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Integrity of Authorship and Peer Review Practices: Challenges and Opportunities for Improvement

Durga Prasanna Misra,[1] **Vinod Ravindran**,[2] **and Vikas Agarwal**[1]

[1]Department of Clinical Immunology, Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow, India
[2]Centre for Rheumatology, Calicut, India

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Address for Correspondence:
Durga Prasanna Misra, DM
Department of Clinical Immunology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Raebareli Road, Haibat Mau Mawaiya, Lucknow, Uttar Pradesh 226014, India.
E-mail: durgapmisra@gmail.com

ORCID iDs
Durga Prasanna Misra
https://orcid.org/0000-0002-5035-7396
Vinod Ravindran
https://orcid.org/0000-0001-5842-1877
Vikas Agarwal
https://orcid.org/0000-0002-4508-1233

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ABSTRACT

Integrity of authorship and peer review practices are important considerations for ethical publishing. Criteria for authorship, as delineated in the guidelines by the International Committee of Medical Journal Editors (ICMJE), have undergone evolution over the decades, and now require fulfillment of four criteria, including the need to be able to take responsibility for all aspects of the manuscript in question. Although such updated authorship criteria were published nearly five years ago, still, many major medical and specialist journals have yet to revise their author instructions to conform to this. Inappropriate authorship practices may include gift, guest or ghost authorship. Existing literature suggests that such practices are still widely prevalent, especially in non-English speaking countries. Another emerging problem is that of peer review fraud, mostly by authors, but also rarely by handling editors. There is literature to suggest that a proportion of such fake peer review may be driven by the support of some unscrupulous external editing agencies. Such inappropriate practices with authorship malpractices or disagreement, or peer review fraud, have resulted in more than 600 retractions each, as identified on the retractions database of Retractionwatch.com. There is a need to generate greater awareness, especially in authors from non-English speaking regions of the world, about inappropriate authorship and unethical practices in peer review. Also, support of any external editing agency should be clearly disclosed by authors at the time of submission of a manuscript.

Keywords: Research Integrity; Authorship; Peer Review; Peer Review Fraud; External Editing Agency; Retraction

WHAT IS RESEARCH INTEGRITY?

Research is the ethical pursuit of the understanding of the natural truth. Whenever research is undertaken, it should adhere to certain basic principles along with adequate scientific rigor. These are the principles of research integrity. The United States Department of Health and Human Services further defines this as adherence to principles of ethical research conduct, while appropriately acknowledging the contributors to the same, which is ethically peer reviewed and shared with the scientific community in appropriate manner while avoiding conflicts of interest (COI) and maintaining the principles of mentorship. Such

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research should protect the interests of involved human or animal subjects.[1] Only when all these principles are upheld can the research herewith conducted be considered valid. Since scientific endeavour relies significantly on the trust between those who conduct it, the persons in charge of editorial and peer review responsibilities for the same and the readers of the scientific work, it is important to uphold these principles of research integrity so that this trust is maintained between all these parties. Any breach of the principles of research integrity in a particular publication violates the trust between author, journal editors, reviewers, and the readers.[2] The Committee on Publication Ethics (COPE), which is one of the bodies that lays down guidelines for good publication practices, lays down the framework for corrective measures that could be called upon by a journal in case violations of research integrity are brought to light post-publication, depending on the degree of misconduct in question. These could range from either an outright retraction from the published literature of the paper in question, an expression of concern by the journal, or a correction of the published paper issued by the journal.[3,4] Should retraction be deemed the best course of corrective action (as is recommended should the findings of the paper be unreliable or conduct of the study unethical, and if associated with issues such as plagiarism or redundant publication), the retraction notice should try to be as objective as possible in outlining the flaws of the retracted paper, find display along with the original paper in the website of the journal and be freely accessible to any reader (even if the journal is not open access).[3,4]

As is evident, two of the key principles mentioned in the definition of research integrity are those of appropriate acknowledgement of contributors (authorship or contributorship) and ethical peer review. In this narrative review, we shall discuss these issues in detail, whilst referring to instances of inappropriate authorship or peer review practices in the published literature to help guide authors how to avoid these issues in their own manuscript.

SEARCH STRATEGY

We adhered to the search strategy recommended for narrative reviews by Gasparyan et al.[5] To identify relevant articles on inappropriate authorship and peer review practices, we searched the database Scopus (which includes all the data available in Medline also) on the 29th of June, 2018 using the key words “authorship” AND “retraction, “fake peer review” and “retraction”, “fake review” AND “retraction” and “fake peer review” alone, in the titles, abstracts and keywords. Further, to identify retractions due to authorship and peer review, we searched the retractions database of the website Retractionwatch.com, which is the largest available collection of retraction notices the world over. The database was obtained from the Center for Scientific Integrity, the organization which runs this website, in .csv format on 29th June, 2018, and permission to search the same and submit the results for publication was obtained from the owners of the database. The reason for retraction was manually searched using search terms “Concerns/Issues about Authorship”, “Forged Authorship” (for retractions due to authorship issues) and “Fake Peer Review” (for retractions due to fake peer review). The numbers of individual entries were enumerated by hand searching. Further, the continent of affiliation of each selected entry was analyzed manually (some of these entries had affiliation to countries across multiple continents). These results were analyzed using GraphPad Prism 6 for Mac OSX, version 6.0e (Graph Pad Software, La Jolla, CA, USA).

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WHAT IS AUTHORSHIP – A HISTORICAL EVOLUTION IN THE MODERN TIMES

Authorship refers to the attribution of responsibility for planning, conduct, analysis and publication of a scientific paper. A listed author should be able to take responsibility for all aspects of a published scientific paper.[6,7] Criteria for authorship have been proposed by the International Committee of Medical Journal Editors (ICMJE), formerly called as the Vancouver group, which is another body which provides guidelines for the ethical conduct and publication of biomedical research.[8] It is useful to understand the historical evolution of authorship criteria by analyzing the various versions of the guidelines proposed by the ICMJE, as available on the website.[8] The first versions of these guidelines in 1978, 1979, and 1982 only referred to authorship fleetingly, wherein a statement was required from the submitting author to confirm that the manuscript had been perused by all the listed authors, who agreed to its contents. The fourth version of this document in 1988 mentioned for the first time the three mandatory criteria for authorship. The first criteria related to involvement in the planning and designing of the study, or to the analysis of the study results or their interpretation. The second criteria related to involvement in either drafting the manuscript for submission, or contributing to its revision to enhance the scientific interpretation of the study findings. The third criteria related to confirmation of approval from all authors for the submitted version of the manuscript. These criteria also mentioned the requirement for at least one author to bear responsibility for at least one crucial part of the manuscript, as well as mentioned the possibility that the journal editor might ask the authors to justify their contributions. This version of the document also introduced the concept of group (collective) authorship, with the requirement that specific persons should be identified who can vouch for critical portions of the said manuscript. Also, the concept of acknowledging those who might not fulfill authorship criteria, but nevertheless have contributed intellectually to the study, was introduced in the 1988 version; similar concepts remained in the 1991 version. The 1994 iteration of the ICMJE guidelines mentioned the consideration of order of authorship to be a mandate of the group of authors, with other considerations remaining the same in principle. While the 1995 and 1997 versions of the guidelines remained principally the same on the subject of authorship, the 2004 iteration further emphasized the consideration to disclose all author contributions, as well as identify an author in the group (the guarantor) who could vouch for the overall integrity of the published work. While this portion remained principally unchanged in the 2005, 2006, 2007, and 2008 iterations of the document, the August 2013 version of the document further expanded the existing authorship criteria to include a fourth mandatory criteria i.e., a confirmation that the listed authors are responsible for all aspects of the said manuscript and agree to answer any future questions regarding either the integrity or correctness of the study in question. A suggestion was also made to decide on authorship before starting the study in large, multi-author papers. Also, this document outlined processes for any correction to the author list after submission of the manuscript, as well as the responsibilities of the corresponding author. Further, the requirement of authors to declare potential conflicts of interests was mandated, and a form synthesized for this purpose by the ICMJE was made available. The December 2013, 2014, 2015, 2016, and 2017 (most recent)[9] iterations of this document remain principally the same with respect to authorship. The key changes are summarized in **Fig. 1**. In our opinion, the inclusion of the latest fourth authorship criteria is especially important, as in cases of scientific misconduct detected after publication of the article, often the corresponding author and the first author are held responsible, and the remaining co-authors may shy away from the responsibilities of authorship.[10,11] Similar procedures for dealing with authorship disputes are also outlined by the COPE.[3]

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Fig. 1. Evolution of authorship criteria as per the ICMJE.
ICMJE = International Committee of Medical Journal Editors, COI = conflicts of interest.

INAPPROPRIATE AUTHORSHIP

In this era of collaborative research, where more and more scientists are coming together from different parts of the globe to work in unison, it is natural that the number of authors in a scientific paper is increasing everyday.[12-14] As is evident from the above discussion, the present ICMJE criteria very clearly define who is an author and who is not. Attributing authorship to a person who does not fulfill the four mandatory criteria is inappropriate.[9] Previous publications have discussed this issue exhaustively,[6,7,15] and we shall briefly discuss the same. "Guest" authorship refers to the practice of including influential names in one's paper in an attempt to bias the perceptions of the editor, reviewer and reader towards the validity of the work, whereas "Gift" authorship refers to the practice of naming seniors, such as the Department Chair, other institutional administrators or other colleagues as authors even when they do not fulfill the criteria for authorship. "Gift" authorship ostensibly implies an intent to get back this favour in the future, possibly by being named as a gift author themselves or earning favour in work and promotion. "Ghost" authorship refers to the practice of either leaving out the person who has done a major chunk of the presented work, such as a junior colleague or student, or omitting persons who have significantly contributed as authors but may not want to be named, such as personnel who are employees of a pharmaceutical company who may have written a manuscript on a drug trial but naming whom might raise questions about COI in relation to a drug.[6,7,15] These are summarized in **Fig. 2.** In this context, it is becoming increasingly important to declare transparently the contributions of all authors towards different aspects of a particular manuscript.[16] It is also useful to note a recent initiative, the Contributor Roles Taxonomy (CRediT), which aims to present author contributions clearly under 14 different headings, ranging from designing a study up to the stage of writing or editing a manuscript.[17,18] The order of listing authors is also important, and may be a point of conflict at a later stage when a manuscript is being written. Authorship grids to quantify the extent of contribution to each stage of a manuscript may help avoid conflicts in the order of listing authors.[15,19] Also, it may be useful to enter into a formal co-author agreement prior to initiating the work in question so that issues such as conflicted authorship do not prop up later.[20]

Literature suggests that inappropriate authorship practices are prevalent even today. In a survey of 69 respondents from an European country, nearly a third confessed to having given gift authorship, one-fifth said that they had arrangements with other colleagues for reciprocal

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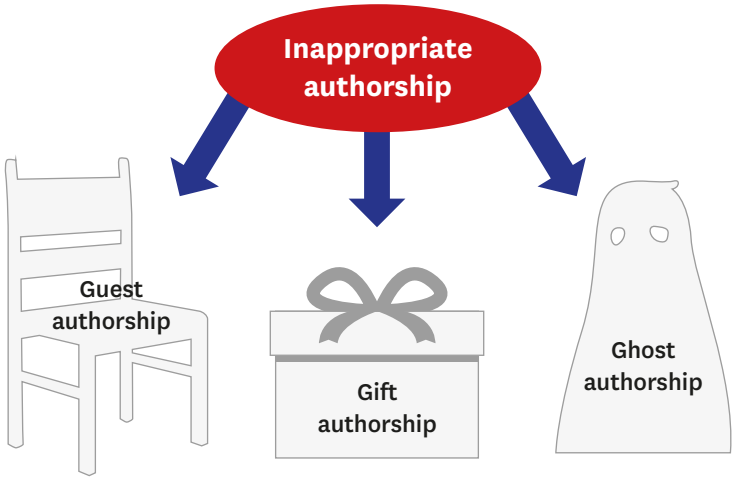

Fig. 2. Inappropriate authorship.

gift authorship, and one-half agreed that they had been victims of ghost authorship at some time. Less than half of the respondents in this study professed awareness of the ICMJE and COPE guidelines for publication ethics.[21] Another study from a Asian country surveyed nearly 63 corresponding authors regarding the attribution of authorship to nearly three hundred authors in their submitted papers.[13] Only two-thirds of them met the three ICMJE criteria for authorship,[8] and it was concerning that more than a third could be categorized as gift authors. About 5% did not even merit acknowledgement as per the ICMJE norms.[13] Another analysis of responses assessing the perceptions of guest and ghost authorship amongst peers from more than 6,000 authors who had published with two major scientific journals revealed that, while ghost authorship was considered to be an uncommon occurrence, guest authorship amongst senior authors was considered by nearly a fifth to be a prevalent issue.[22] A report analyzing the responses of more than 1,200 Chinese scientists reported the most common perceived academic misconduct amongst these scientists was the inclusion of authors in a manuscript without obtaining permission for the same, along with inappropriate appropriation of others work as one's own (plagiarism).[23] Another peculiar type of guest authorship that has been described in literature is the practice of including one's own relations as authors simply to boost their academic profile, when they do not qualify for the same by virtue of their contributions, and this should also be strongly discouraged.[24] A peculiar instance reported on the COPE website described the inclusion of a peer-reviewer in the list of authors in a revised manuscript.[25] While such instances lie in the grey area between right and wrong, in the opinion of the authors, peer reviewers should refrain from such practices, keeping in mind the requirement by the ICMJE that editors and peer reviewers should refrain from using any aspect of the manuscript in question for their personal gain.[9]

Inappropriate authorship can result in adverse results for the publication if detected. This may be pointed out either by any of the listed authors, or identified by journal editors by virtue of their vast experience.[6] If there is disagreement about the authorship of the paper, brought to the attention of the journal editor by any of the authors, then this brings the integrity of the entire work into question. The ICMJE lays down a procedure for disputes regarding authorship, wherein the authors' institution is mandated to investigate and decide regarding disputed authorship if requested to do so by the journal editor. Any change in the list of authors after initial submission or after publication (online or print) of the manuscript should be made only with the full written consent of all authors, including the author whose

name was either added or deleted.[9] The COPE recommends that changes in authorship post-publication should be accompanied by a notice of correction, and recommends retraction if while reviewing the paper in the light of such a problem, the scientific validity of the paper is also found to be questionable.[3] However, since the integrity of the publication now may be in question, the concerned journal might decide to even decide to reject a paper which is in peer review, or retract from the scientific record a published paper with disputed authorship. This is especially a consideration in view of the fact that certain instances have been reported in the literature wherein addition of authors to a scientific paper has been done at the revision stage in exchange for a price paid to an external agency which had been entrusted with the handling of the submission process to the journal, and this is discussed in more detail later.[26] Another study had analyzed over a thousand retractions on PubMed from 2013–2016, and could identify authorship issues responsible for 6% of such retractions.[27] We analyzed the retractions database of Retractionwatch.com with more than 17,000 listed retractions, and could identify more than 700 instances of retractions due to issues with authorship (**Fig. 3**). Further discussions with the creators of the database led us to conduct additional searches, which included the terms "Objections of Author(s)" along with any of these terms "Plagiarism", "Concerns/Issues about Referencing/Attributions", "Duplication of Article", "Duplication of Image", "Duplication of Data" or "Copyright Claims", as these articles could also potentially have been retracted for inappropriate authorship. Hereafter, we analyzed these results for the continent from which these were published. We found a majority of these retractions were from Asia, followed by Europe (**Figs. 4** and **5**). There may be a need for editors and experienced authors from these parts of the world to further increase awareness amongst researchers about the ICMJE guidelines in general and authorship criteria in particular.

Journals also have a responsibility to instruct their authors appropriately regarding authorship. In this regard, as an example, we reviewed the list of journals in the field of rheumatology as listed on the Scimago Journal and Country Rank website,[28] which further categorises these journals into four quartiles (Q1 to Q4) based on their Scimago Journal Rank indicator, which reflects the visibility of the journal on the Scopus database. We reviewed the instructions for authors at these journal websites for the contemporariness of authorship criteria as per the latest four authorship criteria proposed by the ICMJE guidelines.[9] We categorized our results based on whether the mentioned, mentioned but not updated (i.e., had three criteria instead of four) or whether they were not mentioned or unavailable on the website. A few of these instructions (seven out of sixty) could not be accessed, as they were not in English. The results are presented in **Fig. 6**. It was quite alarming to note that even in

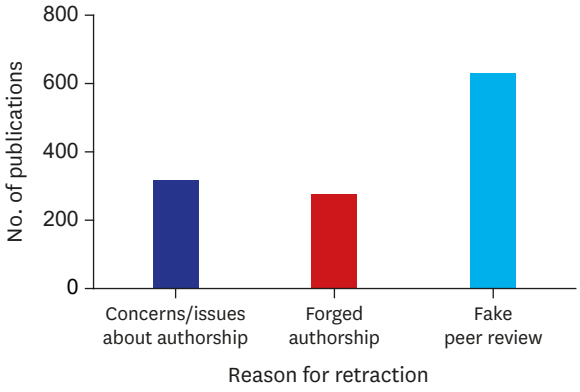

Fig. 3. Number of retractions due to specific issues related to inappropriate authorship or fake peer review. Data were searched on Retractionwatch.com retractions database (date of search: 29th June 2018).

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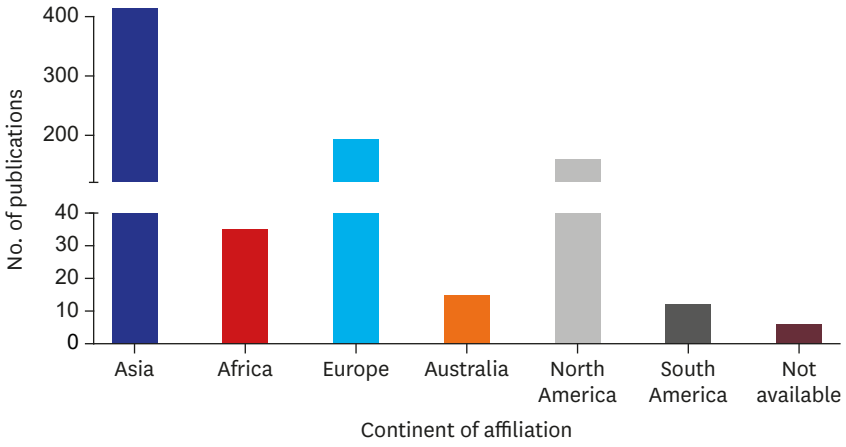

Fig. 4. Analysis of continent of affiliation for retractions due to inappropriate authorship issues. Data were searched on Retractionwatch.com retractions database (date of search: 29th June 2018). Reason of retraction listed as "Concerns/Issues about Authorship" or "Forged Authorship".

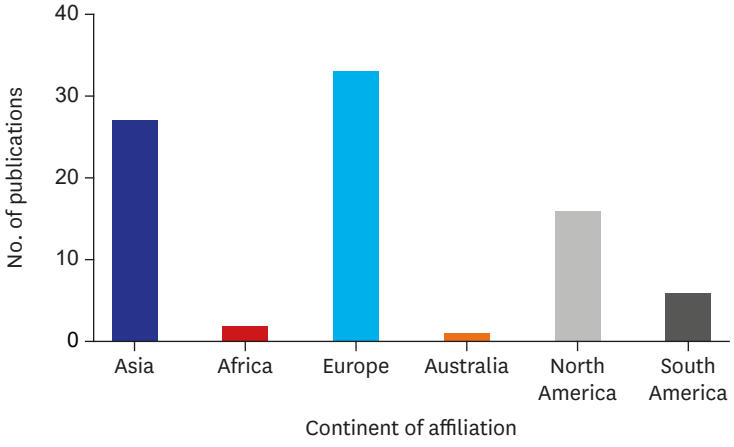

Fig. 5. Analysis of continent of affiliation for retractions due to inappropriate authorship issues, other than those represented in **Fig. 4**, identified by searching reason of retraction using the terms "Objections of Author(s)" along with any of "Plagiarism", "Concerns/Issues about Referencing/Attributions", "Duplication of Article", "Duplication of Image", "Duplication of Data" or "Copyright Claims". Data were searched on Retractionwatch.com retractions database (date of search: 29th June 2018).

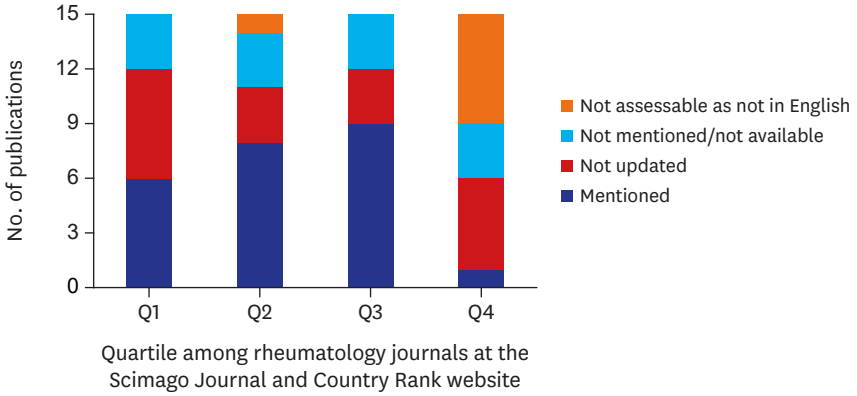

Fig. 6. Analysis of contemporariness of authorship criteria referred to in the author instructions in general medical and specialist journals. As an example, we analyzed the rheumatology journals listed at the Scimago Journal and Country Rank website, as per the quartile in which the journal is listed (Q1, Q2, Q3 or Q4) (date of search: 28th June 2018).

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the top quartile of rheumatology journals, up to two-fifth did not have updated authorship criteria. Literature suggests that the lack of updated authorship criteria may be even more widespread.[7] Therefore, there may also exist a need to generally increase awareness about the updated authorship criteria amongst journal editors and editorial members as well.

PEER REVIEW PRACTICES

In the editorial workflow commonly in practice at most journals, the corresponding author submits a manuscript on the behalf of co-authors, which is then dealt with by a handling editor, who may be the Editor-in-chief or another junior editor (Associate editor or Assistant editor). In turn, the handling editor sends the manuscript out for peer review by one or more reviewers, on the basis of whose recommendations a decision is made, further to be ratified by the Editor-in-chief before transmission of the decision to the author. Peer review forms an integral part of the assessment of the validity of a scientific paper. It refers to the evaluation of one's work by one's own peers, i.e., colleagues in the same specialty who are likely working on this area or on related areas, and therefore, are likely to have acquired expertise in the area and remain updated in the knowledge in this field. Broadly speaking, peer review can be either open or closed. In an open peer review system, the identity of the handling editors and reviewers is disclosed to the authors, whereas, in a closed peer review system, both the author and reviewer are unaware of the other's identity (double blind) or the reviewer is aware of author's identity but not the other way around (single blind).[29,30] Since a vast majority of peer review is conducted voluntarily by scientists without any additional financial remuneration, it may be difficult at times to enlist the services of peer reviewers for a particular manuscript. Therefore, it has been common practice at many journals to ask authors to suggest names of suitable reviewers for their work.[31]

Considering the importance of peer review in the ultimate decision making process for a manuscript, the integrity of peer review processes are paramount. The ICMJE prescribes the requirement for peer reviewers to be free from biases, independent in their assessment and critically evaluate the manuscripts that they review. Peer reviewers should declare COI, and if they do have any such potential concerns in mind, mention them clearly in their comments to the editor. If in doubt about COIs, it may even be prudent to discuss beforehand with the editor before proceeding for further review of the manuscript in question. Reviewers also owe the responsibility to authors to avoid discussing any aspects of a manuscript in public before the said manuscript has already been published, as well as to destroy any copies of the manuscript they have reviewed, not utilizing any such information for their personal benefit.[9]

Recent literature suggests alarming instances wherein the integrity of peer review processes has been found to be compromised. The practice of authors suggesting peer reviewer names can potentially compromise this process if such reviewers are directly assigned the manuscripts in question, with the aid of an automated manuscript submission and peer review system. Since such assignment is based on the email address provided by the author, if a fake email address was provided at this stage, it is possible that such invitations for review may be received and acted upon by the persons operating the fake email accounts, who in turn may be the authors themselves, or an external editing agency entrusted with the handling of editing and submission of a manuscript. Indeed, this is what was detected by some large publishers, wherein fake email accounts provided at the time of submission were automatically assigned manuscripts in certain highly specialized areas, and these reviews

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were returned by these "fake" reviewers very early, and, quite unsurprisingly, favourable in their comments, helping the ultimate publication of these manuscripts. The publishers in question ultimately issued retractions for such manuscripts which had been subject to peer review fraud.[31-39] Another related variant of peer review fraud is that for manuscript submission via email, wherein the authors suggest names of scientists for reviewing their manuscript, create fake profiles of such scientists with fake email addresses, promote such fake profiles by manipulating the search algorithms of commonly used online search engines, and ultimately provide favourable reviews for their manuscripts using these fake email addresses.[35] Apart from the above described types of reviewer identity fraud, reports also exist of editor's journal accounts being hacked to generate favourable decisions for manuscripts.[35,37] Another less common type of peer review fraud described in literature is that conducted by handling Editors themselves. In such instances, due to difficulties in getting reviewers for their manuscripts, the editors in question created fake email addresses operated by themselves, through which they themselves submitted reviews for manuscripts, enabling quick decision making for manuscripts handled by them. When such instances were eventually detected by the publisher, the editors in question suffered from a loss of face.[31] It is quite possible that such instances represent increasing pressures on editors to obtain timely peer review reports. When such pressures co-exist with potential financial incentives for editors to get papers published in their journals, this creates an unwarranted conflict of interest which can potentially compromise the integrity of the peer review process.[31,40] An analysis of more than 250 retraction notices for fake peer review, including from Retractionwatch.com, revealed that this was a relatively new phenomenon which had emerged in this decade alone, and numerous major publishers had fallen victim of this fraud.[41] Our own analysis of the data from the Retractionwatch database revealed more than 600 instances of fake peer review (**Fig. 3**). What was more concerning was that a vast majority of these manuscripts were from a single continent, i.e., Asia (**Fig. 7**).

While the response of certain publishers has been to abolish author-suggested reviewers altogether, this may not necessarily be a practical solution, considering the difficulties editors encounter in recruiting peer reviewers in the present times. Another pragmatic solution might be to avoid using suggested reviewers to review the manuscript for which they have been suggested, instead adding their names to the reviewer database of the journal, noting down

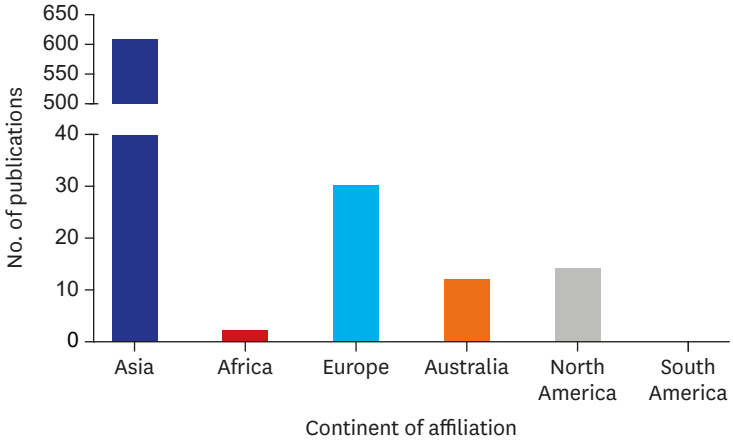

Fig. 7. Analysis of continent of affiliation for retractions due to fake peer review. Data were searched on Retractionwatch.com retractions database (date of search: 29th June 2018). Reason of retraction listed as "Fake peer review".

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their area of expertise and utilizing their services to instead review future manuscripts. Hence, editorial effort may help avoid falling prey to fake peer review.[33] Some journals now require authors and reviewers to submit institutional email addresses, however, this practice may be restrictive, limiting such privileges only to those scientists in universities.[42] In our experience, institutional emails at universities from lesser developed regions of the world may only utilize a basic email system, lacking the ease-of-use of commercial email ids, and sometimes may only be accessible while on campus. Instead, requiring authors and reviewers to declare and link a universal researcher identification such as the Open Researcher and Contributor Identifier (ORCID) may also help prove the veracity of the identity of such scientists.[33,43] Also, the use of reviewer lists from voluntary databases such as Publons, where many reviewers register profiles as well as many other journals directly upload peer reviewer names with their permission (with or without peer review reports depending on the journal policies), may increase the likelihood of identifying authentic peer reviewers, or verifying the identity of suggested peer reviewers.[44] Similar initiatives should be promoted by peer reviewers and editors together in the future. Pre-print servers are emerging as another alternative publication model for scientists, wherein they can post their manuscripts for anyone to read and criticize. Based on such review reports, the scientists can further enhance their manuscripts before submitting for formal journal publication. Reviewing the online records of such pre-publication reviews and assessing whether authors have addressed these in a submitted manuscript may help editors hasten the peer review process, however, this area needs further exploration in the field of biological sciences.[45] Post-publication peer review is another emerging development in the area of peer review, and involves commenting on published manuscripts uploaded to websites such and pubpeer.com or others, or published with certain journals, or on social media sites, often performed anonymously. While such initiatives have helped identify a large number of instances of inappropriate publication and ethical practices in the already published literature, there is more work required in this area. First, there exist instances of harsh and sometimes unwarranted criticism of published literature on such post-publication peer review sites, since the comments are generally posted anonymously. Second, editors, reviewers, and authors need to work together to establish a mechanism whereby glaring mistakes identified during post-publication peer review are able to be corrected in the published literature, so that, overall, there is a positive impact on the quality of published literature.[46] Another suggestion to deal with fraudulent peer review is to pursue the open peer review model, wherein peer reviewer names and reports are published along with the peer reviewed manuscript,[47] thereby enabling easier identification of fraudulent peer review and acting as a deterrent for the same. However, as of today, it has not been uniformly proven that open peer review produces better quality peer reviews than blinded peer review models,[47] and many genuine peer reviewers, especially those who are in the early stages of their career, would prefer to remain anonymous.[48]

Another type of fraudulent manuscript submission practice recently described in literature involves selling of authorship of manuscripts by external editing agencies. In such cases, manuscripts submitted by external editing agencies on the behalf of authors, which have undergone a round of peer review with a revision suggested by the journal editor, are then advertised to potential authors. Authorship of such manuscripts is then offered for a fee paid to the editing agency, and a change of authorship including this new author is then requested while submitting the revised manuscript.[26,49] Such practices clearly violate acceptable principles of authorship[6,9] and also subvert the peer review process. For this reason, any changes in the author list during revision of a manuscript should be carefully investigated by journal editors, and allowed only if the authors in question can adequately justify the change in the authors list.

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EXTERNAL EDITING AGENCIES AND "BROKERING" AGENCIES

Increasingly, external editing agencies are being used by authors, especially from those countries where English is not a native language or where the medium of higher education is not English, or by authors or author groups too busy with routine clinical work to devote time and due attention to manuscript writing. Therefore, it is essential to reflect on potential ethical issues arising from the use of such editing agencies. While their mandate is generally to improve the quality of English in such articles, or improve the standard of scientific writing, there are instances where such agencies have also been granted permission by authors to submit manuscripts on their behalf, as well as handle editorial queries and subsequent manuscript revisions, without any further significant input from the authors, at times even generating fake data and create manuscripts without any actual scientific work having been done.[49] As discussed previously, reports exist of such agencies generating fake peer reviewer accounts and providing favorable, doctored reviews for manuscripts submitted by themselves.[35,37] Similarly, authorship of such manuscripts may also be sold during peer review.[26,49] Such fraudulent activities of some editing agencies may be better described by the term "brokering" agencies, however, not all editing agencies indulge in such practices. Indeed, an analysis of retractions due to misconduct on PubMed did not find the use of external medical writers to be a risk factor for retraction.[50] The latest ICMJE guidelines do not mention specific considerations for the use of external editing agencies, and this issue may need to be addressed in a future revision of these guidelines. In our opinion, it is reasonable to expect authors to transparently declare at the first submission the use of an external agency in editing their manuscript. Also, it should be declared who paid for the use of such an agency, to avoid the spectre of potential "ghost" writers and their accompaniment undeclared conflicts of interest.[6] Should such an undeclared utilization of an external editing agency be later discovered, editors should pay due attention to further confirm the veracity of the manuscript, its authors and any potential attempts to disrupt ethical peer review process. Another related recent consideration is the concept of portable peer review, wherein an external peer review agency provides peer review services, which are then transferred along with the manuscript to the author's journal of choice.[51] While such peer review is ostensibly independent,[51] potential undeclared financial COI should always remain a consideration for editors whenever they encounter such manuscripts.

CONCLUSION

Authorship and peer review practices are the cornerstone of modern day scientific publishing. However, even today, some portions of the scientific community seem to have a lack of understanding of the tenets of ethical practices in authorship and peer review, as exemplified by the large number of retracted scientific publications due to these issues. Even today, some major medical and specialist journals lack updated authorship criteria. There seems to be a need to increase awareness regarding best practices in authorship and peer review amongst authors, reviewers and editors alike to avoid falling foul of such malpractices. Considering the significantly large number of retractions due to these issues from certain geographic regions of the world, young authors from these regions need to be made aware of best publication practices by means of seminars on ethical scientific conduct and writing conducted by more experienced peers. Authors should exercise caution and transparently declare the use of any external editing agency and avoid potential malpractices that may be

associated with some of these agencies. There may be a need for journals to come together and resolve to adhere to ethical principles of publishing practices akin to a recently published declaration by a group of European editors.[52,53]

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