

Comment



ILLUSTRATION BY DAVID PARKINS

Predatory journals: no definition, no defence

Agnes Grudniewicz, David Moher, Kelly D. Cobey and 32 co-authors

Leading scholars and publishers from ten countries have agreed a definition of predatory publishing that can protect scholarship. It took 12 hours of discussion, 18 questions and 3 rounds to reach.

When 'Jane' turned to alternative medicine, she had already exhausted radiotherapy, chemotherapy and other standard treatments for breast cancer. Her alternative-medicine practitioner shared an article about a therapy involving vitamin infusions. To her and her practitioner, it seemed to be authentic grounds for hope. But when Jane showed the article to her son-in-law (one of the authors of this Comment), he realized it came from a predatory journal – meaning its

promise was doubtful and its validity unlikely to have been vetted.

Predatory journals are a global threat. They accept articles for publication – along with authors' fees – without performing promised quality checks for issues such as plagiarism or ethical approval. Naïve readers are not the only victims. Many researchers have been duped into submitting to predatory journals, in which their work can be overlooked. One study that focused on 46,000 researchers based in Italy found that about 5% of them published in such outlets¹. A separate analysis suggests predatory publishers collect millions of dollars in publication fees that are ultimately paid out by funders such as the US National Institutes of Health (NIH)².

One barrier to combating predatory publishing is, in our view, the lack of an agreed definition. By analogy, consider the historical criteria for deciding whether an abnormal bulge in the aorta, the largest artery in the body, could be deemed an aneurysm – a dangerous

condition. One accepted definition was based on population norms, another on the size of the bulge relative to the aorta and a third on an absolute measure of aorta width. Prevalence varied fourfold depending on the definition used. This complicated efforts to assess risk and interventions, and created uncertainty about who should be offered a high-risk operation³.

Everyone agrees that predatory publishers sow confusion, promote shoddy scholarship and waste resources. What is needed is consensus on a definition of predatory journals. This would provide a reference point for research into their prevalence and influence, and would help in crafting coherent interventions.

To hammer out such a consensus and to map solutions, we and others met in Ottawa, Canada, over two days in April this year. The 43 participants hailed from 10 countries and represented publishing societies, research funders, researchers, policymakers, academic institutions, libraries and patient partners (that is, patients and caregivers who proactively engage in research). Our focus was the biomedical sciences, but our recommendations should apply broadly.

Here we put forward our definition. We describe what it took to achieve consensus and how we'll move forward.

The definition

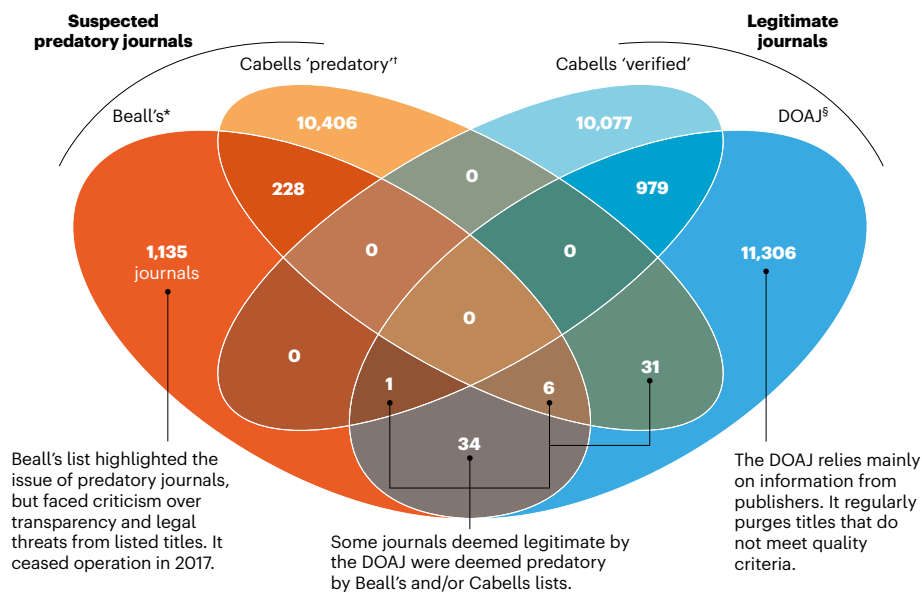
The consensus definition reached was: **"Predatory journals and publishers are entities that prioritize self-interest at the expense of scholarship and are characterized by false or misleading information, deviation from best editorial and publication practices, a lack of transparency, and/or the use of aggressive and indiscriminate solicitation practices."**

Road to consensus

Since the term 'predatory publishers' was coined in 2010, hundreds of scholarly articles, including 38 research papers, have been written warning about them. Scientific societies and publishers (including Springer Nature) have helped to establish the 'Think. Check. Submit.' campaign to guide authors. But it is not enough. **More than 90 checklists exist to help identify predatory journals** using characteristics such as sloppy presentation or titles that include words such as 'international'. This is an overwhelming number for authors. Only three of the lists were developed using research evidence⁴. Paywalled lists of quality journals and predatory journals show that there is an appetite for clear, authoritative guidance. But these lists are inconsistent and sometimes out of reach^{5,6} (see 'No list to rule them all').

NO LIST TO RULE THEM ALL

Assessments of which journals are likely to be predatory or legitimate do not tally, and titles can appear in both categories. There is no way to know which journals were considered for a list but left off, or which were not considered.



⁴Informally assessed by University of Colorado Denver librarian Jeffrey Beall in ~2008-17; ⁵Pay-to-access lists from Cabells, a scholarly analytics company; ⁶The Directory of Open Access Journals, a community-curated list requiring journal best practices such as peer review and statements on author fees and licensing.

A journal's membership of agencies such as COPE (the Committee on Publication Ethics), curated indexes such as Web of Science, or being listed in the Directory of Open Access Journals (DOAJ) is insufficient to guarantee quality. Predatory journals have found ways to penetrate these lists, and new journals have to publish for at least a year before they can apply for indexing.

A scoping review comparing publications about predatory journals found that their characterizations sometimes overlapped, sometimes did not and sometimes directly conflicted⁷. These inconsistencies suggest that crafting a practical definition would require building consensus across researchers, publishers, research institutions and the broader public.

Participants in our summit completed a three-round modified Delphi survey (a structured technique to elicit input, offer feedback and build consensus) that included 18 questions and 28 sub-questions. There were also 12 hours of discussion, followed by 2 further rounds of feedback and revision.

Crafting a consensus definition was hard. Even reaching agreement on the use of 'predatory' was a challenge. Part of the group wanted a term that acknowledges that some authors turn to these outlets fully aware of their low quality; these scholars willingly pay to publish in predatory journals to add a line to their

CVs. We discussed replacing the term entirely with language that recognizes nuances in publishers' quality and motivation. Alternatives considered included 'dark', 'deceptive', 'illegitimate' and 'acting in bad faith'. Ultimately, we concluded that the term 'predatory' has become recognized in the scholarly community. Implementation science suggests that introducing new nomenclature would take considerable resources, which we felt could be better put towards combating predatory publishing directly. So we recommend keeping the word 'predatory' while noting its limitations.

Details matter

Predatory journals are driven by self-interest, usually financial, at the expense of scholarship. They are characterized by the following:

False or misleading information. This applies to how the publisher presents itself. A predatory journal's website or e-mails often present contradictory statements, fake impact factors, incorrect addresses, misrepresentations of the editorial board, false claims of indexing or membership of associations and misleading claims about the rigour of peer review.

Deviation from best editorial and publication practices. Standards here have been set out in the joint statement on Principles of Transparency and Best Practice in Scholarly

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Publishing (see go.nature.com/35mq7mj), issued by the DOAJ, the Open Access Scholarly Publishers Association, COPE and the World Association of Medical Editors. Examples of substandard practice include not having a retraction policy, requesting a transfer of copyright when publishing an open-access article and not specifying a Creative Commons licence in an open-access journal. These characteristics can be difficult to know before submitting, although such information is easily obtained from legitimate journals. An unprofessional-looking web page – with spelling or grammar mistakes or irrelevant text – should also raise red flags.

Warning signs should be assessed with care. For instance, journals are not eligible for listing on the DOAJ or joining COPE until after one year of operation. A well-meaning but poorly resourced journal might not be able to maintain a professional website. Also, some journals claim to follow best practice but do not. Summit participants agreed that the burden of proof rests on the journal.

Lack of transparency. There are two reasons we list this separately from deviation from best practice. First, transparency in operational procedures (such as how editorial decisions are made, fees applied and peer review organized) is presently somewhat aspirational in academic publishing and thus cannot be considered a current best practice. Second, the absence of transparency in predatory journals makes it important enough to highlight separately. Predatory publishers often fail to provide their contact information or details about article processing charges. Editors and members of their editorial boards are often unverifiable.

Aggressive, indiscriminate solicitation. Although legitimate journals might solicit submissions, predatory journals often use aggressive solicitation such as repeated e-mails. These might be excessively flattering in tone, or might mention researchers' past publications while noting that related submissions are urgently needed for a forthcoming issue. A clear warning sign is that the invitee's expertise is outside the journal's scope.

Criteria we left out. Some obvious candidates for this list – journal quality and intent to deceive – were deliberately left out. It can be tough to distinguish a predatory journal from a journal that is under-resourced. Both can be low quality, but the latter does not have an intention to deceive^{8,9} (see also go.nature.com/33gmjnt and go.nature.com/2afaka7). Furthermore, such intent is hard to assess and, if many of the characteristics described in the definition are met, identifying intent might not be necessary.

Most controversially, we omitted quality

of peer review, even though negligent peer review is often a prominent feature of predatory journals. We are not saying that peer review is unimportant, only that it is currently impossible to assess. Unfortunately, many legitimate journals fail to make their peer-review processes sufficiently transparent, for instance by sharing peer reviewers' comments and other data. At the moment, journal quality, adequacy of peer review and deceit are too subjective to include.

Next steps

Efforts to fight predatory publishing require collaboration and support. Organizations, researchers and governments have started to respond. To name just a few, in 2017, the NIH released a statement encouraging researchers it funds to publish in reputable journals. India's University Grants Commission has created a reference list of respectable journals and is currently working to revise academic publication incentives and develop a training course to reinforce the message. In November 2018, COPE held a forum on predatory publishing to examine problems and solutions.

So far, disparate attempts to address predatory publishing have been unable to control this ever-multiplying problem. The need will be greater as authors adjust to Plan S and

"It can be tough to distinguish a predatory journal from a journal that is under-resourced."

other similar mandates, which will require researchers to publish their work in open-access journals or platforms if they are funded by most European agencies, the World Health Organization, the Bill & Melinda Gates Foundation and others (see www.coalition-s.org).

Many might argue that, with predatory journals adapting so quickly, our group's efforts would have been better spent crafting interventions or promoting outreach. We believe that with this consensus definition, we are better prepared to track the problem over time, compare the results of studies on predatory journals and develop and evaluate intervention strategies such as educational campaigns and policy mandates. Over the coming months, we will solicit input and make the definition usable so that funders and academic institutions can ensure that researchers avoid submitting manuscripts to predatory journals or listing such publications on their CVs.

Our first step is to develop a portal that presents our definition and other educational resources in multiple languages – available at <https://osf.io/8xvpm> – and how to get involved. Next, we will establish an international observatory to compile data on the

problem, tracking numbers of publications in predatory journals by discipline and geography. We will work with funders, institutions, patients and other stakeholders to iteratively develop resources to assess journal quality. We are seeking funding to create and test a digital tool to achieve these goals.

Efforts to counter predatory publishing need to be constant and adaptable. The threat is unlikely to disappear as long as universities use how many publications a scholar has produced as a criterion for graduation or career advancement. The publish-or-perish culture, a lack of awareness of predatory publishing and difficulty in discerning legitimate from illegitimate publications fosters an environment for predatory publications to exist. Predatory journals are also quick to adapt to policies and measures designed to foil them. As scientific publishers experiment with new formats and business models online, it has become increasingly easy for fake publishers to masquerade as legitimate ones. We invite others to join us in our call to action.

The authors

Agnes Grudniewicz is an assistant professor at the Telfer School of Management, University of Ottawa, Canada. **David Moher** is a senior scientist and director and **Kelly D. Cobey** is an investigator at the Centre for Journalology, Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Canada.

Gregory L. Bryson, Samantha Cukier, Kristiann Allen, Clare Arden, Lesley Balcom, Tiago Barros, Monica Berger, Jairo Buitrago, Lucia Cugusi, Michael R. Donaldson, Matthias Egger, Ian D. Graham, Matt Hodgkinson, Karim M. Khan, Mahlubi Mabizela, Andrea Manca, Katrin Milzow, Johann Mouton, Marvelous Muchenje, Tom Olijhoek, Alexander Ommaya, Bhushan Patwardhan, Deborah Poff, Laurie Proulx, Marc Rodger, Anna Severin, Michaela Strinzel, Mauro Sylos-Labini, Robyn Tamblyn, Marthie van Niekerk, Jelte M. Wicherts, Manoj M. Lal.

e-mails: agnes.grudniewicz@telfer.uottawa.ca; dmoher@ohri.ca; kcobey@ohri.ca

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A full list of author affiliations accompanies this Comment online (see go.nature.com/2dndsjf).