

Editorial from Editorial Board Member

Thoughts on Impact Factors and Editing of Medical Journals

Publishing original papers, reviews, editorials, letters-to-the-editor, and other types of scientific articles is a crucial stage of the research process impacting author and journal profiles and research institutions ranking. A high quality publication is a means of science communication and collaboration of scientists in their field of expertise [1]. Scholarly publications facilitate comprehensive discussion of scientific achievements and prospects of future research studies, including those with international collaboration. Importantly, articles published in biomedical journals can substantially change existing medical research and education practices and suggest better quality diagnostic, preventive and curative methods.

Successful publications attracting attention of other researchers, stimulating new ideas, and becoming highly-cited boost authors' research profile, strengthen positions of institutions supporting scientific productivity, and increase chances to get funding for future research studies. Currently, in most countries, academic promotion of an individual, faculty recruitment, and distribution of financial sources for research are all subjected to the evaluation of a researcher/institution profile in world-renown indexing systems and catalogues, such as PubMed, Scopus, Index Copernicus, Institute for Scientific Information (ISI).

Over the past decades, indexes have proliferated to quantify impact of scientific productivity. Most notably, citation indexing and analysis proposed in 1950th by Eugene Garfield [2] have evolved into the expanded system of tracking citations and journal ranking through ISI [3]. Introduction of the Hirsch (h) index in 2005 [4] facilitated evaluation of an individual's research output and his/her scientific impact based on a number of highly-cited publications indexed on Scopus, ISI, or Google Scholar. The h-index is defined as h number of papers out of all publications of the author with at least h citations each. It was initially devised by J.E. Hirsch to distinguish physicists with a small number of high quality papers attracting more citations from those with a large number of papers without significant impact on the field. Simplicity of this index made it essential indicator of career advancement in other fields of science, as well as institution and journal ranking by Scopus and other leading abstracting/indexing databases. Meanwhile, several important limitations of the h-index became apparent, one being its inability to objectively measure scientific impact of young scientists and those with a small number of publications, particularly in the field of biomedicine [5]. It also became clear that comparisons between different levels of the h-index are appropriate only within certain fields of science (e.g., cardiovascular medicine, rheumatology, general medicine, etc.).

Measurement of scientific impact practised over the past decades has become an objective link between standards of education and research output in academic institutions worldwide. Notably, citation analysis of scientific publications indexed on Scopus over a 5-year period has been incorporated into the system of annual ranking of academic institutions by prestigious The Times Higher Education QS World University Rankings [6]. Today, world universities competing for leading 600 places are those with the highest number of highly-cited papers (reflected in the so called citations per faculty score), which indirectly make these universities famous all over the world (this brings points for the so called academic peer-review) and attractive for international academic and research collaboration (international factors used for a university ranking include proportion of international faculty). In 2009, Universities of Harvard, Cambridge and Yale were among 3 top academic institutions with the highest scores.

Another more research oriented project analyzing 5-year citations through Scopus database is the SCImago Institutions Rankings (SIR) [7]. Annually released reports of SIR reflect indicators of research output, citations per paper, international collaboration, and average of impact of scientific publications. The ranking is aimed to improve performance of research and academic institutions by expanding network of research collaborators and funding organizations.

To reach and hold leading positions, academics, scientists, academic and research institutions worldwide are now strongly encouraged to improve quality of research studies and to publish papers in peer-reviewed journals visible in most prestigious indexing databases, with a high submission and citation rates, rapid and fair proceeding, and constantly improving editorial policy aimed at increasing impact of scientific publications [8]. Editors of journals, in their turn, are obliged to widen readership, to constantly improve the process of peer-review and editing, and to increase the number of publications with higher scientific value.

Over the past few years, we have witnessed major interrelated changes in spreading information on scientific publications and their impact in the broad and narrow sense. Few years ago, it was difficult to imagine that social networking services such as Facebook, Twitter, and LinkedIn would be used for widening readership of scientific publications and more close collaboration between faculty of academic institutions and medical editors throughout the world. Nowadays, networking through the electronic media, video commenting on the most interesting and ground-braking publications, and sharing information on

relevant papers by emailing or sending newsletters to interested subscribers are routinely practiced by journals such as *The New England Journal of Medicine*, *The Lancet*, *British Medical Journal*. Updating and improving quality of services through journal web-sites (i.e., counting visits and downloads, providing access to PowerPoint slides for educational purposes), joining CrossRef and Google collaboration have further increased their impact. Importantly, opening access to some or all journal articles, switching from traditional print format to rapid online publication, and launching online journals have revolutionized the whole process of publishing and accelerated spreading of scientific information.

Obviously, rapid adoption of updated information into newly published articles can be reached by increasing number of issues per year (for example, *the Lancet*, *British Medical Journal* and some other high rank general medical journals publish weekly), by launching ahead of print format with citation based on the Digital Object Identifier (DOI), or by switching from traditional publishing of issues to publishing volumes. Some publishers have also switched to publishing papers immediately upon acceptance and their distribution to different issues at the end of the year (e.g., *Vascular Health and Risk Management* published by DovePress). Along with increasing chances for citations, this hybrid format of publication is also useful for preserving core values of traditional journals by placing in the same issue collection of original research papers, reviews, commentaries, letters, and meeting reports.

As a result of changes in the distribution of scientific information, new metrics of the impact have emerged and become additional tools for journal ranking. In this regard, the *immediacy index* is a prime example [9]. This index is already incorporated in the citation analysis by Thomson Reuters to reflect how rapidly, on average, journal articles are cited in the year they are published (calculated by dividing total number of citations in a given year to the number of articles published in that year). Clearly, articles published early, in the first issues of the year have more chance to be cited in that year and to increase value of the *immediacy index*. Subsequently, editors can boost the impact by publishing high priority and potentially highly citable articles in the first half of the year and by increasing frequency of issuing publications. In their turn, the authors, being aware of values of the *immediacy index* in different journals, can make more substantiated choice as to where submit their manuscripts with cutting-edge scientific information.

Seemingly, expansion of online publication highlighted importance of supplements and thematic issues. The main goal of these issues is to provide a platform for communication among experts with common scientific interests. The issues outline major achievements and unresolved issues in a particular field of science. Special issues, especially collections of invited review articles, can rapidly promote new journals. As a matter of fact, relatively new journals published by *Bentham Science* and *Bentham Open* (most of them with high impact factors), regularly publish special issues.

Review is a quintessential source of information covering diverse topics of interest for a certain group of scientists. Compared with original research papers and case reports, review articles are in an advantageous position to attract more readership and relevant citations. Today, there are many newly launched journals publishing solely reviews with rather high values of published or unofficial impact factors (e.g., *Inflammation and Allergy – Drug Targets*) achieved within a short period of time. Importantly, review articles can also increase impact of traditional journals, provided that they are of high quality and based on updated information and robust evidence. In contrast, redundant and mediocre reviews, even those written by invited world-renown experts, can leave negative impact on a journal's profile.

As is shown above, the impact of peer-reviewed journals is no longer a measure of a single metrics. Better understanding of advantages and limitations of each component of the impact is instrumental for improving quality of medical writing and editing. It should be noted that widely used for years *Journal Impact Factor* (JIF) and published annually by Thomson Reuters in JCR® is not always an appropriate measure of scientific impact [10]. JIF is the total number of citations registered by Thomson Reuters in a given year to the journal articles published in the 2 preceding years, divided by the number of source items of the journal published in that two years (i.e., reviews, original papers, short communications, case reports, and proceedings papers). While JIF rightly distinguishes top ranked general medical journals such as *The New England Journal of Medicine* (JIF 2008 – 50.017), *Journal of the American Medical Association* (31.718), *The Lancet* (28.409), its relatively low levels do not always reflect 'real' importance and the impact of specialized and local journals. For example, JIF 2008 for top rheumatological journal, *Annals of the Rheumatic Diseases*, is 7.188, which is less than values of JIF for top general medical and cardiological journals. This is why it is recommended to compare JIF values only within the frames of specialty categories. Besides, JIF does not mirror the total rate of publications and citations, the number of highly-cited papers, and the impact of publications in a period spanning for more than 2 years. In fact, journals with a small number of source items (denominator of JIF), with a modest total citation rate and a high self-citation rate can artificially reach high values of JIF. Also, journals, especially old ones, with readership from around the world are in a better position to reach a higher level of JIF. This is why, to better understand 'real' impact of a journal, authors, editors, and reviewers should pay more attention to its aims and scope and

alternative parameters of the impact (e.g., total number of publications, citations and highly-cited publications). To overcome limitations of 2-year JIF and to ensure more objectivity in the context of ranking, several journals display on their web-sites JIF averaged for 3-5-years. Additional useful information can be obtained from Scopus and other databases calculating the h-index of journals. It is also possible to rank journals using total annual citation rate provided by Scopus and ISI Web of KnowledgeSM.

Finally, Thomson Reuters introduced the *Eigenfactor* score, which differs from JIF in that it takes into account citations to papers published over a 5-year period and excludes from calculations self-citations (citation of publications published in the same journal) [11]. Interestingly, the *Eigenfactor* score calculation showed that none of the high rank biomedical journals reached score 1, suggesting that enduring impact of publications is a difficult task even for well-established traditional journals. The latter also underscores the need for further improving quality of medical writing and editing.

Obviously, quality of publications and their impact is a result of the process, where not only authors but also publishers, editors, and reviewers contribute in different ways. Tasks of publishers are to secure funding, particularly for commissioned reviews and editorials, to provide basic means for online and print publication, to implement and upgrade electronic editorial managing system, to track readership of a journal by counting downloads and citations of papers, and to support with expanding indexing services. In our times, it is hardly possible to overestimate the role of online publication, which is a prerequisite for rapid distribution of information. Publishers facing difficulties with print publication can reduce its circulation or switch to solely online publishing without any negative consequences. Moreover, overcoming the problem of delayed issuing of print editions can be beneficial for indexing on Index Medicus/MEDLINE and other catalogues and for absorbing more authors.

Publishers are responsible for recruiting distinguished members of editorial board with experience in a particular field of science and in the peer-reviewing and editing. In a highly competitive field of biomedical publishing, the recruitment of well-trained and experienced editors is becoming a driving force behind the impact. Fortunately, there are several professional associations supporting editors and publishers of biomedical journals with professional information, networking with colleagues and examining their skills (e.g., *European Association of Science Editors*, *World Association of Medical Editors*, etc.). As a separate discipline and a subject of teaching at newly established departments of medical research, medical writing and editing is being incorporated in undergraduate curricula in academic institutions worldwide. Note less importantly, postgraduate master and doctoral courses of editing are being introduced. Ideally, membership in professional associations, degree in medical editing, and the list of accomplishments in the peer-reviewing and editing should become objective criteria for recruiting/replacing editors.

Defining tasks of each editor and a member of editorial board is a crucial step towards improving performance of a journal. Equally important is to regularly evaluate profile of editors within the frames of a journal and to renew the list of editors based on the obtained results.

Publishers along with editors can increase impact by actively commissioning papers of great importance for readership. For example, local or regional medical journals inviting authors to submit papers relevant to the needs of local health care system and written by local authors facilitate an increase of impact. On the contrary, editors trying to increase the impact by inviting highly-cited authors and publishing their papers on topics of little concern for local readership can negatively influence on JIF and other parameters of the impact.

Editors are in an exceptional position to choose interesting submissions for commenting, thus furthering attention of other scientists towards original publication and increasing its impact. These commentaries can be written by editors or by external experts, provided there are appropriate editorial policy and sufficient funding for publishing commissioned editorials. It is worth noting that percentage of editorials and letters-to-the-editor can be viewed as a separate parameter of the impact (percentage of all types of papers in a journal is available in ISI Web of KnowledgeSM for the indexed journals). Unfortunately, some newly launched journals have abandoned editorials as useful means of scientific communication in an attempt to speed-up the publication process, to leave more space for original research papers, and to increase publications record.

Editors should also more actively look for and invite reviewers with required professional skills. Unambiguously, the most important role in the process of increasing quality of publications and their impact can be delegated to the reviewers. Good reviewers share authorship to some extent. As specialized experts, they are gatekeepers of journals who support editors with comprehensive information on novelty and scientific merits. Reviewers can increase impact of a manuscript by simply suggesting appropriate corrections/changes in the abstract and key words (most important parts of a paper indexed on PubMed serving as an anchor for future citation). They can also support editors with recommendation to reject papers, which do not add any valuable updated information and have little chance to have impact on the field of interest. In other words, reviewers can actively influence the decision-making and reduce burden of redundant publications. Finally, reviewers can increase the impact

of a journal by timely responding to the reviewer invitations and by providing results of rigorous review within a short period of time, thus shortening timeframe of the peer-review. Not surprisingly, there is a tendency towards shortening time allocated to the review from 21 to 7 days in several journals. The shorter duration of the peer-review, the faster distribution of the cutting-edge information, with highly likely increase of the *immediacy index*.

In conclusion, medical editing is gaining more importance as a driving force of science communication in our times. Combined efforts of publishers, editors and reviewers with better understanding of the importance of diverse components of scientific impact can speed-up scientific progress subjected to rapid distribution of valuable updated information. Authors should be provided with full access to information on impact factors of journals and characteristics of the peer-review to make more substantiated decision before submission of their future manuscripts.

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