional organizing body;
- In their communications, legitimate organizers avoid any form of flattery and adulation;
- They are meticulous and as specific as possible about the details, which means that (1) they never salute "Dear Dr. or Professor", (2) communication is free of unprofessionalism and overt but also minor grammar/spelling errors, and (3) avoid descriptors overplaying the global reach of the event ("World/Wordly", "International", "Global");
- They do not tease/entice researchers, i.e. by emphasizing tourist information about the conference venue.

Just like predatory journals, fake conferences are not meant to advance knowledge and science, as they only exist for their lucrative game [38*]. We recommend the *Think. Check. Attend.* initiative to help researchers identify legitimate conferences and avoid predatory conferences [41].

CONCLUSIONS

Predatory publishing is detrimental for scholars, institutions, science credibility and, potentially, for patients' safety, as summarized in Table 1. Based on crystal-clear interest to profit, both journals/publishers and researchers can act as the predators. Effective countermeasures may be improving knowledge about the responsibility of publishing research results and the ability to recognize predatory journals and conferences. Moving from "quantitative" to "qualitative" evaluation of scholars' curricula can help reducing the *publish-or-perish* pressure.

Keypoints

- Predatory journals and conferences threaten the reputation of the open-access movement as they deviate from best editorial standards and ethics;
- Scholars and clinicians are targeted by dubious publishers via email invitations to submit manuscripts and attend dubious conferences;
- Naïve scientist and clinicians at their early stages of career are most vulnerable to the tempting techniques of such deceptive entities;
- Also experienced authors publish in predatory journals or attend fake conferences to inflate curricula and boost career progression;
- By this review we urge educational and ethical actions to enhance scholars' awareness of this serious threat to scientists' reputation and patients' safety.

Acknowledgements: We would like to thank Dr. Antonio Corrado ("Korrado18") for creating and proving the Figure.

Financial support and sponsorship: none

Conflicts of interest: none

FIGURE LEGEND

Fig. 1

Heading: Scholars and publishers can both be predators.

Legend: This figure provocatively depicts the relationship between a scholar under the *publish or perish* rush and a publisher (who can be viewed as a man who lead a predatory journal or who organize a predatory conference). The idea behind is that both can make profit of this “agreement”, to earn money (publisher) or to inflate his/her curriculum (scholar).

Source: Original authors' own artwork.

ABBREVIATIONS

COPE: Committee on Publication Ethics

DOAJ: Directory of the Open Access Journals

DORA: San Francisco Declaration on Research Assessment

ICMJE: International Committee of Medical Journal Editors

OASPA: Open Access Scholarly Publishers Association

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*of special interest

**of outstanding interest

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