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Should I publish in an open access journal?

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An *"*author pays*"* publishing model is the only fair way to make biomedical research findings accessible to all, say **Matthew Kurien** and **David S Sanders**, but **James J Ashton** and **R Mark Beattie** worry that it can lead to bias in the evidence base

Yes—Matthew Kurien, David S Sanders

Digital technology has changed the landscape of scientific publishing. For centuries scholarly communication by publishing in print journals was central to academic life.[1] The internet has democratised scientific communication and cut distribution costs, and support for open access publishing has grown with these developments.[2 3]

Open access means permanently removing obstacles—financial, legal, and technical—to accessing, sharing, and reusing scholarly research outputs.[4] In practice, journals charge researchers a fee to publish articles that are free to read online.

At the end of last year the European Commission backed a group of national research funders, cOAlition S, proposing that all research they funded after 2020 be published with open access.[1] The coalition is consulting on capping author fees at a "reasonable" level. The funders propose bulk payment arrangements, rather than individual authors worrying about fees. They also want to eliminate conditional open access, whereby articles in a subscription journal are made open access on payment of a fee.

Open access publishing is the only fair way to make research accessible to all, facilitating quicker changes to medical practice and benefits for patients. All doctors and researchers have a collective responsibility to promote this innovation.

Locked behind paywalls

About 75% of published science articles are locked behind paywalls.[4] This restricts access for researchers based on wealth. More fundamentally, it deprives taxpayers and patients access, who help pay and participate in research. If you're at a privileged institution you may have access through a journal subscription. Alternatively, you may be fortunate enough to afford the articles yourself. But you may be less fortunate if you're in a low or middle income country, where healthcare, and the knowledge underpinning it, is needed most. Programmes such as the Health InterNetwork Access to Research Initiative (HINARI) support access in poorer countries, but researchers from poorer countries tend to cite research in subscription journals less often.[5]

Paywalls obstruct the universality of science, depriving the scientific community and global society of research.[6] This has ethical, academic, economic, and societal consequences.[1] [4] Societal benefits may seem trivial when considering whether to publish individual work with open access; however, equity of access is a fundamental tenet in healthcare, and it should apply to information too.

Academic impact can be assessed in several ways, including citation counts, and open access articles tend to be cited more often.[4] In medicine, our recent study of gastroenterology journals suggested a citation advantage for open access versus traditional publication (median citation rate 38.5 v 33.0 per research paper).[7] Confounders may account for this apparent advantage: for example, authors may select only the best articles to submit for open access publication. Other metrics including social media engagement, mentions in the media, and social bookmarking also show this advantage.[8]

Despite these findings researchers continue to pursue publication in closed access, high impact journals. This is often driven by a misdirected reward system that emphasises the wrong indicators, such as a journal's impact factor.

The upfront cost of author fees is a potential deterrent to open access publishing. Although most researchers would value reading articles free of charge and without restrictions, charging individual researchers to publish through open access is inequitable. For these reasons, cOAlition S is pushing for revision of the whole system of incentive and reward in science.[6]

Mushrooming predatory publishers

A counterargument to open access publishing is the mushrooming of predatory publishers who allow publication to be bought: this damages the open access movement and undermines the quality and integrity of science. Researchers should be wise to these publishers and

judiciously choose publication in open access journals with established reputations and respected editorial boards.

Improvements in patient outcomes and advances in medical practice depend on sharing scholarly communication openly. Researchers have a collective responsibility to ensure transparency while maintaining standards. Having demonstrated the benefits of open access to researchers and society, we now encourage all researchers to go forth and set their work free.

Competing interests: We have read and understood BMJ policy on declaration of interests and declare the following interests: MK has no conflict of interests to declare. DSS has received educational research grants from Dr Schär (a gluten-free food manufacturer) and Tillotts Pharma (producer of a point of care test for coeliac disease) for investigator led studies.

Provenance and peer review: Commissioned; not externally peer reviewed.

No—James J Ashton, R Mark Beattie

It's hard to argue with cOAlition S's proposal that all research it funds after 2020 should be published with open access.[9] Open access publishing could, however, disadvantage researchers who lack the resources for it, reduce the relevance and quality of the evidence base, and introduce bias.

Open access publication disseminates research findings more widely, potentially improving healthcare practice and patient outcomes. If doctors had unlimited time to read all published research, and if all researchers could afford the fees (typically $2000-$3000 for publication), open access would be preferable. But not all researchers can.

Bias towards commercially funded work

Open access publication may suit researchers funded by industry, or bodies such as the National Institute for Health Research and the Medical Research Council, as they can pay the fees. However, this is hard for researchers with limited funds or from developing countries. Publishing quality improvement projects, clinical reviews, or evidence based guidance without academic or commercial funding can prove difficult. This runs counter to efforts to share knowledge globally.

Preferentially disseminating industry funded work risks biasing the evidence base towards commercially driven results, distorting medical practice and causing avoidable harm.[10 11]

The Annals of the Rheumatic Diseases, owned by BMJ, is a "hybrid" subscription journal whose authors can choose to pay to make their work open access. Jakobsen and colleagues found a significant open access bias in the journal towards studies with industry funding

(12/71; 17%) when compared with studies without (11/145; 8%).[12] And, in general, the number of open access papers funded by big pharma recently exceeded open access work that wasn't industry funded.[11]

Researchers who publish with open access may also inadvertently benefit from it at the expense of others: these publications receive 2-3 times more citations.[13] This higher impact can help authors raise funding, potentially reducing the funding available to equally worthy research groups and stopping them achieving their potential.[14]

Financial incentives to publish more

Publishers also have an interest in the quantity of open access articles they publish. For example, the open access journal PLOS One accepts 70% of submissions, compared with 8% at subscription based or hybrid Nature journals.[15] Hybrid journals create additional internal conflict: if all articles are open access the readers have no need to pay—pushing up subscription fees.[16] Thus, open access publication changes a publisher's incentive to publish, and authors, publishers, and industry may be able to manipulate the system. The dangers include financially motivated publications, reduced quality, and biasing of published research.[11]

High quality peer review is important for publishing robust science, both in open access and subscription journals. If open access journals do peer review submissions some review only for accuracy, not for relevance. Even if peer review processes are strong enough to spot and remove fake science, financial incentives to publish could leave the open access literature swamped with methodologically sound articles of questionable value or priority.[17]

Clinicians and researchers focus their reading on journals specific to their specialty. To apply evidence integrating research into practice they need articles that are relevant to their needs. Subscription journals can prioritise the most relevant findings for their readers, with accompanying interpretation. Open access publishing makes it harder to distinguish relevant, high quality findings.The challenge of accurately relaying science to the public becomes harder when media outlets easily pick up and misinterpret open access research.[18]

Opening up research and the potential loss of subscription journals means that, although access to research will increase, content could be regulated less and dominated by researchers who can afford to publish. To tackle these problems open access publishing must be subject to high quality peer review and editorial judgment on the relevance of research, and it must include systems for equitable payment of fees. How this could become sustainable in the near future is difficult to envisage.

Competing interests: We have read and understood BMJ policy on declaration of interests and declare the following interests: both authors have previously written editorial pieces, none of which have been published in open access publications. MB is an associate editor of Clinical Nutrition, an Elsevier group journal, and editor in chief of Frontline Gastroenterology, a BMJ journal.

Provenance and peer review: Commissioned; not externally peer reviewed.

1 Parker M. The ethics of open access publishing. BMC Med Ethics 2013;14:16.

2 Laakso M, Welling P, Bukvova H, et al. The development of open access journal publishing from 1993 to 2009. PLOS One 2011;6:e20961.

3 Science Europe. cOAlition S: making open access a reality by 2020. 4 Sept 2018. https://www.scienceeurope.org/wp-content/uploads/2018/09/cOAlitionS_Press_Release.pdf.

4 Tennant JP, Waldner F, Jacques DC, et al. The academic, economic and societal impacts of open access: an evidence-based review. F1000Research 2016;5:632. doi:10.12688/f1000research.8460.3.

5 Smith E, Haustein S, Mongeon P, et al. Knowledge sharing in global health research—the impact, uptake and cost of open access to scholarly literature. Health Res Policy Syst 2017;15:73. doi:10.1186/s12961-017-0235-3.

6 Schiltz M. Science without publication paywalls: cOAlition S for the realisation of full and immediate open access. PLOS Med 2018;15:e1002663. doi:10.1371/journal.pmed.1002663.

7 Sanders D, Menic N, Nyamali I, et al. PTU-002: Does open access influence the citation metrics in gastroenterology journals? Gut 2017;66:A50-1.

8 Wang X, Liu C, Mao W, et al. The open access advantage considering citation, article usage and social media attention. Scientometrics 2015;103:555-64.

9 Else H. Radical open-access plan could spell end to journal subscriptions. Nature 2018 Sept 4. https://www.nature.com/articles/d41586-018-06178-7.

10 Angell M. Industry-sponsored clinical research. JAMA 2008;300:1069. doi:10.1001/jama.300.9.1069.

11 Warren M. Big pharma is embracing open-access publishing like never before. Nature 2019 Feb 28. doi:10.1038/d41586-019-00610-2.

12 Jakobsen AK, Christensen R, Persson R, et al. Open access publishing. And now, e-publication bias. BMJ 2010;340:c2243.

13 Eysenbach G. Citation Advantage of open access articles. PLOS Biol 2006;4:e157. doi:10.1371/journal.pbio.0040157.

14 Carpenter CR, Cone DC, Sarli CC. Using publication metrics to highlight academic productivity and research impact. Acad Emerg Med 2014;21:1160-72. doi:10.1111/acem.12482.

15 Van Noorden R. Open access: the true cost of science publishing. Nature 2013;495:426-9. doi:10.1038/495426a.

16 Logan CJ. We can shift academic culture through publishing choices. F1000Research 2017;6:518. doi:10.12688/f1000research.11415.1.

17 Bohannon J. Who's afraid of peer review? Science 2013:342;60-5. doi:10.1126/science.342.6154.60. http://science.sciencemag.org/content/342/6154/60.abstract.

18 McCartney M. Margaret McCartney: Who gains from the media's misrepresentation of science? BMJ 2016;352:i355. doi:10.1136/bmj.i355.