

Rising Influence of Chinese Medical Research: Driven by Volume Growth and Quality Improvement of China-originated Journal Articles

EXECUTIVE SUMMARY

Being recognized as one of the most scientifically-advanced countries in the world, China has made tremendous achievements not only in contributing the most scientific publications but also improving their quality on an ongoing basis. When it comes to the academic capacity of a country, both the quantity and the quality of research articles published by domestic scholars and scientists are the most commonly used evaluation metrics. China's undivided efforts in basic research¹ over the past several decades have come to fruition, which is evident by its largest proportion regarding the world's relevant total publications and the most number of highly cited papers².

Dating back near the end of the 20th century (1998-2000), the U.S. led the world in terms of the number of scientific articles published, representing 27.9% of the world's total, versus China's share of merely 3.1%. **However, after its consistent efforts in promoting academic accomplishments, China first surpassed the U.S. to become the largest contributor of scientific journal papers in 2016.** According to the latest research conducted by Japan's National Institute of Science and Technology Policy ("NISTEP"), the average output of China-originated research articles from publication year ("PY") 2018 to 2020 was 407,181, capturing a global share of 23.4% and increasing amazingly by over 17 times in volume over the 1998-2000 period. In comparison, the U.S. produced an average of 293,434 or 16.8% of the total, second to China during the 2018-2020 period with the growth rate of only 44% relative to 1998-2000. It meant that China had outperformed the U.S. in volume growth rate as well.

According to various studies, overall quality of China's scientific publications has been greatly improved over the years. Details are as follows:

- **Number of citations of publications by other works.** The Field-Weighted Citation Impact ("FWCI") is the ratio of total citations actually received by the denominators' output and the total citations that would be expected based on the average of the subject field. China's FWCI increased from 0.89 in 2016 to 1.12 in 2020, indicating that the quality of Chinese research output in 2020 was 12% above the world's average. Indeed, China topped the global average from 2018;
- **Number of citations in adjusted top-1% of papers.** China contributed the leading 27.2% global share of the top-1% academic articles during the 2018-2020 period, higher than the U.S. share of 24.9% and led the world. It showed that China is also able to produce world-class academic works;
- According to the **Nature Index**, which tracks 82 top-ranking journals in the world, **scholars and scientists from China made the largest contribution to high-quality natural science research in 2022**, leaving the U.S. behind; and
- Based on data from SciVal, a provider of research performance of institutions, **Chinese authors accounted for 29% of total articles published in the world's top-10 journal in 2020³**, rising progressively from 24% in 2016.

¹ A type of scientific research with the aim of improving scientific theories for better understanding and prediction of natural or other phenomena

² Papers that perform in the top-1% based on the number of citations received when compared to other papers published in the same field in the same year (<https://clarivate.libguides.com/c.php?g=593878&p=4107961>)

³ <https://beta.elsevier.com/connect/behind-the-rising-influence-of-chinese-research?trial=true>

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