Editorials

Impactitis: new cures for an old disease

Although impact factors for journals have been around for quite a while, there is little doubt that they are increasingly perceived as important for measuring the quality of journals and of research, both by editors and authors, sometimes to the point of obsession. In today’s rapidly changing world of scientific publication, we would like to review the impact factor concept, and critically evaluate its importance, sometimes with our tongues in our cheeks! Having concluded that the impact factor is an imperfect factor, we explore some potential alternatives.

How are impact factors calculated?
The impact factor was invented by Eugene Garfield as a simple method for comparing journals, regardless of their size. The impact factor of a journal is calculated as the number of citations in a certain year to papers in the same journal in the two years before (numerator), divided by the number of “source” (citable) items published in that journal in the same two years (denominator). To give an example, the impact factor for 2001 will be calculated from the total number of citations in 2001 to papers published in the years 2000 and 1999, divided by the total number of citable items in the years 2000 and 1999. “Citable” is important here, because not all items published in a journal are considered to be citable by ISI, The Institute for Scientific Information (www.isi.com), which is responsible for compiling the impact factors. Research papers and short reports will be counted as citable items, but editorials, reviews, and letters to the editor are usually not. However, this is not completely predictable because ISI is independent and known to have a mind of its own, and may therefore not follow the allocation of papers to certain categories by an individual journal. To give an example, we traditionally call review papers “leaders”, which may be confusing by an individual journal. To give an example, we traditionally not follow the allocation of papers to certain categories.

Where to find impact factors?
Many few journals advertise their impact factor on their websites (especially those that are proud of them!), but otherwise they are not so easy to find. The libraries of most of the bigger institutions will have a subscription to ISI (http://www.isinet.com/isi/), which provides access to the impact factors. If not, there are some websites that can be freely accessed to check on impact factors (http://www.biblioteca.cbpf.br/fator_e.html or http://www.med-rz.uni-sb.de/ubuklu/impact.html). However, these may not display the most recent impact factor data.

Are impact factors useful?
The impact factor is increasingly perceived as an important bibliometric feature to judge the quality of the output of researchers and their groups. Many researchers have to provide the impact factors of their best publications when submitting a grant proposal. For some, next year’s budget will depend on the quality (as measured by the impact factor) and quantity of the research output. These facts help to explain the growing interest in (or obsession with) the impact factor for both authors and editors. Some librarians also use the impact factor to manage their journal collections. Is this really justified?

Impact factors tell us only how often articles in a certain journal are cited in the relatively short term. There is no doubt that this is a useful measure, especially for scientific
Although one should not admit this (or should use the word “inflated” instead), the answer is yes, at least to some extent. Just imagine the effect of accepting only those papers with a certain number of citations to papers in that journal published in the past two years. Other options are to be liberal in designating short papers as letters; hoping that they will not be counted. A very elegant way is to have many editorials which are not counted, but that cite as many papers as possible from the past two years in the same journal. In addition, letters to the editor relating to previously published papers are most welcome, at least when they are published in the year after the original paper appeared. In fact, it has been noted before that such “uncitables” have an inordinate effect on the impact factor, and as a consequence, the impact factor ranking of a considerable number of journals, including the most esteemed journals, can be inflated by 30–40%. In addition, there are many other problems with impact factors as reviewed by Seglen, which we will not discuss in detail, but will only mention; namely: (1) impact factors are not statistically representative of individual journal articles; (2) impact factors correlate poorly with citations of individual articles; (3) authors use many criteria other than impact factors when submitting to journals; (4) self citations are not corrected for; (5) long articles collect more citations in the national language of the journal are preferred by the journal’s authors; (8) selective journal self citation: articles tend preferentially to cite other articles in the same journal; (9) coverage of the database is not complete; (10) the database has an English language bias and is dominated by American publications; (11) the journal set in the database may vary from year to year; (12) the impact factor is a function of the number of references/article in the research field; (13) research fields with literature that rapidly becomes obsolete are favoured; (14) the impact factor depends on dynamics (expansion or contraction) of the research field; (15) small research areas tend to lack journals with high impact; (16) relations between fields (for example, clinical versus basic research) strongly determine the journal impact factor; and (17) the citation rate of an article determines the journal impact, but not vice versa.

The impact factor is therefore clearly imperfect, and its meaning should not be overestimated. A more honest measure of the quality of a paper, rather than the impact factor of the journal it is published in, may be derived from the number of times it is cited. This information can also be retrieved from ISI through the website “Web of Science”, for which institutes need a subscription, which is unfortunate because it is very useful. This is a mandatory site for editors trying to learn from a citation analysis those papers that do well and those that do not, and for vain authors who want to know how often their papers are cited, and by whom. For authors, the mean number of citations to their paper each year (for example, calculated in the first five or 10 years after publication) might provide a fairly reliable “citation factor”.

In the past, one could argue that papers in bigger journals would provide an interesting new measure. For such a factor, but for journals, other existing bibliometric features deserve more attention. The impact factor could be based on the previous year’s articles alone, which would give an even greater weight to rapidly changing fields. This would probably not be very useful. This is a mandatory site for editors trying to learn from a citation analysis those papers that do well and those that do not, and for vain authors who want to know how often their papers are cited, and by whom. For authors, the mean number of citations to their paper each year (for example, calculated in the first five or 10 years after publication) might provide a fairly reliable “citation factor”.

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also possible to monitor which papers are electronically ordered through PubMed or other electronic libraries such as Ovid.

These novel electronic data provide very useful information on the interest that individual papers raise, and thus the journals in which they are published. Electronic access information from journals’ websites, PubMed, and Ovid could be used to compose an “access factor” for papers and thereby for journals. It is certainly true that this could at present be easily manipulated. It is not hard to imagine overzealous and frustrated editors accessing their own present be easily manipulated. It is not hard to imagine overzealous and frustrated editors accessing their own website all day. However, if the combined forces of different publishers, PubMed, and Ovid could produce a way of preventing this from being manipulated, the access factor could provide a new view on the “quality” of papers and journals.

Conclusion

The impact factor is a useful quality measure of scientific journals, but on its own provides a too limited idea on the extent to which papers in journals are being read and appreciated for daily practice. More attention should be paid to already existing alternative bibliometric scores, such as half life and total number of citations, and “electronic hit data” derived from websites should be used in an intelligent way to provide an electronic access factor. In addition, more attention should be given to the social impact of research.

More importantly, because the publication of a paper in a high impact factor journal does not generate more citations than the paper deserves (the “free ride” hypothesis), choosing to submit a paper to the journal with the proper audience should be one of the major concerns for authors. Because JCP has a wide circulation and a broad cross specialty audience, pathology papers are in good hands with us!

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