Editorial

Scientometrics and its positive consequences

Cientometria e suas repercussões positivas

Scientometrics is the study of measuring scientific and technological progress through quantitative analysis, comparisons of activity, productivity, and scientific innovation. It analyzes, ultimately, the development of science as an informational process[1,2]. Scientometrics uses indexes to provide objective data that may reflect the relevance of a study, researcher, or research institution. The impact of an article, journal, author, or institution can thus be clearly compared within the scientific universe.

For the analysis of this information, the results of these measures, executed through bibliometric techniques, should be analyzed. Therefore, bibliometrics uses statistical analysis to measure these results and their interpretation. Bibliometrics analyzes the indexes derived from the measures related to scientific production. Bibliometric data or indicators include information on academic or scientific qualifications, number of patents registered, number of articles published, references cited, citations per article, number of research grants received, and amount of resources allocated to the research activities promoted by agencies[2]. Currently, with the progressive electronic diffusion of knowledge, new impact measures have been defined, based on the activity in online tools and environments, called altmetrics[1].

The isolated quantitative analysis of a scientific production can provide an unrealistic notion of the scientific relevance of the analyzed element. The number of publications, for example, in isolation do not reflect the quality of publications and their relevance in the scientific community. It follows that there is a need to use information that helps in the qualitative interpretation of scientific production. Impact indexes are therefore taken into account, since they characterize the importance of production in the milieu. This impact can be analyzed in various ways, from the relevance of the source in which a study was published to the number of times a study was cited in other studies. Presently, it also includes the number of times the study, researcher, or institution has been searched electronically, transforming descriptors and keywords into important elements during the preparation of scientific studies. Thus, when one speaks of impact, one wants to interpret the relevance of a study, author, institution, or country in the international scientific community.

The impact factor (IF) of scientific articles was first mentioned in 1955 by the Institute for Scientific Information (ISI) and subsequently generated by the Science Citation Index (Web of Science). Currently, several levels of impact are generated by different institutions, such as ISI, Journal Citation Reports (JCR), Scopus, and Google. Basically, the IF measures the number of citations that the published work has received during a certain period of time after its publication, provided that the journal is indexed in certain databases such as Medline, PubMed, and Scopus. The higher the number of citations, the higher the impact factor of a study. The higher the number of studies with a large number of citations in a given journal, the higher the impact factor of this scientific journal. As the impact factor of a journal increases, the greater the difficulty in publishing in the journal, due to greater demand by authors for this particular journal; in parallel, the greater the relevance of being published in this journal, leading to an increase in the quality of accepted and published articles. It creates a virtuous cycle that raises the search for submissions, the quality of the periodical, and the relevance in the international milieu, not only of the journal, but also of the country in the global scientific context.

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