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A Bibliometric Study on the Development of Scientific Journals: A Case Study of the Journal of Nanjing University of Chinese Medicine (Social Science Edition) Postprint

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Abstract

Objective: This article aims to explore development pathways for scientific journals through bibliometric analysis of the *Journal of Nanjing University of Chinese Medicine (Social Science Edition)* (hereinafter referred to as the *Journal (Social Science Edition)*). **Methods:** Using CNKI as the data source, bibliometric statistical and knowledge mapping visualization methods were employed to obtain relevant bibliometric indicators from a total of 80 issues of the *Journal (Social Science Edition)* and to generate corresponding maps. **Results:** The annual publication volume remained generally stable while exhibiting a gradual downward trend; “TCM Culture” constitutes its main featured column. The primary authors are relatively concentrated, with contributing institutions predominantly being universities of Chinese medicine, concentrated in “traditional Chinese medicine” and “eastern” institutions, necessitating the broadening of manuscript sources. Funding distribution is concentrated at national and provincial levels. “Traditional Chinese Medicine” and “TCM Education” are the main high-frequency keywords of the journal, with its current primary research directions and hotspots being “University Students” and “the Belt and Road Initiative”. **Conclusion:** To promote the sustainable development of the journal, appropriate measures should be taken to improve both the quantity and quality of papers, publish more outstanding articles, and thereby enhance the journal’s academic influence and social impact.

Full Text

Research on the Development of Scientific Journals Based on Bibliometrics: A Case Study of the Journal of Nanjing University of Traditional Chinese Medicine (Social Science Edition)

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Abstract: This study aims to explore development pathways for scientific journals through bibliometric analysis of the *Journal of Nanjing University of Traditional Chinese Medicine (Social Science Edition)* (hereinafter referred to as the “Journal (Social Science Edition)”). Using CNKI as the data source, bibliometric statistics and knowledge mapping visualization methods were employed to obtain bibliometric indicators from 80 issues of the Journal (Social Science Edition) and generate relevant maps. The results show that the annual publication volume has been generally stable with a gradual downward trend. “Traditional Chinese Medicine Culture” is its main featured column. The primary authors are relatively concentrated, with contributing institutions dominated by TCM universities, primarily “TCM” and “eastern” institutions, indicating an urgent need to broaden manuscript sources. Funding distribution is concentrated in national and provincial projects. “Traditional Chinese Medicine” and “TCM Education” are the main high-frequency keywords. The current primary research directions and hotspots are “University Students” and “the Belt and Road Initiative.” To promote sustainable development of the journal, appropriate measures should be taken to improve both the quantity and quality of papers, publishing more excellent articles to enhance academic influence and strengthen social impact.

Keywords: bibliometrics; knowledge mapping; scientific journals; Journal (Social Science Edition); academic influence

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The *Journal of Nanjing University of Traditional Chinese Medicine (Social Science Edition)* (hereinafter referred to as the “Journal (Social Science Edition)”) was founded in 1999 and is published quarterly. With publication approval from the National Administration of Traditional Chinese Medicine, supervision by the Jiangsu Provincial Department of Education, and sponsorship by Nanjing University of Traditional Chinese Medicine, it is the only social science edition jour-

nal among TCM universities nationwide, attracting attention from renowned experts and scholars both domestically and internationally.[1] Its main columns include Traditional Chinese Medicine Culture, Philosophy, History, Economics, Education, etc., and it has published numerous outstanding papers and research findings in medical philosophy, TCM culture, health law, health economics, and other areas, providing rich materials and theoretical foundations for promoting the development of TCM social science research, disciplinary progress, and the formulation of national TCM-related policies.[2] The journal's mission is to serve the development of TCM, advocate rigorous and practical scholarship that integrates theory with practice, and promote domestic and international academic exchange of new achievements and trends in TCM humanities and social sciences, particularly TCM culture research, advancing theoretical exploration and academic prosperity across various disciplines of TCM social sciences. This study uses bibliometric analysis to examine the journal's publication volume, author and institutional distribution, number of funded papers, and keyword distribution over the past 20 years, reviewing and summarizing the development trajectory and achievements of the Journal (Social Science Edition).

Data for this study were sourced from 1,460 articles retrieved from the CNKI database for the Journal (Social Science Edition), with the search period set from January 1, 2001 to December 31, 2020. After removing conference announcements, submission guidelines, discipline introductions, and other irrelevant data, 1,420 valid articles were identified and exported in Refworks format. Using Excel combined with annual publication, funding project, and institutional information from the CNKI database, bibliometric analysis was conducted, and the visualization software CiteSpace 5.6R5 was used to generate scientific knowledge maps of the valid articles published in the Journal (Social Science Edition).

1. Bibliometric Analysis of the Journal (Social Science Edition)

1.1 Annual Publication Volume and Column Analysis

1.1.1 Publication Volume Analysis The distribution of annual publication volume is a basic reflection of the total number of papers published by a journal each year and also an important indicator for measuring the journal's data capacity.[3] Since its inception, the Journal (Social Science Edition) has been published quarterly with a relatively stable number of articles, generally maintaining 60-90 articles per year. In 2007, the journal first implemented column classification, and the publication volume reached its peak of 87 articles. Subsequently, the publication volume has shown a steady downward trend year by year, particularly during two phases: 2007-2011 and 2013-2019, when the decline was more pronounced.

[Figure 1: see original paper]

1.1.2 Column Analysis Analyzing the column settings of an academic journal can, on the one hand, help understand the journal's academic trends, development direction, and article focus, and on the other hand, reveal research hotspots and trends in the discipline. Over the past decade (2016-2021), the columns in the Journal (Social Science Edition) have been primarily divided into featured columns, regular columns, interviews, and other columns. Among these: (1) The featured column "Traditional Chinese Medicine Culture" is widely recognized as an important academic platform for disseminating and promoting TCM culture, having been awarded as a Featured Column of National University Social Science Journals, an Excellent Column of Science and Engineering University Social Science Journals, a Featured Column of Jiangsu Province Journals, and receiving the First Prize for Excellent Columns of Jiangsu Province Social Science Journals.[2] (2) Regular columns in university social science journals are mainly divided into conventional and unconventional content. Conventional content covers areas such as "economics, management, law, and education," while unconventional content involves topics with distinctive TCM university characteristics, including "Cheng Dan' an Research," "TCM Cultural Consciousness and Confidence," "TCM Legislation," and "Overseas Dissemination of TCM." (3) Other columns mainly include interviews, reviews, and subscriptions. The "TCM Culture Interview" column conducts interviews with renowned TCM scholars, covering topics such as TCM culture dissemination, TCM philosophy, TCM culture research, and innovative talent cultivation in TCM culture, thereby enriching the journal's content.

1.2 Author Publication Analysis

Based on CNKI data, Table 1 presents the author publication statistics. Several conclusions can be drawn: (1) The publication years are concentrated between 2001-2020, indicating that the journal has a stable group of contributing authors. All top 10 authors hold senior professional titles, ensuring the quality of published articles. (2) The authors with the most publications are Zhang Zongming, Tian Kan, Shen Shu' nong, Shen Junlong, and Xiong Jixia, with 33, 25, 22, 21, and 18 articles respectively. Their first-author publications are 20, 10, 11, 10, and 13 respectively. This demonstrates relatively close collaboration among authors, which facilitates interdisciplinary research and academic communication. (3) Research focuses are relatively broad. The top author Zhang Zongming's research concentrates on TCM culture, Chinese culture, international communication, comparison between Chinese and Western medicine, and TCM education. The second-most prolific author Tian Kan focuses on TCM law, legislative legal education, and TCM regulations. The third-most prolific author Shen Shu' nong researches ancient medical texts and Dunhuang medical literature. The fourth-most prolific author Shen Junlong focuses on pharmaceutical human resources and administrative emergency intervention. The fifth-most prolific author Xiong Jixia emphasizes TCM services, pharmaceutical manufacturing, and health system reform. The sixth-most prolific author Xue Gongzhen conducts in-depth research on TCM culture studies, methodology,

and Daoist philosophy of life. The seventh-most prolific author Wang Gaoling focuses on medical assistance, essential drug systems, and primary healthcare services. These topics represent the key publication themes of the journal's authors. (4) Manuscript sources are relatively singular. As shown in Table 1, all top 10 authors are from Nanjing University of Traditional Chinese Medicine, lacking contributors from external institutions. This indicates that the Journal (Social Science Edition) needs to further expand its manuscript sources and strengthen cooperation with personnel from other universities and research institutions to present a diversified research content landscape, which would enrich the journal's academic themes and contributor composition. (5) All top 10 authors have backgrounds in philosophy or medicine, enabling more comprehensive and accurate understanding and interpretation of TCM.

1.3 Funding Analysis

Funded papers refer to research articles produced with financial support from government departments at all levels, various funding organizations, and enterprises and institutions.[4] Using Price's formula to screen funding sources, Table 2 presents the statistics on funded papers. Several conclusions can be drawn: (1) The major funding sources, in descending order, are the National Social Science Fund (73), Jiangsu Provincial Department of Education Humanities and Social Science Research Fund (46), National Natural Science Fund (31), Jiangsu Provincial Department of Education Higher Education Philosophy and Social Science Fund Project (17), Jiangsu Provincial Social Science Fund Project (11), Jiangsu Provincial Qinglan Project (11), and National Administration of Traditional Chinese Medicine TCM Science and Technology Research Fund (9). (2) Funding is primarily concentrated in national-level funds and social science funds. National-level funds mainly include the National Social Science Fund, National Natural Science Fund, and National Administration of Traditional Chinese Medicine TCM Science and Technology Research Fund. Social science funds mainly include the National Social Science Fund, Jiangsu Provincial Department of Education Humanities and Social Science Research Fund, and Jiangsu Provincial Department of Education Higher Education Philosophy and Social Science Fund Project.

2. Knowledge Mapping Visualization Analysis of the Journal (Social Science Edition)

2.1 Keyword Co-occurrence Mapping

Keyword co-occurrence refers to the phenomenon where professional terms expressing research themes or directions in a discipline appear simultaneously in one literature.[5] In research hotspot knowledge mapping, the keyword co-word analysis visualization interface can be clustered by selecting "cluster view" to output analysis results, which helps determine relationships between themes in the research field and reveals the main knowledge structure and research hotspots

of that field.[6] This can explain research hotspots in a field during a certain period. Based on set thresholds, this study selected keywords from the Journal (Social Science Edition) between 2001-2020 as network nodes and used CiteSpace software to generate a keyword co-occurrence network map for the journal over the past 20 years, as shown in Figure 2 [Figure 2: see original paper]. The map contains 574 nodes and 444 connections, with a network density of 0.0027. The map only displays major keywords with frequency greater than 4, totaling 36. The top 12 keywords by frequency are “TCM,” “TCM education,” “TCM culture,” “TCM universities,” “university students,” “teaching methods,” “countermeasures,” “TCM history,” “TCM science,” “Inner Canon,” “talent cultivation,” and “traditional Chinese culture,” with frequencies of 109, 66, 38, 35, 34, 24, 22, 19, 15, 15, 14, and 13 respectively. Their starting years are concentrated around 2001-2002, and they have continued through 2020, spanning 19 years, indicating that the journal’s research themes and hotspots have not changed significantly over the past 20 years, consistently focusing on the journal’s mission for topic planning. The keywords in the map can be roughly divided into four categories: Category I focuses on the “TCM” theme, exploring TCM science, TCM theory, and the intrinsic value of TCM, conducting in-depth research on TCM’s development, inheritance, and innovation. Category II focuses on TCM universities and teaching methods, mainly conducting TCM education research to explore deficiencies in TCM teaching and summarize educational experiences, with PBL, clinical teaching, and pharmacological experimental methods receiving significant attention and providing high-quality reference articles for promoting TCM education. Category III focuses on medical students and university students, primarily researching their mental health issues. Medical students face higher academic pressure than other majors, making mental health issues worthy of focused attention, which represents an important section of the journal’s publications. Category IV mainly includes research themes such as TCM culture, traditional Chinese culture, and medical history. Particularly, research and interpretation of the Inner Canon, as one of the four major classics of TCM, has resulted in numerous published articles. Attention to medical history focuses on the Jin and Tang dynasties, the peak period of TCM development in China, with articles published on ancient Chinese epidemic prevention knowledge. Regarding traditional Chinese culture, the focus is on medical psychological thought and Yin-Yang theory, which are fundamental concepts in TCM development and are applied extensively in TCM treatment.

2.2 Keyword Burst Detection Mapping

Burst terms are keywords whose frequency contribution rate suddenly increases within different time periods.[7] Analyzing their burst changes in frequency across different times can identify research stage characteristics and trends, and determine the historical evolution and development trajectory of research themes. By operating the CiteSpace software and clicking “burstiness” on the control panel, the keyword burst detection map shown in Figure 3 [Figure 3: see original paper] was obtained, where the red sections indicate the duration

of keywords and Strength represents the burst rate. Higher burst rates indicate greater attention to the keyword. Figure 3 shows that the research themes of the Journal (Social Science Edition) can be divided into two stages. The first stage, concentrated between 2004-2008, featured research themes such as development, TCM, countermeasures, teaching, and mental health, indicating that the journal's early development focused on TCM development, school teaching, and student mental health issues. The second stage, concentrated between 2008-2020, featured research themes such as traditional Chinese culture, doctor-patient relationships, TCM universities, university students, TCM law, and the Belt and Road Initiative, which received focused attention. From the perspective of keyword duration, the longest-lasting burst keyword is "university students," indicating that as a university journal, the Journal (Social Science Edition) serves not only as a platform for TCM research achievements but also pays attention to various aspects of university student quality education. During this period, "TCM law" and "the Belt and Road Initiative" also received significant attention from scholars, though "TCM law" as a burst keyword appeared and ended in 2017 with a relatively short duration. As of November 2020, China had signed 201 Belt and Road cooperation documents with 138 countries and 31 international organizations.[8] In this context, "the Belt and Road Initiative" is also a major current research hotspot for the journal. From the perspective of keyword burst intensity, "traditional Chinese culture" has the highest burst degree at 5.1003, indicating it has received focused attention from scholars, followed by doctor-patient relationship (3.891), TCM (3.7197), and influencing factors (3.761), which to some extent reflects the journal's research hotspots and frontier content.

3. Conclusion

This study used Excel and CiteSpace software to conduct bibliometric and knowledge mapping analysis of literature published in the Journal (Social Science Edition) over 20 years, examining annual publication volume and columns, authors and institutions, and funded papers. The following conclusions were drawn: (1) Emphasis on both quantity and quality of publications. Since its inception, the journal has maintained a relatively stable number of published articles, showing a steady downward trend year by year. The journal should actively promote its own development, continuously solicit contributions from relevant scholars and experts within the university, and actively organize campus lectures targeting master's and doctoral students to attract readers and effectively strengthen the linkage between the journal and authors, providing internal manuscript sources to improve both the quantity and quality of published articles. The journal's publication cycle could be reformed to support higher publication volume, potentially changing to a monthly schedule. (2) Continuous optimization of featured columns. As university journals are mostly comprehensive academic journals with extensive coverage, they lack the specialization of professional academic journals. Therefore, while ensuring publication quality, establishing distinctive featured columns such as "Traditional Chinese

Medicine Culture” is beneficial for concentrating wisdom to deeply explore the field of TCM culture and providing solutions and methods for related issues. This column, approved by the Ministry of Education’s Social Science Department in 2014, has continued uninterrupted to this day, providing a reference for sustainable column development. (3) Stable contributor team. The journal’s main contributing authors include Zhang Zongming, Tian Kan, Shen Shu’ nong, Shen Junlong, and Xiong Jixia, who have formed distinctive research directions and scientific cooperation teams. The journal has a stable group of contributing authors, providing a strong guarantee for manuscript sources, and the close cooperative relationships among major contributing authors facilitate mutual advancement of academic disciplines and cross-disciplinary exchange. For example, scholar Zhang Zongming has published multiple articles in the journal with long durations and large spans. Meanwhile, Zhang Zongming has gradually formed the main backbone of his publications through cooperation with Wen Xiang and other scholars. Under the leadership of these scholars, a large number of young scholars have been attracted to the journal, injecting new vitality into its development. The main contributing institutions include Nanjing University of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, and Guangzhou University of Traditional Chinese Medicine, with more internal than external contributions, and the main force remains Nanjing University of Traditional Chinese Medicine, indicating that broadening external manuscript sources is necessary. (4) Numerous funded papers. The proportion of funded papers in the journal reached its peak at 68.75% in 2020, showing an upward trend year by year since 2004. This reflects the journal’s increasing influence and greater attention from the academic community. There are many social science funded papers, and the proportion of national-level funds is also high, indicating that the journal has received certain attention, its published articles are of relatively high quality, and it holds a certain position in Jiangsu Province’s TCM academic community, serving as a window for TCM academic exchange. (5) Attention to contemporary hotspots. The keyword co-occurrence map and burst detection map show that TCM, TCM education, TCM culture, TCM universities, and university students are high-frequency keywords and the core focus of attention. Among them, “TCM” has the highest frequency, with main research content concentrated in TCM science, TCM medicine, connotation and value, Five Elements, TCM information, and preventive treatment theory, receiving relatively high attention. Based on the comprehensive publication situation from 2001-2020, the journal’s early focus on development, TCM, countermeasures, teaching, and mental health gradually transitioned to attention on traditional Chinese culture, doctor-patient relationships, TCM universities, university students, TCM law, and the Belt and Road Initiative. This is inseparable from the journal’s nature as a TCM university journal and is closely related to the joint efforts of the editorial team. In recent years, the journal’s research hotspots have concentrated on “the Belt and Road Initiative,” which is closely integrated with the proposal of relevant national TCM policies.

In summary, journals such as the Journal (Social Science Edition) represent an

important component of scientific journals. Without strong general scientific journals, China cannot achieve the goal of “leaping to rank among the world’s top tier” in comprehensive scientific journal strength.[9] Therefore, only by building strong general scientific journals can we explore a development path suitable for scientific journals. The Journal (Social Science Edition) reflects distinctive research characteristics in the field of TCM, with themes keeping pace with the times and focusing on internal TCM research developments within the university, serving as an important platform for showcasing academic exchange within the institution. To promote better and faster development of the journal, it should integrate its own advantages in TCM culture resources, highlight its TCM characteristics, strengthen the construction of a high-quality editorial team, organize events to attract scholars from the industry to submit contributions, improve the quality of academic manuscripts, expand into new development areas, form diversified and multi-dimensional research themes, thereby expanding the journal’s academic influence, enhancing its position among university journals, building a strong academic platform for integrated exchange in the field of TCM culture, promoting sustainable development of the journal, striving to build a world-class scientific journal, and working hard to achieve the goal of becoming a strong scientific journal nation.

Note: Figure translations are in progress. See original paper for figures.

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