International Journal of Research in Medical Sciences
Kaushik R. Int J Res Med Sci. 2013 Feb;1(1):1-3
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: 10.5455/2320-6012.ijrms20130201

Editorial

The "*Authorship Index*" - a simple way to measure an author's contribution to literature

Robin Kaushik*

Department of Surgery, Government Medical College and Hospital, Chandigarh, India

***Correspondence:**
Dr. Robin Kaushik,
Email: robinkaushik@yahoo.com

Writing scientific papers is an important part of 'academic' medicine, not only to present one's experience and innovations, but also to assess a person's contribution and impact on scientific Literature. In addition, publications also play a crucial role in assessing a person for jobs, promotions, or funding.[1] In the light of these facts, then, it becomes important to have a good number of publications so that one's CV becomes impressive. However, in this race to have large number of scientific publications, these facts also encourage the publication of papers with negligibly important scientific content and also the issues of gifted authorship, where a person who has not contributed significantly to the actual process of either conceptualising or writing the manuscript is acknowledged as an author for various local compulsions.

However, it is difficult to actually measure the contribution made by a particular author towards a particular article. Although there are strict criteria that are laid down for determining authorship, it is difficult to exactly assess the relative credit each author gets for a particular paper towards the total work done. As per the ICJME, *"An 'author' is generally considered to be someone who has made substantive intellectual contributions to a published study, and biomedical authorship continues to have important academic, social, and financial implications"*. He must be able to "*take responsibility for at least one component of the work, should be able to identify who is responsible for each other component, and should ideally be confident in their co-authors' ability and integrity*". In addition, the ICJME clearly states that "*Authorship credit should be based on 1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published"*.[2] There should be no other grounds on which authorship can be claimed.

Berk, in his editorial for the AJR[3] commented that "*It is inappropriate to assign coauthorship as a courtesy (honorary coauthorship), as a gift (gratuitous coauthorship), or solely because the person is a member of a team (cronyism)... is not warranted if the person served only as a department or laboratory manager, chief of the service, or chairman of the department.... Recognition and appreciation for these various services should be given in an acknowledgment*". However, the ground reality is quite different. It often becomes difficult to stick to such ideals at the risk of ruining one's daily, working relationships.

How then, can one assess the relative contributions of each author in a manuscript? As a simple rule of thumb, the order of the authors in a manuscript often indicates the contribution of each, with the first author having done most of the work , the second lesser, and so on – the so called '*sequence-determines-credit*' approach. However, this is not an absolute rule, and the order of authors is relative. Importantly, in this approach, the corresponding author (who is also considered equally important as the first author, if they are not the same person) loses credit. Another method is the '*equal contribution*' method where the authors are listed alphabetically and given equal credit.[4] Although there are a few other methods to quantify the contributions of authors, but ultimately, none is perfect.

A simple measure of the scientific content or importance of any manuscript can be determined by the quality of journal in which it has been published (i.e. the journal impact factor) and the number of times it has been cited by other authors. As is obvious, these two are inter-related, since an article that has been cited more often also helps in raising the journal's impact factor. In addition, the 'Hirsch' index (h) value of an author also gives a good measure an author's scientific value[5], and these three combined do give a good indication of an

author's overall status. But unfortunately, none of these takes into account the extent of contribution of the author to the actual article.

THE AUTHORSHIP INDEX (AI)

Having realised the difficulties in quantifying the actual contributions made by each author in a particular article, it may be better to calculate a particular author's overall contribution in his career towards scientific Literature. Here is where the 'Authorship Index' or AI comes in.

Very simply, an author gets one point for being the first author (FA) or the corresponding author (CA) for a particular article. If the author is both - the first and corresponding author, he still gets one point, not two. At any other position (OP) in the authorship sequence, he gets half a point. The total points thus gained in his bibliography are then tallied up (FA + CA + ½ OP) and divided by his total number of publications (n) and multiplied by 100 to give his AI (Table 1) over his career.

Therefore, an author with 20 publications, 10 as first author, 5 as corresponding author and 5 as an author in any other position in the author's sequence will have an AI of 87.5 [FA (10) + CA (5) + ½ OP (2.5) = 17.5 divided by 20 (n) and multiplied by 100]. Compare this with another author with 50 publications, in which there are 15 are first author, 5 corresponding author publications and 30 as author at other positions. At first sight, this author looks to be more prolific than the previous one, both in terms of the number of articles published, as well as in the number of first / corresponding authorships, but his AI works out to be 70 [FA (15) + CA (5) + ½ OP (15) = 35 divided by 50 (n) and multiplied by 100], which is lower than the previous author, thus indicating that he might not have contributed as much in his other articles.

Thus an author can have a maximum AI of 100 if he has been the first author or corresponding author in all of his articles, indicating a very active role in the authorship process. Conversely, an author with no first or corresponding authorships would have a score of 50. All authors would therefore have scores falling in between 50 to 100 AI points; the higher the score, the more chances of this person being a prolific and active author. The lower the score, the more chances of not having contributed significantly in the process of article writing. Therefore, this AI may be able to give an indirect insight into what journal editors really want – stricter authorship norms.

Table 1: Calculating the AI.

$$AI = \frac{FA + CA + \frac{1}{2} OP}{n} \times 100$$

FA = Number of times person has been first author

CA = Number of times person has been corresponding author

OP = Number of times person has been author at any other position

n = Total number of publications of the author under consideration

Note –

- If the author is both - first author as well as corresponding author for any publication, it is to be counted only once (either in FA or in CA), not in both

No system is infallible, and even this concept of AI has its drawbacks. Probably more fallacies will come to light in the long run. First of all, what constitutes a good AI? Having established that a score of 50 is 'rock bottom', what is the significance of a score of 60, or 70? May be, calculation of the AI of some senior authors in India and abroad may help answer this question. Off hand, an AI of 75 would probably represent at least half of the publications of an author being actively contributed to. The second drawback that comes to mind is that one would need access to the full bibliography of a person to calculate his AI - today, these are readily available through various providers through the internet, and so, may not actually be such a problem. Another drawback is that often, senior authors, despite having genuinely contributed to a manuscript, add their names at the end, after all the other authors, giving their junior members a chance to 'shine'. They would not get any credit for doing so in this system. However, over their career, it would cause little change to their AI, since being genuine authors/contributors, they would have written enough articles earlier, when they were at a junior level.

In some interviews, it is fast becoming the norm to present the citation status of one's publications and the impact factor of the journals in which these articles have been published, along with the 'h' index. May be the calculation of the AI will show another dimension - the proficiency of a candidate in being able to actually contribute significantly to scientific writing.

REFERENCES

1. Wren JD, Kozak KZ, Johnson KR, Deakyne SJ, Schilling LM, Dellavalle RP. The write position. A survey of perceived contributions to papers based on byline position and number of authors. EMBO Rep 2007;8:988-91.
2. Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Ethical Considerations in the Conduct and Reporting of Research: Authorship and Contributorship. Available at http://www.icmje.org/ethical_1author.html. Accessed 11 December 2012.
3. Berk RN. Irresponsible coauthorship. AJR Am J Roentgenol 1989;152:719-20.
4. Tscharntke T, Hochberg ME, Rand TA, Resh VH, Krauss J. Author sequence and credit for contributions in multiauthored publications. PLoS Biol 2007;5(1):e18. doi:10.1371/journal.pbio.0050018.
5. Hirsch JE. An index to quantify an individual's scientific research output. Proc Natl Acad Sci U S A 2005;102:16569-72.

DOI: 10.5455/2320-6012.ijrms20130201
Cite this article as: Kaushik R. The "Authorship Index" - a simple way to measure an author's contribution to literature. Int J Res Med Sci 2013;1:1-3.