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Bredan, Amin; Benamer, Hani T S; Bakoush, Omran

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LUND UNIVERSITY

PO Box 117  
221 00 Lund  
+46 46-222 00 00

EDITORIAL

## Why are journals from less-developed countries constrained to low impact factors?

Eugene Garfield's brainchild, the journal impact factor (IF), was a brilliant idea born at the dawn of the information technology revolution and has become the most widely used bibliometric tool for evaluating journals. Despite some inherent limitations and some abuse (1), it is indeed a useful and very widely used tool for comparing journals. It is an ever present concern for both authors and journals. Journals seek to raise their ranks relative to the other journals by publishing the best research submitted to them. On the other hand, authors attempt to publish their research in the most highly ranked journals they can. This editorial will focus on some issues related to making comparisons between the IFs of journals, with some emphasis on journals from less-developed nations.

We plotted the recently released 2013 IF versus rank for the 149 journals in the Web of Science category of 'medicine, general and internal' (Fig. 1). Topographically, the path to higher rank starts as a long and almost flat track (a difference of about 0.02 IF points between adjacent ranks) covering about 125 journals and reaching a maximum IF of about 3. The next part of the curve, covering about 15 journals and reaching an IF of about 7, has a slope that is over 10-fold higher (about 0.24 IF points per rank difference). Thereafter, the path becomes a steep mountain climb on which sit the top seven journals.

The top seven journals sit in an IF category of their own ranging from 54.4 to 13.2. These journals were launched between 1927 and 1988, except for *PLOS Medicine*, which was started in 2004, and *Journal of Cachexia, Sarcopenia and Muscle*, which was started in 2010. The PLOS venture was started following a petition by more than 34,000 scientists from 180 countries to promote world-wide free access to journal content (2) and has received several large donations, including 9 million dollars from the Gordon and Betty Moore Foundation (3), which kicked off the PLOS publications. The generous funding and the desire of a large part of the international community to support open access publishing were probably instrumental in the rapid success of PLOS journals. Moreover, the success of the earlier PLOS journals probably set the scene for the success of those that followed. The *Journal of Cachexia, Sarcopenia and Muscle* of the Society on Sarcopenia, Cachexia and Wasting Disorders (4) could have benefited from the support of the society's members in the form of contributions of good reviews and research papers. Importantly, the journal is described on its web site as 'the first scientific journal dedicated to research on cachexia and sarcopenia'. This implies that it found an empty niche in the range of journals and was able to fill it successfully.

The top 53 journals in the category of 'medicine, general and internal' are all from North America and Europe.

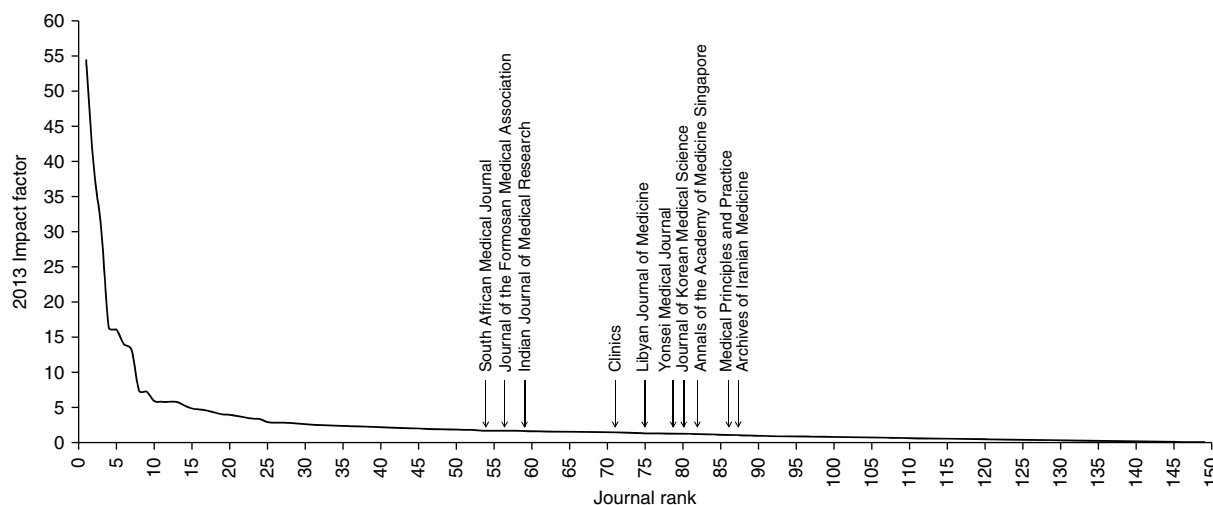


Fig. 1. Ranks of 2013 impact factors for journals in the category of 'medicine, general and internal' in the Journal Citation Reports. The top 10 journals from Africa, Asia, and South America are indicated.

This pattern is broken by the *South African Medical Journal* (rank 54, IF 1.71). Thereafter, there is no particular geographical clustering, and journals from the different continents are scattered throughout the remaining ranks. It is expected that top journals would be from developed nations, but one must ask why no journal from a less-developed nation has an IF greater than 1.7. The *Indian Journal of Medical Research* did have an IF of 2.06 in 2012, but then it slid to 1.66 in 2013. Ups and downs are extremely common in IFs, but it seems that journals from less-developed nations are unable to climb past this region of the IF spectrum. It is important to ask whether there is bias in the scientific community at large against publishing in journals from less-developed nations. First, given the possibility of publishing in two journals of equal IF, is the researcher (even from less-developed nations) more likely to choose a Western journal? Moreover, when researchers write their manuscripts and alternative references can be cited, are they more likely to cite papers published in journals with higher IF, which are generally from the Western nations? Such biases might exist, but they would not explain the whole story. We believe that the major reasons lie elsewhere.

It is well-known that one should not compare the IFs of journals in different disciplines because they have different intensities of research and citation patterns. In the same way, journal IFs should not be compared if the journals deal with different medical specialties. For example, according to the subject categories of the Journal Citation Reports, the top dermatology journal in the 2013 IF ranks is *Journal of Investigative Dermatology*, which has an IF of 6.37. By contrast, the IFs of the top four journals in the oncology category range from 23.89 to 162.50. But are journals classified by the Web of Science in one category homogeneous enough with respect to research topic? If one examines the journals listed in the category of 'medicine, internal and general', one finds that the journals are not at all homogeneous enough for across the board comparison. While some journals publish research on any topic in general medicine, for example, *Journal of Internal Medicine*, others publish only within a subcategory, such as *Palliative Medicine* and *Journal of Women's Health*.

Another aspect that can differentiate between journals that are categorized together is the scientific sub-community that is effectively served. For example, the *Irish Journal of Medical Sciences* (IF 0.57), established in 1832, provides a 'forum for the younger medical/scientific professional to enter world literature and an ideal launching platform now, as in the past, for many a young research worker'. By contrast, some journals do not claim an educational role or target a particular region. *International Journal of Clinical Practice* (IF 2.54) 'gives special priority to work that has international appeal' and 'The *Lancet* journals

are international medical journals that will consider any original contribution that advances or illuminates medical science or practice ...'. In parallel, some journals aim to serve a particular region. *South African Medical Journal* (IF 1.71) is described on its web site as a 'general medical journal publishing leading research impacting clinical care in Africa'. Likewise, *Libyan Journal of Medicine* (IF 1.33) serves in particular scientists in less-developed countries. In general, journals from Africa, Asia, and South America target their countries or regions. Health problems affecting these regions in particular, such as parasitic diseases and other diseases of poverty, are not a priority in the Western nations, and so the effective scientific communities of these journals are largely regional. So while researchers in these regions concentrate on health problems in their own regions with limited resources and publish them in journals in their regions, their publications are not going to gather many citations from scientists in the Western World, and their journals are not going to move far up the IF scale.

In general, journals that gain a widespread international audience in the world-wide scientific community gain higher IF, whereas journals with a geographically limited audience have an IF under 2. Research focusing on local issues is more likely to find its venue in a journal from the less-developed world, where the size and nature of the audience does not seem to permit journals to achieve a higher IF. We wish to emphasize that journals should not be compared indiscriminately and evaluated on the basis of the IF alone, without paying attention to factors that can limit the IF potential of journals but do not reflect negatively on journal quality. Ideally, perhaps, journals should be evaluated individually on the basis of the merits of the research they publish. But that is impossible from a practical standpoint, and the results would always be controversial. More realistically, we believe that journals should only be compared in specific groups that minimize the effects of scope, aim, and audience, and even then a lower IF does not necessarily mean the publication of lower quality research. Making comparisons across a wide and heterogeneous range or with the Olympians on the mountain top is unreasonable if not meaningless.

Amin Bredan

Department of Biomedical Molecular Biology  
Ghent University & VIB Inflammation Research Center  
Ghent, Belgium

Hani T. S. Benamer  
Neurology Department  
New Cross Hospital  
Wolverhampton, UK

*Omran Bakoush*  
 Department of Internal Medicine  
 UAE University  
 UAE  
 Department of Nephrology  
 Lund University  
 Sweden

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