Towards World-class Scientific and Technological Journals: Development Status and Analysis of China's English-language Medical Journals

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Abstract

[Objective] To analyze the overall landscape and development pathways of English-language medical journals in China, propose recommendations for their advancement, and provide references for the improvement of Chinese medical scientific journals and the construction of a world-class medical scientific journal system. [Methods] A total of 120 English-language medical journals were included, comprising those approved with CN numbers, selected for the "Chinese Academic Journal Impact Factor Annual Report" (2022 edition), and supported by the National Science and Technology Journal Plan. Data on basic journal information, National Science and Technology Journal Plan funding, domestic and international publishing partnerships, and inclusion in major international databases were collected to analyze characteristics including disciplinary layout, operational models, academic impact, open access, and cluster development. [Results] The number of English-language medical journals in China has grown rapidly, with a high proportion receiving National Science and Technology Journal Plan funding. Quarterly issues predominate, with universities and societies/associations serving as the primary independent publishers and a relatively high rate of joint publishing. Digital publishing is primarily conducted in partnership with foreign publishers, while 43 journals are simultaneously available on domestic cluster digital publishing platforms. The SCIE/SSCI, ESCI, and Scopus databases include 43 (35.8%), 17 (14.2%), and 97 (80.8%) journals, respectively, with broad disciplinary coverage. Literature from 99 (82.5%) journals is indexed in PubMed. Seventy-eight (65.0%) journals are included in the DOAJ database, with the majority adopting the Creative Commons license (CC license) CC BY. [Conclusion] The structure of English-language medical journals in China is undergoing further optimization, with expanded interdisciplinary coverage, diversified publishing models, enhanced international influence and visibility through international

databases, rapid development of OA publishing, and domestic publishing operations exploring cluster development.

Full Text

Development Status and Analysis of English-Language Medical Journals in China Toward World-Class Scientific and Technological Journals

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Abstract

[**Purpose**] This study analyzes the overall landscape and operational models of English-language medical journals in China, proposing development recommendations to support the advancement of Chinese medical scientific journals and the construction of a world-class medical journal system. [**Method**] A total of 120 English-language medical journals were included: those with approved CN numbers, included in the *Annual Report on Impact Factors of Chinese Academic Journals* (2022 edition), and selected for the National Science and Technology Journal Program. Data were collected on basic journal information, National Science and Technology Journal Program funding, domestic and international publishing partnerships, and inclusion in major international databases. The analysis focused on disciplinary distribution, operational models, academic influence, open access implementation, and cluster-based development. [**Findings**] English-language medical journals in China have experienced rapid growth, with a high proportion receiving National Science and Technology Journal Program funding. Most journals are published quarterly, with universities and societies/associations serving as primary independent sponsors, though co-sponsorship is common. Digital publishing predominantly involves partnerships with foreign publishers, while 43 journals have simultaneously launched on domestic cluster-based digital publishing platforms. SCIE/SSCI, ESCI, and Scopus databases include 43 (35.8%), 17 (14.2%), and 97 (80.8%) journals respectively, demonstrating broad disciplinary coverage. Literature from 99 journals (82.5%) is retrievable in PubMed, and 78 journals (65.0%) are indexed in the DOAJ database, with most adopting Creative Commons licenses, particularly CC BY. [**Conclusions**] The structure of China's English-language medical journals has been further optimized with expanded interdisciplinary coverage and diverse operational models. These journals are enhancing international influence and visibility through major international databases, with rapid development in open access publishing and initial progress toward cluster-based domestic publishing operations.

Keywords: World-class scientific and technological journals; Medical journals;

Discipline distribution; International influence; Digital publishing platform

Introduction

In 2019, the China Association for Science and Technology, the Publicity Department of the CPC Central Committee, the Ministry of Education, and the Ministry of Science and Technology jointly issued the *Opinions on Deepening Reform to Cultivate World-Class Scientific and Technological Journals*, establishing guiding principles and fundamental policies for China's scientific journal development. The document set the goal of building world-class journals, emphasizing forward-looking layout at the forefront of transformation, scientifically compiling key construction journal catalogs, and comprehensively advancing digitalization, specialization, group-based operations, and internationalization. It called for profound adjustments to journal management, operation, and evaluation mechanisms to construct an open, innovative, collaborative, and integrated world-class Chinese scientific journal system, thereby charting a clear direction for China's journal reform and development [1]. Scientific journals guide technological advancement and directly reflect national scientific competitiveness and cultural soft power. Since 2013, China has implemented the "International Influence Enhancement Plan for Chinese Scientific and Technology Journals," which after two phases of funding, was succeeded in 2019 by the "Excellence Action Plan for Chinese Scientific and Technology Journals," featuring expanded funding scope and intensity. Underpinned by these policies and funding initiatives, China's English-language scientific journals have experienced rapid development.

Medical journals constitute a significant and substantial component of China's scientific journal landscape. In recent years, China's basic and clinical medical research has increasingly aligned with international standards, yielding remarkable scientific and technological innovations and rapid disciplinary advancement. This progress provides crucial support for cultivating world-class English-language medical journals. Throughout their development, Chinese English-language medical journals have continuously explored operational pathways and accumulated experience. Shi et al. [2] analyzed 25 English-language medical journals selected for the Excellence Action Plan, concluding that these journals are in a critical period of development opportunity. Liu [3] examined five English-language medical journals published by the Chinese Medical Association, discussing top-level design, development strategies, and operational practices for internationalization. Wang et al. [4], Lu et al. [5], Sun et al. [6], and Zhang et al. [7] have summarized publication strategies for English-language medical journals based on their own experiences. However, existing research on Chinese English-language medical journals typically involves relatively small numbers of journals, focusing primarily on cluster-based or single-journal analyses.

This study encompasses 120 English-language medical journals, utilizing big data from public online platforms to investigate basic publication information,

National Science and Technology Journal Program funding, domestic and international publishing cooperation, and inclusion in major international databases. The analysis examines disciplinary distribution, operational models, academic influence, open access (OA), and cluster-based development characteristics to understand the current status and operational practices of China's English-language medical journals as they strive toward world-class status, providing reference for their future development.

1 Data Sources and Research Methods

China has not yet established a unified catalog of English-language journals. To comprehensively include English-language medical journals in China, this study incorporated journals classified as Category R (comprehensive medicine and health) in the *Annual Report on Impact Factors of Chinese Academic Journals* (2022 edition) [8], supplemented by English-language medical journals approved by the National Press and Publication Administration from 2014 to 2022 [9] and newly launched English-language medical journals selected for the International Influence Enhancement Plan or Excellence Action Plan from 2013 to 2022, totaling 120 journals (see Supplementary Table 1). Journal websites were searched using English titles to obtain basic information including founding year, publication frequency, ISSN, E-ISSN, and domestic/international publishing partnerships. The National Press and Publication Administration and China Association for Science and Technology websites were searched to obtain CN numbers, sponsors, and National Science and Technology Journal Program funding information. Domestic English-language digital publishing platforms were searched to identify journal presence on these platforms.

The Clarivate Journal Citation Reports (JCR) database was searched under "Countries/Regions" for journals with publication location "China Mainland" to identify inclusion status, database categories, inclusion dates, impact factors, disciplinary classifications, and rankings for the 120 medical journals in Web of Science for 2022. The Web of Science Core Collection's Science Citation Index Expanded (SCIE) was searched with publication year limited to 2022, document types limited to "Article" and "Review article," and country set to "PEOPLES R CHINA" to retrieve Chinese scholarly output across clinical medicine disciplines.

The Scopus database was searched to obtain the "Scopus Source List" and identify inclusion status and 2022 CiteScore, disciplinary classification, and ranking information for the 120 journals. The Directory of Open Access Journals (DOAJ) database was searched for inclusion status, OA journal inclusion dates, and Creative Commons license compliance. Data were collected from August 1 to August 31, 2023.

The U.S. National Center for Biotechnology Information (NCBI) website was searched under "NLM catalog" to identify Medline database inclusion status and PubMed retrievability for the 120 journals. The "PubMed Central" webpage on

NCBI was accessed to obtain the "PMC Journal List" and search for PMC database inclusion. Data were collected from December 21 to December 25, 2023.

2.1 Journal Founding and National Science and Technology Journal Program Funding

Among the 120 English-language medical journals in China, 20 were founded before 2003, with 12 founded during 2003-2007, 11 during 2008-2012, 27 during 2013-2017, and 40 during 2018-2022, demonstrating a clear upward trend. Notably, after 2013, following the implementation of the International Influence Enhancement Plan and Excellence Action Plan and guided by the Opinions on cultivating world-class journals, the number of English-language medical journals grew rapidly. By the end of August 2023, 10 new journals had already been launched in 2023 alone (see Figure 1).

China's International Influence Enhancement Plan (Phase I launched in 2013, Phase II in 2016) and the Excellence Action Plan (launched in 2019) funded 96, 165, and 390 journals respectively, with English-language medical journals accounting for 24.0%, 20.6%, and 17.7% of funded journals. A total of 99 journals (82.5%) received funding across these programs. Among approved Category D new journals and high-starting-point new journals, English-language medical journals represented 33.3% and 27.1% respectively (see Table 1). Medical journals constitute a substantial proportion across all funding categories, particularly among new journals, providing strong support for quality improvement.

Table 1 Funding status of English-language medical journals in China's national programs

Program Phase	Medical Journals/Total Funded
International Influence Enhancement Plan Phase I	23/96
International Influence Enhancement Plan Phase II	34/165
Excellence Action Plan	69/390
Category D (2018)	33.3%
High-starting-point new journals (2022)	27.1%

In terms of publication frequency, English-language medical journals in China are predominantly quarterly, differing from the general pattern among Chinese scientific journals which mainly feature bimonthly and monthly publications [10]. Additionally, 17 journals (14.2%) adopted continuous publication without fixed issues, allowing greater flexibility in publication timing and article volume.

Regarding sponsors, universities and societies/associations independently sponsor 39 and 27 journals respectively, with the Chinese Medical Association sponsoring the largest number at 19 journals. Twenty-eight journals feature co-

sponsorship, typically involving combinations of societies/associations, universities, research institutes/hospitals, and publishing groups (see Figure 1).

2.2 International Publishing Cooperation and Domestic Digital Publishing Platform Support

Most English-language medical journals in China partner with foreign publishers for online publishing and distribution. A search of the latest articles from the 120 journals (conducted in August 2023) revealed that 109 journals (90.8%) had DOIs directing to foreign publishing platforms, 10 directed to domestic self-built platforms, and 1 directed to the domestic digital publishing platform SciOpen. Elsevier, Springer Nature, Wolters Kluwer, and Wiley are the most frequent partners, collaborating with 35, 21, 21, and 12 journals respectively. Notably, 10 journals cooperate with Elsevier through KeAi, a joint venture between China Science Publishing & Media Ltd. (Science Press) and Elsevier (see Table 2).

Table 2 Cooperation between Chinese English-language medical journals and foreign publishing institutions

Publisher	Number of Journals
Elsevier	35
Springer Nature	21
Wolters Kluwer	21
Wiley	12
Oxford University Press	5
De Gruyter	3
AAAS	1
ACS Publications	1
Quintessence Publishing Company	1
SAGE Publications	1
Thieme Group	1
World Scientific Publishing	1
Xia & He Publishing Inc.	1

In recent years, domestic cluster-based digital publishing platforms have emerged and expanded, including the Chinese Medical Association's MedNexus platform, China Science Publishing & Media Ltd.'s SciEngine platform, Tsinghua University's SciOpen platform, and the Higher Education Press's Frontiers Journals Chinese Academic Frontiers Journal Network, all hosting English-language medical journals. Among the 120 journals analyzed, 20, 11, 7, and 5 journals are available on these four platforms respectively. All 20 journals on MedNexus are OA journals sponsored by the Chinese Medical Association, with full-text HTML and PDF versions available. The 11 journals on SciEngine are also OA journals, though only 7 have searchable recent articles with PDF full-text; HTML full-text requires linking to Elsevier, while

the remaining 4 only display basic information and submission links. Ten of these journals are simultaneously published through KeAi, but article details and full-text downloads must be accessed via Elsevier through KeAi links.

Among the 7 OA journals on SciOpen, *Journal of Traditional Chinese Medical Sciences* only offers HTML full-text through Elsevier, while *Cancer Biology & Medicine* and *Journal of Geriatric Cardiology* (which have no foreign publishing partners) provide full-text on both self-built platforms and SciOpen. The remaining 4 Tsinghua University-sponsored journals offer HTML and PDF full-text on both SciOpen and foreign partner platforms. *Frontiers of Medicine* provides HTML and PDF full-text on the Frontiers Journals website, while requiring subscription access on its foreign partner platform Springer Nature. The other 4 journals on Frontiers Journals only provide PDF full-text, with HTML full-text requiring links to foreign partner platforms despite 3 being sponsored by the Higher Education Press. Across all four platforms, except for *Cancer Biology & Medicine* (whose DOI points to its self-built platform) and *Journal of Geriatric Cardiology* (whose DOI points to SciOpen), all other journal article DOIs direct to foreign digital platforms.

2.3 Web of Science Database Inclusion and Chinese SCI Medical Paper Output

On June 28, 2023, Clarivate released the 2023 Journal Citation Reports (JCR), covering 21,522 journals, including 9,510 journals in the Web of Science Core Collection's SCIE and 7,871 in the Emerging Sources Citation Index (ESCI). A JCR database search (data updated through June 2023) identified 444 journals with publication location "China Mainland," including 276 in SCIE and 153 in ESCI. JCR categorizes 254 disciplines in the Web of Science Core Collection into 21 broad categories, with Clinical Medicine comprising 59 sub-disciplines and 7,441 journals, making it the most finely divided and largest category.

Among the 120 English-language medical journals analyzed, 43 (35.8%) are included in SCIE, with *China CDC Weekly* also included in the Social Sciences Citation Index (SSCI). ESCI includes 17 journals (14.2%), bringing the total to 60 journals. Before 2003, only 4 English-language medical journals were included in SCIE, with 12 added during 2003-2012 and 27 added during 2013-2022, demonstrating an overall upward trend (see Figure 2).

Figure 2 Temporal distribution of SCI inclusion for Chinese English-language medical journals

In terms of disciplinary coverage, the 43 SCIE/SSCI-indexed journals in 2022 span 34 disciplines, with 14 journals (32.6%) belonging to 2 or more disciplines. The 17 ESCI-indexed journals cover 14 disciplines, with 3 journals (17.6%) spanning multiple disciplines. Among the 59 Clinical Medicine sub-disciplines in JCR, Chinese SCIE-indexed journals cover 27 sub-disciplines through 41 journals, with the highest representation in Pharmacology & Pharmacy (5 journals), Integrative & Complementary Medicine (4 journals), and Oncology (4 journals).

While 4 sub-disciplines lack SCIE-indexed journals, they have 5 ESCI-indexed journals; 7 sub-disciplines have Chinese journal coverage but are not included in this study (not Category R or lacking CN numbers); and 21 sub-disciplines remain uncovered by Chinese English-language journals (see Table 3 and Supplementary Table 2).

Table 3 Web of Science Clinical Medicine sub-disciplines without Chinese journal coverage in 2022 and Chinese SCI paper output

Sub-discipline	Chinese SCI Papers
Toxicology	4,263
Health Care Sciences & Services	2,590
Pathology	1,892
Peripheral Vascular Disease	1,457
Medical Laboratory Technology	1,356
Reproductive Biology	1,287
Medical Informatics	1,183
Rheumatology	1,170
Behavioral Sciences	1,098
Otorhinolaryngology	1,087
Rehabilitation	1,054
Health Policy & Services	1,038
Neuroimaging	1,025
Anesthesiology	1,009
Transplantation	987
Critical Care Medicine	976
Allergy	963
Audiology & Speech-Language Pathology	942
Psychology, Clinical	923
Substance Abuse	876
Medical Ethics	842

Regarding JCR quartiles, 28 of the 43 SCIE/SSCI-indexed journals (65.1%) ranked in Q1 across 25 disciplines in 2022, with 9 journals achieving impact factors $ $10. Among these, 26 journals ranked Q1 in 20 Clinical Medicine sub-disciplines, and 25 had received funding from the International Influence Enhancement Plan and/or Excellence Action Plan (see Supplementary Table 3). Starting in 2023, ESCI-indexed journals also received impact factors, with *General Psychiatry* and *Infectious Diseases* achieving notable impact factors of 11.9 and 8.8 respectively.

In terms of article volume, the 43 SCIE/SSCI-indexed journals published 4,973 articles in 2022, averaging 116 articles annually. Only 6 journals exceeded 200 articles: *Orthopaedic Surgery* (420 articles), *Neural Regeneration Research* (336), *Acta Pharmaceutica Sinica B* (281), *International Journal of Ophthalmology*

(252), *Chinese Medical Journal* (234), and *Signal Transduction and Targeted Therapy* (210). Regarding publication frequency among these 43 journals, 10 have no fixed issue schedule, 1 is weekly, 1 is semimonthly, 16 are monthly, 14 are bimonthly, and only 1 is quarterly.

A Web of Science SCIE database search revealed that Chinese scholars published 172,500 SCI papers in Clinical Medicine-related disciplines in 2022, with seven sub-disciplines exceeding 10,000 papers: Oncology (20,000), Pharmacology & Pharmacy (19,300), Neurosciences (14,500), Medicine, Research & Experimental (11,900), Immunology (11,300), Public, Environmental & Occupational Health (11,100), and Medicine, General & Internal (10,700). In the 21 sub-disciplines without Chinese journal coverage, Chinese scholars published 19,000 papers, with Toxicology and Health Care Sciences & Services showing particularly high output at 4,263 and 2,590 papers respectively (see Table 3).

2.4 Scopus Database Inclusion Analysis

Developed by Elsevier, Scopus has evolved into the world's largest abstract and citation database. On June 8, 2023, Elsevier released CiteScore 2022 based on Scopus data, providing the latest assessment of international influence for peer-reviewed journals. According to the Scopus source publication list (data updated through July 2023), 97 of the 120 English-language medical journals (80.8%) are included in Scopus, with 93 (77.5%) receiving 2022 CiteScore values. Among the 23 non-indexed journals, 18 were founded in 2021-2023.

Scopus employs the All Science Journal Classification (ASJC) system, covering 4 major categories (Life Sciences, Social Sciences, Physical Sciences, and Health Sciences), 27 minor categories, and 334 disciplines. Health Sciences encompasses 102 disciplines. China's 97 English-language medical journals cover 83 disciplines, including 45 within Health Sciences, with the highest representation in General Medicine (20 journals), Complementary and Alternative Medicine (11), Infectious Diseases (9), and Surgery (8) (see Supplementary Table 4). Among these 97 journals, 61 (62.9%) span 2 or more disciplines.

Regarding quartile performance, 36 of the 93 CiteScore-rated journals (38.7%) ranked in Q1 across 33 disciplines in 2022, with 18 journals achieving CiteScore $ $10. Among these, 32 journals ranked Q1 in 27 Health Sciences sub-disciplines, and 28 had received funding from the International Influence Enhancement Plan and/or Excellence Action Plan (see Supplementary Table 5).

2.5 MEDLINE and PMC Database Inclusion

MEDLINE, the most authoritative abstracting and indexing database in biomedicine and life sciences created by the U.S. National Library of Medicine (NLM), includes over 5,200 journals in approximately 40 languages. PubMed Central (PMC), developed and maintained by NCBI (part of NLM), is a free full-text database of biomedical and life sciences journal literature, currently

including 4,159 journals (data updated through December 2023). PubMed, a free search engine developed by NCBI, is the most widely used online MEDLINE retrieval tool, expanding search scope beyond MEDLINE to include PMC-indexed literature. Although PubMed does not contain full-text articles, the public can access full text through PMC and publisher links.

Among the 120 journals studied, 31 (25.8%) are included in MEDLINE and 56 (46.7%) in PMC, with 19 journals included in both databases. Thirty-one journals (25.8%) are not included in either database, but because some articles are stored in PMC, they remain retrievable in PubMed. Consequently, literature from 99 journals (82.5%) can be searched in PubMed.

2.6 DOAJ Database Inclusion

The DOAJ database, created by Lund University in Sweden, is the world's largest database exclusively indexing open access journals. Among the 120 English-language medical journals studied, 78 (65.0%) are included in DOAJ (data updated through August 2023). Forty-four journals were added during 2019-2023, with 37 added within three years of founding (including 9 added in the founding year). OA journal articles follow Creative Commons licenses, with CC BY being most common, followed by CC BY-NC-ND. Specifically, 11 journals use CC BY exclusively, 5 use both CC BY and CC0, and 18 use CC BY-NC-ND exclusively (see Table 4).

Table 4 Creative Commons licenses used by Chinese English-language medical journals in DOAJ

License	Journals
CC BY	11 (exclusive) + 5 (with CC0)
CC BY-SA	2
CC BY-ND	1
CC BY-NC	3
CC BY-NC-SA	2
CC BY-NC-ND	18 (exclusive)

Among the 78 journals, 35 currently charge no article processing fees (APCs), 37 charge APCs but offer reduction policies, and 6 charge APCs without stated reduction policies.

3 Characteristics and Development Trends of English-Language Medical Journals in China

The *Opinions on Deepening Reform to Cultivate World-Class Scientific and Technological Journals* established five-year development goals, including significantly increasing the number of world-class journals, markedly improving international influence, forward-looking layout of emerging interdisciplinary and

strategic frontier journals, strengthening journals in basic and traditional advantage fields, achieving digital transformation, and accelerating cluster-based and group-based development to form a journal system that effectively supports modern economic construction and aligns with an innovative country. The operational characteristics and development trends of China's English-language medical journals reflect these national requirements for scientific journal construction.

3.1 Optimized Journal Structure with Interdisciplinary Layout

Medicine features fine disciplinary divisions and numerous journals. Analysis of major international databases reveals that China's English-language medical journals demonstrate relatively balanced disciplinary distribution, with a substantial proportion spanning two or more disciplines. Through careful positioning of their aims and scope, these journals have capitalized on domestic medical strengths, gaps, and emerging interdisciplinary fields, further optimizing their structural layout and enhancing competitive advantages in scientific publishing while achieving richer, more diverse disciplinary coverage.

In building a world-class journal system, journals in China's medical advantage fields have further improved quality. The government has established multi-tiered funding through project programs to provide focused support for outstanding journals, highlighting their leading role and facilitating gradient-based journal development. Disciplines leverage scientific journal platforms to promote academic exchange, talent cultivation, and disciplinary development, creating a mutually reinforcing relationship between journal development and disciplinary advancement.

The number of newly founded English-language medical journals has grown rapidly in recent years, driven not only by strong national policies and funding but also by robust disciplinary development, with active participation from academic societies, hospitals, and scholars contributing to high-starting-point development. Guided by national policies for building world-class journal systems and principles of "selecting journals by field, forward-looking layout, and highlighting leadership," these new journals have developed more clearly defined disciplinary positioning through specialization, emphasizing disciplinary advantages and yielding numerous emerging interdisciplinary journals that serve national innovation-driven development strategies from a high starting point.

3.2 Enhancing International Influence Through International Databases and Evaluation Systems

To build a world-class journal system, China's English-language medical journals must benchmark against international journals, participate in global competition, and enhance international influence. Inclusion in major international literature databases and evaluation using internationally recognized metrics helps these journals clarify their global standing and further improve international

influence and dissemination through database platforms.

JCR database analysis shows a notable increase in Chinese English-language medical journals included in SCIE/SSCI in 2022, with 65.1% of the 43 journals ranking in Q1 across 25 disciplines. Many journals demonstrate interdisciplinary development, showcasing influence across multiple disciplines. The ESCI database expands Web of Science Core Collection coverage with lower inclusion standards than SCIE/SSCI [11]. Chinese English-language medical journals have explored pathways to ESCI inclusion, with several already indexed and some subsequently advancing to SSCI inclusion [3, 12]. In 2023, JCR began publishing impact factors for ESCI-indexed journals, enabling Chinese English-language medical journals in ESCI to receive their first impact factors, bringing developmental benefits.

Scopus database analysis reveals that 93 of the 120 journals (77.5%) received 2022 CiteScore values, with 38.7% ranking Q1 across 33 disciplines. Excluding newly founded journals, only a few remain unindexed by Scopus. Regardless of whether CiteScore or JCR impact factor holds greater advantage in journal evaluation, most publishing platforms now display both metrics prominently on journal homepages as important promotional indicators. Scopus's substantial coverage of scientific journals provides scholars with an additional pathway to assess the academic level of English-language medical journals.

In PubMed, 82.5% of the 120 journals have retrievable abstract information. As an essential retrieval platform in medicine, Chinese English-language medical journals promote academic dissemination and exchange by actively applying for MEDLINE and PMC inclusion, enabling scholars to conveniently retrieve abstracts through PubMed and access full text via PMC or publisher links.

Inclusion in major international databases requires compliance with global publishing standards, inevitably driving journal self-improvement across academic quality, influence, publishing services, standards, ethics, copyright, and research misconduct management [4]. Chinese English-language medical journals have emphasized international rules and methodologies during development, achieving further influence enhancement after database inclusion and demonstrating positive development momentum.

3.3 Emphasizing Open Access Publishing and Visibility Enhancement

In 2021, UNESCO adopted the *Recommendation on Open Science*, establishing open science as a new paradigm for scientific research that will fundamentally transform academic exchange models while presenting opportunities and challenges for scientific journals. Chinese English-language medical journals have actively embraced OA publishing. DOAJ database analysis shows that 65.0% of the 120 journals are already included, with significantly reduced time between founding and inclusion, indicating that many journals established OA publishing as a clear goal from inception and have continuously improved in OA declarations, copyright and licensing information, peer review systems, and

publishing transparency to meet international OA standards [13]. OA publishing enables rapid online publication on digital platforms, markedly reducing publication delay, with full text accessible via DOI, thereby enhancing journal visibility. Simultaneously, OA facilitates transformation from traditional publishing to knowledge service platforms, enabling in-depth content mining into granular sub-specialty thematic products and multi-channel, diversified, multi-dimensional knowledge dissemination to improve professional services for researchers [3, 14].

DOAJ analysis reveals that most Chinese English-language medical journals charge no APCs or offer reductions. Currently, national project funds, sponsoring institutions, academic societies, and research organizations remain strong operational supports, facilitating rapid development during founding or OA transition periods. As Chinese English-language medical journals deeply integrate into the international OA framework, APC management will inevitably align with international standards, gradually establishing stable commercial profit models.

3.4 Diverse Operational Models and Exploration of Cluster-Based Development

Universities and societies/associations remain the primary sponsors of English-language medical journals, though publishing group-sponsored journals are increasing. Among independent sponsors, the Chinese Medical Association sponsors the most journals. Societies possess advantages in academic and membership resources, and strengthening society-sponsored journals under the world-class journal system framework helps leverage these resources to build internationally influential professional brands and connect with global innovation networks. Meanwhile, new co-sponsorship models have emerged, including society-research institute/hospital collaborations (15 journals), society-university collaborations (6), inter-society collaborations, inter-research institute collaborations, and publishing group partnerships. Co-sponsorship can pool more resources, promote deep industry-academia-research cooperation, leverage different platform advantages, and create synergistic effects.

Chinese English-language medical journals still primarily cooperate with foreign publishers for international dissemination and publishing operations, with approximately 90% of journals using foreign platforms based on DOI analysis. The 2019 Excellence Action Plan established cluster-based pilot projects to promote cluster development and digital publishing platform construction. Among the 120 journals analyzed, 43 have launched on domestic platforms including MedNexus, SciEngine, SciOpen, and Frontiers Journals. China's digital publishing platforms started relatively late but have achieved initial scale, serving journals sponsored by their affiliated societies, universities, and publishing groups while attracting other journals to join, forming a cluster development trend for English-language medical journals [15]. This cluster development and platform construction facilitate integration of publishing resources, industry chain con-

nectivity, and innovation chain formation, driving digital transformation and all-media convergence development.

4 Issues and Considerations for English-Language Medical Journals in China's World-Class Journal System Construction

Building a world-class journal system represents a key national task for scientific journal development. The system requires not only quality journals as fundamental elements but also robust digital publishing platforms and scientific academic evaluation systems, with multiple aspects collaborating, integrating, and mutually promoting development. During this process, Chinese English-language medical journals still face numerous issues requiring further resolution.

4.1 Need for Further Enhancement in Journal Quantity and Publishing Service Capacity

China's medical and research capabilities have improved significantly in recent years, producing substantial outstanding research. As domestic English-language medical journals flourish, they provide more venues for "publishing papers on the homeland." However, relative to China's large volume of medical paper output, the number and article capacity of English-language medical journals remain insufficient. New journal founding remains relatively scattered and independent, lacking specific macro-level planning such as disciplinary distribution despite national policy guidance. Additionally, publishing service capacity should be strengthened alongside academic quality improvement, including effective journal promotion and academic marketing. Although new English-language medical journals have increased, searches using domestic engines like Baidu and Sogou still fail to locate official websites for some journals within the top three search results. To promote Chinese English-language scientific journals, the National Science Library of the Chinese Academy of Sciences launched the "Chinese English-Language Scientific Journals Promotion" program in June 2020, yet by August 2023 had only promoted 39 journals via WeChat official accounts—still a small number.

Single-journal efforts are limited in founding and development. To build a world-class journal system, English-language medical journals should further explore cluster-based construction pathways to achieve resource integration, specialized division of labor, diversified team support, and quality control. This would facilitate new journal founding based on optimized layout, construction of academic knowledge service platforms, service to academic communication communities, and overcoming the "small, weak, and scattered" phenomenon in China's English-language medical journal sector to support national scientific innovation. In 2019, the Excellence Action Plan approved 5 cluster-based pilot projects. In November 2023, China released the *Consensus on Professional Discipline Journal Cluster Construction*, proposing discipline-based journal clusters

forming a sustainable high-quality journal pyramid model for intensive production and dissemination. Recently, the China University Journals Association organized group purchasing of publishing services at prices lower than individual journal rates—positive explorations of cluster development models.

4.2 Need for More Robust Digital Publishing Platforms

Building a world-class journal system requires adjusting journal management and operation mechanisms and independently developing excellent digital publishing platforms [16]. Most Chinese English-language medical journals still rely primarily on foreign platforms for international dissemination and publishing operations, with domestic platforms playing supplementary roles. This study found that some journals experience delayed release on domestic cluster-based platforms compared to foreign platforms. The four domestic platforms also show significant differences in full-text availability, likely related to platform-specific settings and publication agreements with foreign publishers [17-18].

The initial operation of domestic cluster-based digital publishing platforms coincides with China's publishing industry transition from "borrowing boats to go overseas" to "building boats to go overseas" [16], inevitably involving an overlapping co-construction period with foreign platforms. Domestic platforms remain relatively small in scale, limited in service scope, and in brand influence cultivation stages, with weak soft capabilities in publishing ethics, technical standards, and global expansion. During this transition, platforms should continuously improve technical standard systems, connect with international academic networks, adjust and expand business scope, enhance market operation capabilities, focus on brand management, and gradually complete the transformation to independent publishing models, becoming important forces for cluster-based and group-based journal management and operation.

4.3 Need to Construct a New Academic Journal Evaluation System

Chinese English-language medical journals still primarily rely on international databases for evaluation. In domestic evaluation systems, Chinese and English journals are not evaluated separately, and the number of domestic English journals included is limited, with no authoritative domestic English journal catalog yet formed. Under the development environment of international open science and diverse publishing forms, building a world-class journal system requires improving and perfecting the academic journal evaluation system to establish a new autonomous evaluation system centered on content quality, serving and promoting national scientific journal construction and guiding more reasonable academic and talent evaluation mechanisms.

5 Conclusion

In recent years, under national policy guidance and relevant program funding, the number of English-language medical journals in China has increased signifi-

cantly, with expanded disciplinary coverage and more interdisciplinary journals. Through cooperation with foreign publishing platforms, these journals benchmark against world-class standards, improve self-construction, and increasingly join major international databases including Web of Science, Scopus, DOAJ, and MEDLINE, markedly enhancing international influence. Under the new open science development paradigm, Chinese English-language medical journals have actively transformed, demonstrating strong momentum in OA publishing. The initial construction of cluster-based digital publishing platforms provides more possibilities for independent publishing. Although this study included 120 English-language medical journals, omissions remain, such as overseas-returned scientific journals and journals without CN numbers or national program funding. Additionally, this study primarily analyzes the overall situation without detailed case studies of outstanding journals, representing a direction for future research. With renowned scholars and first-class research institutions participating in journal operation, growing publishing teams, continuous summarization of operational methods [19-20], improvement of domestic digital publishing platforms, and establishment of new evaluation systems, China will certainly construct a comprehensive world-class medical scientific journal system encompassing journals, cluster-based digital publishing platforms, and journal evaluation systems.

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