

THE IMPACT FACTOR : DOES IT MEASURE THE QUALITY OF RESEARCH?

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Doing a research with a sound and valid statistical design, representative sample size, proper data collection and rigorous experiment techniques is important but equally important is dissemination of the study results. Different factors one considers while publishing research are relevancy of the journal, waiting time for publication, cost of publication, indexation of a journal and the Impact Factor. The value of a journal is measured in terms of its indexation. There are many indexation platforms for medical journals such as Institute of Scientific Information (ISI), Index Copernicus International, Medline, PubMed, EMBASE, Excerpta Medica of Netherlands and World Health Organization Index Medicus.^{1,2} Till now the most commonly used and agreed gauge of measuring the quality of a research article, with its own controversies, is the Impact Factor; So most of the authors consider the Impact Factor of a journal before submitting their research work.

Impact Factor of a journal reflects the frequency with which an article published in certain journal is cited in other scientific writings. A journal needs to be indexed with ISI to qualify for establishing its Impact Factor. Journal Impact Factor was developed by the ISI of Philadelphia, PA, USA; ISI was launched in 1958 with an aim to create a database listing the content of more than 4,000 scientific journals published worldwide. ISI has no official governmental, scientific, or academic status. It is not a public service corporation; rather it is a private completely independent, non-governmental, commercial company.

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With the database, ISI creates products for sale. It provides information to scientific community on payment. The original purpose of the database was to sell current listings of selected topics in the world's scientific literature to researchers who wanted to stay updated with the scientific developments in their field of specialty. In a bid to develop a mechanism for rating the research included in the database, ISI developed the Impact Factor. The Journal Impact Factor is the average number of times that articles published in the past two years from a journal have been cited in the journal citation Reports (JCR) of the third year. The Impact Factor of a journal reflects the frequency with which a journal's articles are cited in the scientific literature. It is derived by dividing the number of citations in the JCR year by the total number of articles published in the previous two years.³

An Impact Factor of 1.0 means that, on average, the articles published one or two years ago have been cited one time. An Impact Factor of 5.5 means that, on average, the articles published one or two years ago have been cited five and a half times. Assume that there are a total 1000 citations to a journal. Out of these 500 are during 2014 and 2015 and the journal published 100 articles during these two years. So the 2 years Impact Factor of this journal will be $500/100=5$, meaning that, on average, the articles published one or two years ago have been cited 5 times. The citing works may or may not be articles published in the same journal. However, most citing works are from different journals, proceedings, or books indexed by Web of Science.⁴

Conceptually developed in the 1960s, Impact Factor has gained acceptance as a quantitative measure of journal quality.³ Impact Factor has various uses; the librarians use it for selecting journals for the library. The universities, scientific, and research organizations use Impact

Factor to rate the research of their employees. Some of the institutions use Impact Factor for honoring their faculty and for promotion to higher faculty positions and have linked research funding with the Impact Factor.^{5,6}

Impact Factor, being a quantitative measure of research, is widely used; however, it has undergone criticism as well.^{5,7} Currently, only a few evaluations are available regarding the suitability of Impact Factor to measure the quality of research.⁸

Though Impact Factor is a convenient way of quantifying the quality of a journal but there are problems associated with the use of Journal Impact Factor. In my opinion, the single most important limitation of the Impact Factor is that it takes into account articles published only in ISI journals. The Science Citation Index database covers about 3200 journals,⁹ whereas the estimated world total is about 126,000;^{10,11} thus only 2.5% of the total journals are considered for calculation of Impact Factor. There are other indexation platforms such as PubMed. Thus a journal if indexed by PubMed

but not indexed in ISI will not be considered for Impact Factor. Another factor which makes Impact Factor dubious is its bias towards non English language journals, e.g. ISI has only two German language journals while there are more than 500 German language journals.¹² This may be one of the reason that most of the top ranked Impact Factor journals are American. Another issue with the Impact Factor is comparison of cross disciplinary journals. The citation habits and dynamics are different in different fields thus affecting the Impact Factor but when it comes to numbers i.e. Impact Factor is the same.

Although the scientific community has accepted Impact Factor as an indicator for the quality of the journals but they are always debating and looking towards alternatives that can judge the quality of a journal in terms of its real scientific value and the best would be the qualitative and quantitative assessment by the panel of experts. Till we establish such a system lets keep on measuring the journal by Impact Factor.

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