Citation, impact factor and Indian journal of surgery

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ABSTRACT
Market economy, WTO issues and globalisation are some of the phrases on the tongue of people these days. Parallel to that in the scientific field, people have started talking about, impact factor, citation index etc. Scientists have started evaluating the scientific journals, scientific articles and even scientific institutions in terms of these parameters. The increasing awareness of journal impact factor and the possibility of their use in evaluation have started changing scientist's publication behavior while selecting the journal to report their work. They may choose a journal of high impact often at the cost of a specialist journal which might actually be more appropriate to publish their work. An attempt has been made to create awareness about these and also the significance of these terms in relation to Indian Journal of Surgery is discussed.

KEY WORDS
Citation Index, Impact Factor, Indexing, Citation.

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INTRODUCTION
Publication of papers / scientific articles is important to share experiences and create a platform for future generations to which they can refer if needed. Presently the publications are important for other reasons too viz. carrier advancement, competitive grants, awards etc. Crucial decision for every one writing an article is where to publish. In the absence of any other suitable parameter the choice of journal is decided by its “Impact Factor”. In the scientific field, people have started talking about impact factor, citation index etc. and scientists have started evaluating the quality of scientific journals and the articles published there in reference to these terms. In this game of citation numbers and impact factor Indian journals are far behind.

It is not very long when “Indexing” of journal was a status symbol. The journal was judged by the fact whether it was indexed or not. New journals arriving on the scene used to loudly announce that the journal was indexed and older journals use to display their index number proudly on the cover page. One can, if interested, verify these statements from a library. Even Indian journal of Surgery was announcing this. To the people, in that time, it meant that the article had more weight age, was probably cited and certainly listed in the Index Medicus. People preferred indexed journals to report their work because recognition had only that way to come. India was no exception to it. It acted both ways. Several publications relevant to Indian subcontinent were published in those indexed journals (published out side India) which were not easily accessible and went unnoticed by people at home who probably needed them more. Even good articles published in Indian journals were not given importance because those were published in India. I am referring to articles published on amoebiasis, abdominal tuberculosis, bone tuberculosis, malaria etc.

There was a time when accessibility to scientific work was limited. Either it was not available or was available at a premium which several people could not afford. The situation is totally different now due to advancements made in information technology. The information can be easily accessed. Many journals are available on line and relevant published literature can
be searched and scanned easily. However the status symbols like impact factor, citation index etc. continue to decorate journals and people assess the quality of journals with these parameters.¹

WHAT IS INDEXING?

An index is typically an alphabetical list with references to where the names, subjects etc are mentioned in a book. Besides indexing of a scientific paper includes information about where to find it i.e. title, author(s), name of journal, its year of publication, key words and at times references cited in the paper. Extensive indexing involves enumeration of the references cited in a particular article and is used to generate citation statistics. This in turn forms the bases of Science Citation Index (SCI) and journal citation reports.

WHAT IS IMPACT FACTOR?

Journal impact factor (IF) was introduced in 1970s to rank different journals by citation analysis and help librarians to make decisions concerning journal subscriptions. This in turn was picked up by publishing houses, in market economies, to enhance their advertising revenues by promoting sales. A cascading effect was eventually seen and IF became a convenient tool to assess the quality of scientific work.

The IF was first calculated by Institute of Scientific Information (ISI) – an organization based at Philadelphia, USA. The organisation continuously records scientific citations as represented by the reference lists of articles from a large number of the world’s scientific journals. The references are re-arranged in the database to show how many times each publication has been cited within a certain period and by whom. The results are published as the Science Citation Index (SCI) which is a commercial property of the Institute of Scientific Information. On the basis of SCI and author’s publication lists, the annual citation rate of papers by an author can thus be calculated. Similarly the citation rate of a scientific journal – the journal impact factor can also be calculated.

The IF of a journal is an average number of citations of articles from a journal, in all journals and is believed to be a measure of quality of the journal.² IF is calculated by taking the number of all citations of a particular journal for two previous years and dividing this by the total number of article published in the journal during that time. The supposition is that citing occurs most frequently during this time. Only article that are cited within two years after its publication contribute to the impact factor.

It has been noted that distribution of absolute values of IF vary widely among disciplines (even in bio-medical subgroup) from hundredths of a unit to more than 40 meaning thereby that some journals are thousands time more important than others. The review journals have higher IF than journals carrying original research articles.

CONSEQUENCES OF IMPACT FACTOR

Initially source items counts in the Journal Citation reports included number of original research articles, technical notes, reviews and papers presented as proceedings. The counts did not include editorials and letters. Editorials, book reviews etc. previously regarded as non-source items have been re-classified as source items and some items previously classified as source has been included in non-source category so as to favorably alter the numerator and denominators for IF calculations. The total number of pages in a journal might have remained the same but the contents have been drastically altered.

The impact factor thus influenced not only the sales of the journals but also the editorial policies of the journals.³ Several journals have started publishing review, mini-reviews or their equivalents like CME articles, updates, and current concept articles etc. which attract citations more rapidly and in large numbers. The citations in the comments on the article (letters) are also being counted for calculating IF.

People have spotted a simpler and more effective approach which allows them to publish in appropriate places that is journals of their specialty (but having low IF) and still get higher ratings.⁴ The institutional policies on publishing the work - choice of journal, self citation and ability to organise a team (read network) can greatly influence IF. As a consequence the ranking of many journals has changed since 1981 when these rankings came into practice for the first time.⁵

DISCUSSION

Evaluating scientific quality is a difficult problem with no standard solution. There are >100,000 scientific journals and the number of journal articles doubles every 15 years. The number of journals is such that a determined author will almost invariably publish a specific article somewhere irrespective of the quality. The explosion in journal quantity (many of which have
IFs of zero when rounded to one decimal place) has created the opportunity to enjoy the advantages of variety press with the face validity of peer review. Many of these journals are supported by the influence of faculty members who are editors or authors and libraries have mandatory subscriptions for that. In this game of citation numbers and impact factor, no matter how these are obtained by journals, winner are always a few journals mostly from North America and Western Europe, while the losers are invariably from developing countries.

There may be some truth in the above observations but actual situation is totally different. There are several medical specialties, many of them clinical like hand surgery, orthopedics, plastic surgery, leprosy, geriatrics, rehabilitation medicine etc. in which journals having IF 2 either do not exist or few if at all. It was observed that a survey of intramural NIH scientists (including molecular and cellular biochemists, immunologists, geneticists, neurobiologists and clinical and behavioral researchers) has revealed that citation frequency and IF were poor indicators of prestige journals. This is probably true for other specialties also.

Science citation index includes only about 5000 journals of an estimated 126,000 (less than 4%). The inclusion criteria for the index are not very clear since many of listed journals have very low impact factors suggesting that a citation rate alone may not be a key factor for inclusion. IF assigned to USA based publications have been approximately 30% higher than those given to publications from elsewhere due to a higher frequency of self citation and colleague citation. The journals not included in the SCI database are often crudely referred to as having no IF (? Zero). This is far from true.

The citations to a paper do not depend upon the journal impact factor although journal impact factor does depend upon citations. The citations depend mainly on theoretical and practical significance of the research reported in the paper, its immediate significance or its usefulness in future research. It is not necessary that publication in high IF journal enhances citation rate. The article gets its due credit irrespective of its publishing journal if found “Useful” enough to be cited. The arguments about visibility are not valid once the article is indexed as it can get mentioned by several portals which index articles. The type of research being reported can affect the IF because of the citation limitation, general journals having higher impact factors than specialist journals because of the larger pool for citation. The super-specialties have fewer technical people who can understand the contents of specialty journals and use them. This is likely to reflect in IF of those specialty journals.

Language barrier also come in the way of IF of journals. English predominates probably because English speaking people are more in contemporary scientific community. Vernacular journals being of primary interest to the local people, the selection policy of Science Citation Index is deliberately slanted towards material most widely used. As a result the relevant information is confined and not properly disseminated which should have been in the interest of the community. Classical example is the work of Carayon on neural damage in leprosy (in French) which has not been read and referred widely except for few article published in English. Observation made on Leprosy in Brazil (in Spanish), China (in Chinese) and Japan (in Japanese) had the same fate. English summary of the work is the only tool which introduces this work to English speaking people.

When the citation patterns of some reputed journals was examined it was noted that citations of individual article in a journal of high IF had a skewed distribution. A few article had many citations and the rest were sparsely cited and virtually there was no correlation between citation frequency of a certain article and IF of the journal in which it was published. Others have also observed that articles contribute unevenly to the impact of journal and reported that most cited half of articles are cited, on average, 10 times as often as the least cited half. Assigning the same score (IF) to all article masks this enormous difference – exactly opposite to what is intended. Even the uncited articles are given full credit for the impact of few highly cited articles that predominantly determine the value of IF. Also the correlation between IF and actual citation rate of articles from individual scientists is often poor.

IF creates a tendency to treat clinical journals as less important. It is difficult to publish a clinical study fast enough to reward the source article with a citation within two years. A study inspired by a clinical article requires ethical sanction, consecutive patients, treatment alternatives and follow-ups taking their own time. In addition time is taken by the journal for peer review and publication which may amount to 25% of total lapsed time between generation of hypothesis and publication of results.

Quality plays a small part in determining IF. Habits to cite articles published within 2 years determine IF.
thereby favoring research areas that generate many short-term studies. These studies may be half-baked, may not have any long-term relevance, add to volume of the published literature and fade out with time. Citation impact is primarily a measure of scientific utility rather than scientific quality and the author’s selection of references is subject to strong biases unrelated to quality. It may be more appropriate to judge the journals by criteria other than citation data. Journal prestige rather than journal impact appears to more valid criteria.

It was also noted\(^8\) that scientific authors do not necessarily publish their most citable work in journals of high impact, nor does their article necessarily match IF of journals they appear in. Although some authors may take journals IF into consideration while submitting an article, other factors are probably also important viz. journal’s subject area, its relevance to author’s specialty, fairness and rapidity of the editorial process, publication lag and publication cost. The question remains that why people continue to look for the impact? The answer probably is that as long as there are people to judge science by its wrapping rather than by its contents, one cannot afford to take any chances. In our country some or nearly all the best science appears in high impact journals. This has probably some thing to do with a carving for recognition also. Until unless a work done in India is recognized in west, it is not given its due acclaim in our country.\(^11\)

The citations depend mainly on theoretical and practical significance of the research reported in the paper, its immediate significance or its usefulness in future research.\(^9\) Besides judging the quality dimensions of research out put, citation count is also an useful indicator for identifying the pockets of excellence in research. Citation count seems to be a more reliable indicator of a paper than the journal impact factor. For these reasons journal visibility is very important. There has been a new surge towards dissemination of published articles through open archives, institutional archives and databases so as to enhance international visibility.\(^12\)

There is no alternative to assessing the research work purely on the bases of its contents. Citation and IF based parameters cannot substitute judgment based on a wider understanding of work.\(^13\) One can therefore conclude that direct comparison between journals on the basis of total number of citations alone is not correct because it is influenced by a variety of factors like journal format and content, appropriateness of article classification and discipline specific citation tendencies. The two year period taken as cut off line is rather arbitrary and only serves the purpose of reflecting immediacy of a journal impact. The scientific value of this time constrained index is apparently suboptimal, many important papers achieving their maximal scientific impact outside this time frame.\(^14\) Those who use IF for purposes other than journal comparison have failed to appreciate its original intended use. Even comparison of journals is not entirely valid if IF alone is used for comparison.

The citation rate of an article may increase IF of a journal but not vice versa. Indian Journal of Surgery has no impact factor but is getting relatively popular among scientific community interested in surgery, at least in our country probably because of its improved appearance, being less expensive, easily accessible and most importantly relating itself to Indian scenario. It is expected to play an important role in timely dissemination of information and address to the problems of our country. These are reasons enough to continue with the journal and patronize it rather looking for impact factors elsewhere. The obsessive desire to publish in high IF journals is based on the prejudice that high quality research published in national journal does not get cited due to poor visibility. Alternative is to provide access to publications via internet and other databases. The initial investment may appear more but has long term benefits. If good papers are published in India quality of our journals will improve. This should be a national endeavor. While the foundations of the scientific reputation of a country are established by the quality of work carried out in her institutions, national journals are expected to carry their achievements to the rest of the world. The need for a strong national journal is an issue on which there cannot be two opinions. A weak indigenous scholarly communication starved of best work eventually affects a country’s science and technology. This is another form of brain drain.\(^11\)

Publication of medical research is more complex because research has impact on human health. The publication priority for major impact journals may not be the same as that of our country. For this reason alone we need to have our own national journal to create awareness and offer solutions to our own medical problems. However these journals are expected to have high standards of publications, peer review, correct references, good quality of copy editing and of course the visibility by making them available on the web for the world to read and cite. Same is true for
Indian Journal of Surgery which has come up to a level. What is needed is “Quality papers”. Journal cannot continue to maintain high standards without active support of scientists doing quality research. A little sacrifice from us will go a long way not only to enhance the status (read Citation index or Impact factor what so ever excites you) but also the popularity of the journal. It is all the more needed because of high costs of foreign journals many of them not available on line, non-availability of full text on line and delay in arrivals.

REFERENCES

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Announcements

Journal is pleased to announce availability of its full text its own website (www.indianjsurg.com).

The IJS website has many features such as

- Free full text availability of articles
- Direct link to abstracts and full text from the cited references
- Link from text of articles to various databases and search engines
- Facility to submit comments on articles
- Email notifications on new issue release
- Statistics of articles download and visits