The Journal of Rheumatology 2023;50:452–3
doi:10.3899/jrheum.220895
First Release December 1 2022

The Journal of Rheumatology

Panorama

Impact Factor Jumps After the 2020 COVID-19 Pandemic: A Retrospective Study in Rheumatology Journals

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"As the publishing sector continues to grow, the need to measure the quality of the produced science grows in parallel...." This assertion is extracted from a study that assessed the increment in the value of scientometric indexes when they were calculated using citations and open access publications in rheumatology journals.[1] The interest in publishing about bibliometrics, particularly the impact factor (IF), in journals of this category has been present in PubMed for at least 10 years.[1-4] One of these studies, in particular, reported the IF of rheumatology journals over 10 years and compared them with those from other fields; the authors found that the IF showed a gradually increasing trend, with a median increase of 66.5%.[2]

The term *jump*, applied to the IF, appeared for the first time in PubMed in 2010, in the *International Journal of Stroke*, which experienced a 1-year increase of 43.6% (2.0 to 2.871, in 2008-2009).[5] The term *IF jumps* appeared again in PubMed in 2021, in an editorial of the *Journal of Oral Pathology & Medicine* acknowledging that the 2020 IF of that journal had climbed to 4.235, equivalent to 69.7% (a record high for the journal and a significant increase from its 2019 IF of 2.495).[6] In 2022, an article demonstrating the increase in the growth rate of IF due to the coronavirus disease 2019 (COVID-19) pandemic in journals in the Radiology, Nuclear Medicine, and Medical Imaging category used the term *IF jumps* again.[7]

Although several studies have analyzed the scientometric data of journals according to specific specialties in other fields of medicine (eg, neurology, gastroenterology, radiology), a comparison of the IF in rheumatology journals indexed in Journal Citation Reports (JCR) is currently not available in the literature, to the best of our knowledge. Moreover, there are no recent studies that analyzed the effect of the COVID-19 pandemic on the IF of journals in rheumatology.[1]

Considering all this information, in this paper we aimed to compare the IF of journals in the category of rheumatology and to calculate their growth rate percentage jump from 2014 to 2020. We believe knowing the growing trends of journals in this category might supplement the assessment of target journals for authors looking to submit their work.

The main objective of this study was to identify IF jumps in rheumatology journals in Web of Science (WoS). Inclusion criteria were all journals with IF values recorded in JCR for 6 years (2015-2020). The study followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines. Because this retrospective study used public, historical data, it did not require the approval of an institutional review board. Previous definitions of WoS and IF calculations have been reported previously.[7]

We chose the IF values of journals in the rheumatology category of the JCR Science edition that consecutively appeared between 2015 and 2020. Selected journals included at least 3 IFs in the selected period. The list of 29 chosen journals is available in the Supplementary Material (available from the authors upon request).

For the percentage of growth rate (IF jump), we calculated each year's IF percentage (%) change using the following formula: [(IF chosen year – IF previous) / IF previous] × 100

We calculated 5 IF growth rates (2015-2016, 2016-2017, 2017-2018, 2018-2019, 2019-2020) for the selected journals. The growth rates of 29 selected journals for the year 2020 are available in the Supplementary Material (available from the authors upon request).

We assessed the IF and IF growth rate distribution using the Kolmogorov-Smirnov and Shapiro-Wilk tests; datasets with a non-normal distribution were reported using median, quartiles, and IQRs. A significant difference between the IF values and IF growth rates for all the years was calculated using the Friedman test. The specific difference between 2019 and 2020 IF (to detect IF jumps during the COVID-19 pandemic) was assessed with the Wilcoxon signed-rank test.

After demonstration of a significant difference in growth rates between 2019 and 2020, we grouped the growth rates (% change) of 2020 into 6 groups based on their quartile values (level 1 = negative growth; level 2 = 1-25%; level 3 = 26-50%; level 4 = 51-75%; level 5 = 76-100%; and level 6 > 100%).

The IF from 2015 to 2020 depicted non-normal distribution for all years. There was a statistical difference between the IF values for all the years (2015-2020): $\chi^2 = 79.327$, $P < 0.001$. In

addition, there was a significant difference in the IF of journals between 2019 and 2020: $z = -4.487$, $P < 0.001$. The median of the IF alone did not allow us to identify any trend in the IF.

However, the trend in IF growth rates did show a clear increase in the 2020 value: 2015, 3.667; 2016, 8.390; 2017, 7.503; 2018, 1.038; 2019, 2.502; 2020, 24.478.

By grouping the growth rate in quartiles, we could identify that from the 29 journals evaluated, during COVID-19 pandemic, negative growth was observed in 2 (6.9%) journals; there was a 1-25% positive change in 14 (48.2%) journals; a 26-50% growth in 11 (37.93%) journals; depicted a 51-75% growth in 1 (3.45%) journal (*Best Practice & Research: Clinical Rheumatology*), and a growth > 100% in 1 (3.45%) journal (*Archives of Rheumatology*). The ranking of journals using quartiles did not find a significant difference between 2019 and 2020.

In this study, we proved the hypothesis posed in the introduction: there were IF jumps in rheumatology journals during the COVID-19 pandemic. We consider the clinical relevance of this manuscript as having 2 components: there are significant differences in the median growth rate of IF across the selected period (2015-2020); and the growth rate of rheumatology journals during the COVID-19 pandemic (2020) is significantly different (most of them higher) than their values from previous years.

Although rheumatology-related diseases remain a significant burden worldwide, little is known about the bibliometrics of rheumatology journals.[4] Rheumatological conditions have increased in published articles in the last few years. Still, no bibliometric studies have characterized rheumatology research, and no attempt has been made to analyze the growing trends of bibliometrics in this specialty.[3]

Although some journals had depicted an IF growth rate close to and above 100% before 2020, only in that year did the median growth rate show a significant difference compared to the previous year (2.502 vs 24.478 in 2019 and 2020, respectively).

Before submitting their manuscripts, authors must first identify which bibliometrics they will consider before evaluating the journals with the highest score for the selected bibliometrics. The IF growth rate could be another metric that helps in this aim. Rheumatology research cannot escape the trend observed in other specialties where current bibliometrics are used to analyze journals' influence, growth, and publishing patterns in their fields.

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