

**THE SCENARIO OF PHARMACY JOURNALS WITH SPECIAL EMPHASIS ON
IMPACT FACTOR**

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ABSTRACT

The Impact Factor of a journal reflects the frequency with which the journal's articles are cited in the scientific literature. It provides a quantitative tool for ranking, evaluating, categorizing and comparing journals worldwide. Along with the impact factor, another term citation index rates the journal articles. It counts for an individual article, an author and a journal altogether. In our country, ranking, rating of pharmacy and scientific journals is lagging far behind as compared to international journals. The main reasons are comparatively low content value and low economic status in our country. Therefore, we need to increase the research work and publicity of our journals and make them available online which reduces the cost as well.

Keywords: Impact factor, Citation index rate, Journal

INTRODUCTION

To publish scientific articles is important with a view to create a platform to share experiences and refer to those articles or journals in which they are published as a guiding light for the future generations. When we talk about the quality of articles, the most important parameters to be considered are Impact Factor and Citation Index which serves as a good technique for scientific evaluation. There are more than lakhs and lakhs of scientific journals and the number of journal articles doubles every 15 years. But in India the impact factor of pharmacy journals does not stand face to face most of the International journals. The impact factor is a measure reflecting the average number of citations to recent articles published in science and social science journals. It is frequently used as a proxy for the relative importance of a journal within its field, and the journals with higher impact factors deemed to be more important than those with lower ones. The impact factor was devised by Eugene Garfield, the founder of the Institute for Scientific Information (ISI) now part of Thomson Reuters. Impact factors are calculated yearly for those journals that are indexed in Thomson Reuters Journal Citation.

What is an Impact Factor?

In many countries, Impact Factor (IF) is one of the criteria applied to evaluate not only the status of scientific journals, but also the publication output of scientists. In these evaluation exercises, Impact Factor is frequently considered as an indicator of research quality and scientific excellence. Sometimes, publication in mainstream journals or impact journals defined as those with an IF, i.e. those covered by the Journal Citation Reports used as the only evaluation criteria in such a way that scientific tribunals pay more attention to the IF of the journal than to the quality of the scientific contribution itself. Impact factor in simple terms indicates the rating of journal articles. It has been defined by different experts since 1960s. Dr. Eugene Garfield who was the founder of the Institute for Scientific Information, currently the chairman Emeritus of Thomson Scientific, Philadelphia first mentioned the idea of an Impact Factor in Science in 1955. Presently, Leo Egghe interprets the impact factor of a journal as the average of a number of independent and identically distributed random variables. Each random variable represents the number of citations of one of the articles published in the journal. Impact factors are

calculated yearly for those journals that are indexed in Thomsom Reuter's Journal Citation Reports which provides a systematic, objective means to evaluate

the world's leading research journals showing the most published articles in a field.

According to the Institute of Scientific Information (ISI) the Impact Factor of a journal is calculated as follows:

$$\text{Impact Factor} = \frac{\text{Number of citations to the previous two years articles in the calculating year}}{\text{Number of article published in the previous two year citable}}$$

The Present impact factor journals hold for the year 2009. The 2009 impact factor of a journal has been calculated as follows:-

A = B/C = 2009 Impact Factor.

A = total cites in 2009.

B = 2009 Cites articles published in 2007 - 08 (this is a subject of A)

C = Number of articles published in 2007-08.

(The impact factor 2010 will be actually published in 2011. Similarly, the impact factor 2011 will be published in 2012).

New journals which are indexed from their first published issue, will receive an Impact factor after two years of indexing in this case, the citations to the year prior to Volume 1, and the number of articles published in the year prior to Volume 1 are known zero values. Journals that are indexed starting with a volume other than the first volume will not get an Impact factor until they have been indexed for three years.

Annuals and other irregular publications sometimes publish no items in a particular year affecting the count. The Impact factor relates to a specific time period, it is possible to calculate it for any desired period, and the Journal Citation Reports (JCR) also includes a 5-year Impact factor. The JCR shows rankings of journals by impact factor, if desired by discipline, such as organic chemistry or psychiatry.

Merits

- 1) It provides quantitative tool for ranking, evaluating, categorizing and comparing journals.
- 2) It provides librarians and researchers a tool for the management of library journal collection.
- 3) There have been many innovative applications of journal Impact factors. The most common involve market research for publishers and others.
- 4) It eliminates some of the bias of such counts which favour large journals over small ones or frequently issued journals over less frequently issued ones and of older journals over newer one.
- 5) It may also serve to advertisers interested in evaluating the potential of a specific journal.
- 6) the most recent use of impact factor is in the process of academic evaluation.

Limitations

- 1) A little change affects the Impact factor for two years after the change is made.
- 2) Different specialties exhibit different ranges of peak impact.
- 3) It does not distinguish between letters, reviews or original research.
- 4) It has inadequate International coverage.
- 5) The coverage is very uneven
- 6) Very few publications from languages other than English are included and very few journals from the less developed countries.

Validity

1. The impact factor is highly discipline-dependent. The percentage of total citations occurring in the first two years after publication varies highly among disciplines from 1-3 percent in the mathematical and physical sciences to 5-8 percent in the biological sciences.
2. The impact factor could not be reproduced in an independent audit.
3. The impact factor refers to the average number of citations per paper, but this is not a normal distribution. It is rather a Bradford distribution, as predicted by theory. Being an arithmetic mean, the impact factor therefore is not a valid representation of this distribution and unfit for citation evaluation.
4. In the short term especially in the case of low-impact-factor journals many of the citations to a certain article are made in

papers written by the author(s) of the original article. This means that counting citations may be independent of the real "impact" of the work among investigators. Garfield, however, maintains that this phenomenon hardly influences a journal's impact factor. Moreover, a study of author self-citations in diabetes literature found that the frequency of author self-citation was not associated with the quality of publications. Similarly, journal self-citation is common in journals dealing in specialized topics having high overlap in readership and authors, and is not necessarily a sign of low quality or manipulation.

5. Journal ranking lists constructed based on the impact factor only moderately correlate with journal ranking lists based on the results of an expert survey.

Citation Index

Citations symbolize the association of scientific ideas. The references that research authors cite in their papers make explicit links between their current research and prior work in the scientific literature archive. Citation in simple language means a note accompanying an award. It is the process of citing the author, year, title and locus of publication (journal, book or other) of a source used in a published work. It counts for

- 1) An individual article (how often it was cited).
- 2) An author (total citations or average citation count per article).
- 3) A journal (average citation count for the articles in the journal).

Indexing means an alphabetical list with reference to where the names, subjects, references etc. are mentioned in a book. Indexing of a scientific paper includes information about where to find it i.e. title, author(s), name of journal, its year of publication, keywords and at times references cited in the paper. Citation indexing is a way to look forward in the literature from the starting point of a particular paper or groups of papers. For e.g. If we have an excellent paper on a particular topic that was published in 2008, we can use science citation Index to find papers published after 2008 that cited that paper. So, by searching for latter papers citing our known paper, we can find more documents on the same topic without using any keywords or subject terms. Citation searching allows us to move forward in time by finding newer papers that cite earlier papers. The

1st citation indices were legal citators such as shepards citations.

Manipulations of the impact factor

1. In 2007, the specialist journal *Folia Phoniatica et Logopaedica*, with an impact factor of 0.66, published an editorial that cited all its articles from 2005 to 2006 in a protest against the absurd use of the impact factor. The large number of citations meant that the Impact factor for that journal increased to 1.44. As a result of the increase, the journal was not included in the 2008 and 2009 *Journal Citation Reports*.
2. In 2008, a single article "A short history of SHELX" included a sentence that essentially instructs readers to cite the paper: "This paper could serve as a general literature citation when one or more of the open-source SHELX programs are employed in the course of a crystal-structure determination". This article received more than 6,600 citations. As a consequence, the impact factor of the journal *Acta Crystallographica Section A* rise from 2.051 in 2008 to 49.926 in 2009, more than *Nature* (31.434) and *Science* (28.103). The second most cited article in *Acta Crystallographica Section A* in 2008 had only 28 citations.

Incorrect application of Impact factor

The IF may be incorrectly applied to evaluate the significance of an individual publication or to evaluate an individual researcher. This does not work well since a small number of publications are cited much more than the majority for example, about 90% of Nature's 2004 Impact factor was based on only a quarter of its publications and thus the importance of any one publication will be different from and in most cases less than, the overall number.

The Impact factor, however, averages over all articles and thus underestimates the citations of the most cited articles while exaggerating the number of citations of majority of articles. Consequently, the Higher Education Funding Council for England was urged by the House of Commons Science and Technology Select Committee to remind Research Assessment Exercise panels that they are obliged to assess the quality of the content of individual articles not the reputation of the journal in which they are published.

Terminologies Associated with Journal Impact Factor:

There are many terminologies associated with journal Impact factor. Amongst all, few important terminologies associated with it are as follows:

- (i) **ISSN:** - The ISSN code stands for International Standard Serial Number. It is a unique 8 digit number divided by a hyphen into 4 digit numbers. The last digit which may be 0-9 or an x is a check digit. This code is used to identify a print or electronic periodical publication. The ISSN system was 1st drafted as an International Standard in 1975.
- (ii) **ISBN:** - The ISBN code stands for International Standard Book Number. The system is a unique numeric commercial book identifier based upon the 9 digit Standard Book Numbering (SBN) code created by Gordon Forster. The 10 digit ISBN format was developed by the International and was published in 1970 as International Standard ISO 2108. Currently the ISO's TC 46/SC9 is responsible for the ISBN. Since, January 2007 ISBNs have contained 13 digit, a format that is compatible with Bookland EAN - 13s. Occasionally, a book may appear without a printed ISBN if it is printed privately or the author does not follow the usual ISBN procedure however this is usually latter rectified.
- (iii) **Total Cites:** Total number of times each journal has been cited by all journals included in the database within the current JCR year.
- (iv) **Five Years Impact Factor:** The 5 year impact factor is the average number of times articles from the journal published in the last 5 years have been cited in the JCR year.
- (v) **Eigen factor score and Article Influence score:** The Eigen factor score is rating of the total importance of a scientific journal. As a measure of importance, the eigen factor score scales with the size of a journal. Two important parameters to measure the journal impact factor are
 - (i) **h-index:** The Hirsch index attempts to measure both the scientific productivity and the apparent scientific impact of a scientist. The index is based on the set of the scientist's most citations that they have received in other people's publications. The index can also be applied to the productivity and the scientific impact of a group of such as department or university or country. This index was suggested by Jorge E. Hirsch as a tool for determining theoretical physicists relative quality.
 - (ii) **g-index:** The g-index is an index for quantifying the science productivity of physicists and other

scientists based on their publication record. It was suggested by Leo Egghe in 2006. The index is calculated based on the distribution of citations received by a given researcher's publications.

- (vi) **Immediacy Index:** The immediacy index measures the frequency of citation of an article from a journal within the same year as publication. The immediacy index is calculated based on the papers published in a single calendar year. Example, The 2009 immediacy index for a journal would be calculated as follows:-

A = the number of times articles published in 2009 were cited in indexed journals during 2009.

B = the number of articles, reviews, proceedings or notes published in 2009.

Therefore, 2009 Immediacy Index = A/B

- (vii) **Serial item and Contribution Identifier:** SICI is a code used for the identification of specific volumes, articles or other identifiable parts of a periodical.

Status of Indian Publications in Pharmaceutical Sciences:

India's record in pharmacy field is somewhere between poor and dreadful. Indian pharmaceutical science papers are published in journals but with a low Impact factor as compared to many International journals. The 2009 Impact factor of few Pharmacy journals published from India and from other countries is presented in Table 1 and Table 2. Such variations are seen because more weight age is put on the International journals in comparison to the Indian journals in our country as well as worldwide. Researchers want recognition of their innovations from the scientific community and at the same time from the employers. But, as more weight age is given to International publications while considering contributions during service period, the tendency or instinct in publishing in national journals becomes significantly less. Since, most of the journals are now available online therefore; the difference from circulation point of view should have less impact on whether the publication is national or international. Besides, scientific journals from India are mostly published by Registered Scientific Societies but are not widely circulated globally, moreover, as mostly in Institutions, UGC or other regulatory bodies have recommended the books and journals published internationally and reasonably, Indian researchers don't want to publish their articles in Indian journals. The results lack of its content value and also the economic status, which actually have importance in a developing country like India. Even language restrictions come in the way of Impact factor of

journals. English predominates worldwide probably because English speaking people are more in contemporary scientific community. In our country though English is the official language but vernacular journals are of primary interest to the people of different localities in our country. However, in order to improve the quality, rating and ranking of our Indian pharmacy journals, the measures to be taken that include,

1. The publishers should make the pharmacy journals approachable to large readers by making them available online as e-journals; as a result more people will recommend the published work which as a result increases the Impact factor of the journals also leads to its cost reduction.
2. The standard of the journal articles should be maintained with proper selection of manuscripts and scientists, scholars across the globe could be incorporated in the editorial board.
3. Submission of articles in the form of hard copies or in soft copies decreases the workload and increases the publication time.
4. Distributers should come forward to market the Indian journals.

5. Processing fee, if any, as applicable should be less and affordable to the researchers.
6. Processing time of consideration for publication should be less and responses should be prompt.

CONCLUSION

There are many conflicting opinions about Impact factors and citation indexing. Both impact factor and citation indexes are not a perfect tool to measure the quality of articles but there is nothing better and it has the advantage of already being in existence and is therefore a good technique for scientific evaluation. 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. That is the reason, why alone we need to have our over national journal to create awareness and offer solutions to our own medical problems. The citations to a paper depend mainly on the theoretical and practical significance of the research reported in the paper, or its usefulness for future purpose. Journals cannot continue to maintain high standards without active support of scientists doing quality research. A little effort and dedication from us will go a long way to increase the status and popularity of the journals.

Table 1: Impact Factor of Pharmacy Journals published from India

Journals	ISSN	Total Cites	Impact factor	Articles
Indian J Pharm Edu Res	0019-5464	50	0.15	140
Indian J Pharmacol	0253-7613	71	0.267	128

Table 2: Impact factor of few pharmacy journals published from other countries

Journals	ISSN	Total Cites	Impact factor	Articles
Advanced drug Delivery Reviews	0169-409 x	14555	11.957	34
Annual review of Pharmacology and Toxicology	0362-1642	6749	22.468	36
Biochem Pharmacol	0006-2952	23088	4.254	80
British Journal of Pharmacology	0007-1188	24221	5.204	198
Current Drug Targets	1389-4501	2576	3.932	430
Curr opinion Pharmacol	1471-4892	4012	7.259	93
Drug resistance Updates	1368-7646	1654	12.581	58
Euro J Pharm Biopharm	0939-6411	5741	3.151	98
Euro J Pharm Sci	0928-0987	4609	2.608	110
J Pharm Sci- US	0022-3549	13857	2.906	42

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