



Research Evolution and Thinking of Traditional Chinese Medicine Vocational Education Based on Knowledge Graph

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Abstract

Objective: Through bibliometrics and knowledge graph visualization, this paper systematically analyzes the evolution and trends of traditional Chinese medicine (TCM) vocational education research. **Methods:** Literature was retrieved from CNKI, Wanfang, and VIP databases from inception to October 2025, using search terms including “traditional Chinese medicine,” “TCM theory,” “vocational education,” “vocational training,” and “skills education.” Visual analysis was performed using VOSviewer and the Bibliometrix R package. **Results:** Annual publications showed phased growth, peaking at 41 in 2022. Core author analysis identified Feng Xiao and Niu Yanhui as the most prolific authors (4 papers each), with a relatively dense collaboration network. Leading institutions included Hunan University of Chinese Medicine and Zhejiang Chinese Medical University, while Hunan and Beijing Universities excelled in article quality. The journals with the most articles were *Journal of Traditional Chinese Medicine Management*, *Modern Distance*

Education of Chinese Medicine, and *Health Vocational Education*. Keyword co-occurrence and cluster analysis revealed research hotspots such as “continuing education,” “traditional Chinese medicine,” and “vocational education,” indicating a gradual shift from macro-level conceptual discussions toward specific pathway and mechanism design. **Conclusion:** TCM vocational education research has achieved considerable progress and attention. However, comprehensive reviews remain limited, and both the proportion of publications in high-level journals and international influence require enhancement. Future research should further integrate digital and intelligent methods to promote innovation and optimization of educational models.

Keywords: knowledge graph, traditional Chinese medicine, vocational education, continuing education, evolution.

1 Introduction

As a treasure of Chinese culture and the cornerstone of health security, traditional Chinese medicine occupies an increasingly important position in the



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"Healthy China" strategy, and vocational education is an important talent support for its inheritance, innovation and industrial development [1]. In recent years, the national level has intensively introduced policies to promote the reform of traditional Chinese medicine education, and documents such as the "Implementation Opinions on Deepening the Collaboration between Medical and Educational Studies to Further Promote the Reform and High-quality Development of Traditional Chinese Medicine Education" clearly propose to "vigorously develop traditional Chinese medicine vocational education" and include it in the key links of the traditional Chinese medicine talent training system. Driven by policy dividends and industry demand, traditional Chinese medicine vocational education is booming. However, the existing research still has the following shortcomings: first, there is a lack of systematic sorting out of the evolution of traditional Chinese medicine vocational education research; second, the grasp of research hotspots and cutting-edge trends is not comprehensive enough; Third, the in-depth thinking on the future development path of TCM vocational education is still insufficient [2–4].

With the rapid development of science and technology, knowledge graph visualization analysis, as an important implementation form of semantic network, is increasingly widely used in the field of medical research, providing a new technical path for overall visualization to grasp research trends, and promoting the innovation and transformation of research models [5]. Based on this, this paper adopts the bibliometric method, takes the three major Chinese databases as the data source, and systematically sorts out the development, evolution process and trend characteristics of the knowledge graph of TCM vocational education through visual analysis methods such as publication statistics, core author/institution analysis, keyword co-occurrence and clustering network construction, in order to provide a reference for in-depth research in this field.

2 Study Design

2.1 DATA

The data for this study originates from the three major Chinese academic journal network publication databases of VIP, Wanfang, and CNKI, using a subject search method. The search terms are "Traditional Chinese Medicine," "TCM," "Traditional Medicine," " Chinese Medicine," "TCM Theory,"

"Vocational Education," "Vocational Training," "Skills Education," "Continuing Education," and "Career Development." The search query is constructed as: (Traditional Chinese Medicine) OR (Chinese Medicine+TCM+Traditional Medicine+TCM Theory) AND (Vocational Education+Vocational Training+Skills Education+Continuing Education+Career Development). The search time range is from the database inception to October 20, 2025. All search results have been manually screened to ensure high relevance to the research topic.

2.2 Method

This study uses an automated analysis method based on large model to conduct a systematic econometric analysis of relevant literature, aiming to reveal the evolution context, knowledge structure and research hotspots of the research field. The specific analysis content includes: (1) annual publication trend analysis, through statistical literature publication time distribution, to identify the key stages of field development; (2) Analysis of the distribution of core authors, based on the number of publications and the frequency of citations, identify influential scholars in the field; (3) Analysis of author cooperative relationships, construction of author co-occurrence network, and reveal the structure of academic community; (4) Analysis of the number of institutional publications, statistics on the contribution of each research institution; (5) Institutional cooperation network analysis, through institutional co-occurrence relationships, identify cooperation models between research institutions; (6) Journal distribution analysis, statistical literature source journals, and identification of core journals in the field; (7) Keyword co-occurrence network analysis, constructing a keyword co-occurrence matrix, and revealing the correlation between research topics; (8) Keyword clustering analysis, which identifies the knowledge structure of the research topic through clustering algorithms; (9) Keyword emergence analysis detects the mutation points of keyword frequency and identifies emerging research hotspots [6]. The above analysis uses VOSviewer (1.6.20) and R language Bibliometrix package to achieve automatic processing through large models, ensuring the objectivity and reproducibility of the analysis results, and providing a visual basis for in-depth understanding of the development trend of the research field.

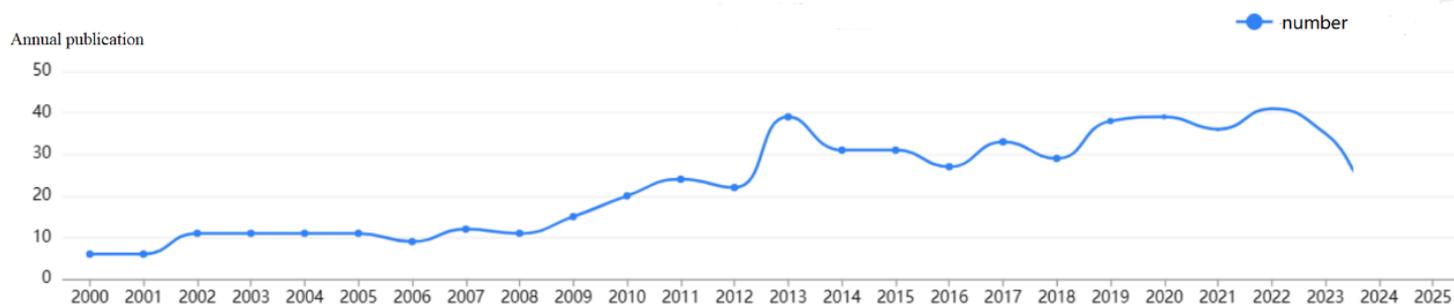


Figure 1. Annual publication trend chart.

3 Result

3.1 Analysis of the Amount of Publications

The publication volume of research on traditional Chinese medicine (TCM) vocational education shows a significant phased growth trend. Overall, 2000 to 2005 was the initial exploration period, with an average annual publication volume maintained between 6 and 11 articles, showing relatively slow growth. From 2006 to 2010, the research entered a rapid development phase, with the average annual publication volume increasing from 9 to 20 articles, reaching 20 articles in 2010, marking the turning point of this phase. Between 2011 and 2013, the publication volume further rose rapidly, peaking at 39 articles in 2013 for the first time, indicating that the research entered a peak period. From 2014 to 2018, although the publication volume experienced slight fluctuations, it remained generally between 27 and 33 articles, suggesting the research entered a relatively stable plateau period. From 2019 to 2023, the publication volume showed an upward trend again, reaching a historical peak of 41 articles in 2022. In 2024, the publication volume slightly declined, but rebounded to 30 articles in 2025, demonstrating that the research still exhibits strong sustainability and development potential (Figure 1).

3.2 Author Analysis

3.2.1 Core Author Analysis

Based on Price's Law to identify the core authors in the field of "Traditional Chinese Medicine and Pharmacy Vocational Education Research," the formula is ($M = 0.749 \times \sqrt{N_{max}}$), where $\sqrt{N_{max}}$ represents the total number of publications by the author with the highest number of publications [6]. According to the input data, the calculated threshold for the number of publications by core authors is 2, and based on this criterion, there are 60 authors whose publication count meets or exceeds this threshold, with a total of 143 publications, accounting for

100% of the total publications in this field. Among them, the core author with the highest number of publications is Feng Xiao and Niu Yanhui, each with 4 publications, followed by Chen Hongtao, Peng Lili, Luo Yaojie, and others, each with 3 publications. From the perspective of the institutions affiliated with the core authors, universities such as Hunan University of Chinese Medicine and Pharmacy, Zhejiang University of Traditional Chinese Medicine, and Gansu Health Vocational College show high research activity. Notably, Hunan University of Chinese Medicine and Pharmacy has a larger number of core authors and more concentrated publication counts, indicating its strong academic influence in the field of Traditional Chinese Medicine and Pharmacy Vocational Education Research (Table 1).

3.2.2 Author Collaboration Network Analysis

In the field of traditional Chinese medicine and pharmacy vocational education research, the author collaboration network map visually presents the cooperative relationships among scholars through nodes and connections. Here, nodes represent authors, and the size of the nodes reflects their academic activity or influence; connections represent cooperative relationships between authors, with the thickness of the connections indicating the frequency of collaboration. This network map includes 154 nodes (authors) and 220 connections (cooperative relationships), indicating the existence of a relatively extensive collaboration network among researchers in this field. In terms of node size, the most active and influential authors mainly include: Feng Xiao from Zhejiang University of Traditional Chinese Medicine (value=4), Niu Yanhui from Gansu Provincial School of Traditional Chinese Medicine (value=4), Bian Yao from the Continuing Education College of Yunnan University of Traditional Chinese Medicine (value=3), Shi Anhua (value=3), Zhang Li (value=3), Chen Hongtao from Hunan University of Traditional

Table 1. Number of author posts.

No.	Author	Year	Number of Publications	Affiliated Institution
1	Feng Xiao	2007	4	Zhejiang Chinese Medical University
2	Niu Yanhui	2008	4	Gansu Province Traditional Chinese Medicine School
3	Chen Hongtao	2019	3	Hunan University of Chinese Medicine
4	Peng Lili	2019	3	Hunan University of Chinese Medicine
5	Luo Yaoyue	2019	3	Hunan University of Chinese Medicine
6	Zhang Wenbo	2014	3	Nanchang University College of Science and Technology
7	Bian Yao	2014	3	Yunnan College of Traditional Chinese Medicine Continuing Education College
8	Shi Anhua	2014	3	Yunnan College of Traditional Chinese Medicine Continuing Education College
9	Zhang Li	2014	3	Yunnan College of Traditional Chinese Medicine Continuing Education College
10	Zhang Guangqin	2009	2	Guangdong Provincial Hospital of Traditional Chinese Medicine Nursing Department
11	Zhuang Ping	2009	2	Guangdong Provincial Hospital of Traditional Chinese Medicine Nursing Department
12	Jiang Xiaojian	2020	2	Hunan University of Chinese Medicine School of Nursing
13	Wang Guozao	2018	2	Hunan University of Chinese Medicine
14	He Qinghu	2018	2	Hunan University of Chinese Medicine
15	Zhang Xin	2009	2	Xinjiang Medical University School of Nursing
16	Li Jinfang	2010	2	Hubei University of Chinese Medicine
17	Guo Hongwei	2017	2	Heilongjiang University of Chinese Medicine
18	Xu Yue	2018	2	Continuing Education Office, Beijing Hospital of Traditional Chinese Medicine, Affiliated to Capital Medical University
19	Wang Lei	2018	2	Continuing Education Office, Beijing Hospital of Traditional Chinese Medicine, Affiliated to Capital Medical University
20	Zhao Yin	2018	2	Continuing Education Office, Beijing Hospital of Traditional Chinese Medicine, Affiliated to Capital Medical University

Table 2. Number of institutional issuances.

No.	Institution	Number of Publications	Citation	Average Citations per Paper
1	Editorial Department of Continuing Medical Education	14	0	0
2	Hunan University of Chinese Medicine	11	110	10
3	Hunan Traditional Chinese Medicine School	8	24	3
4	Gansu Traditional Chinese Medicine School	8	17	2.13
5	Shandong College of Traditional Chinese Medicine	7	45	6.43
6	Beijing University of Chinese Medicine	7	73	10.43
7	Traditional Chinese Medicine School Affiliated to Guangxi University of Chinese Medicine	7	21	3
8	Hainan College of Traditional Chinese Medicine	6	48	8
9	Heilongjiang University of Chinese Medicine	6	26	4.33
10	Hainan Provincial Hospital of Traditional Chinese Medicine	6	45	7.5

Chinese Medicine (value=3), Peng Lili (value=3), Luo Yaojie (value=3), and Zhang Wenbo from Nanchang University Science and Technology College (value=3), among others. These scholars exhibit high academic activity in the field of traditional Chinese medicine and pharmacy vocational education research, and their research achievements have played a significant role in advancing the development of this field (Figure 2).

3.3 Institutional Analysis

3.3.1 Analysis of Institutional Documents

Based on the provided data on institutional publications, the total number of institutions is 608. Among the top ten institutions in terms of publication volume, Hunan University of Chinese Medicine and Beijing University of Chinese Medicine stand out the most, with average citation frequencies of 10 and 10.43 respectively, indicating high academic influence. In contrast, the average citation frequency of Gansu School of Chinese Medicine is the lowest, at

only 2.13. Overall, Chinese institutions demonstrate significant advantages in both publication volume and academic influence, but there are considerable differences in average citation frequency among institutions (Table 2).

3.3.2 Analysis of Institutional Cooperation Networks

The institutional collaboration network constructed in this study consists of 90 nodes, with 144 connections indicating a large number of institutions actively participating in collaboration, forming a relatively dense network (Figure 3). By analyzing the degree of nodes and the strength of connections, several core institutions were identified, which hold significant collaborative influence or bridging positions within the network. Among them, institutions such as Hainan Provincial Hospital of Traditional Chinese Medicine, Beijing Municipal Administration of Traditional Chinese Medicine for Science and Education, and Hunan University of Chinese Medicine demonstrate strong collaborative capabilities. Notably, Hainan

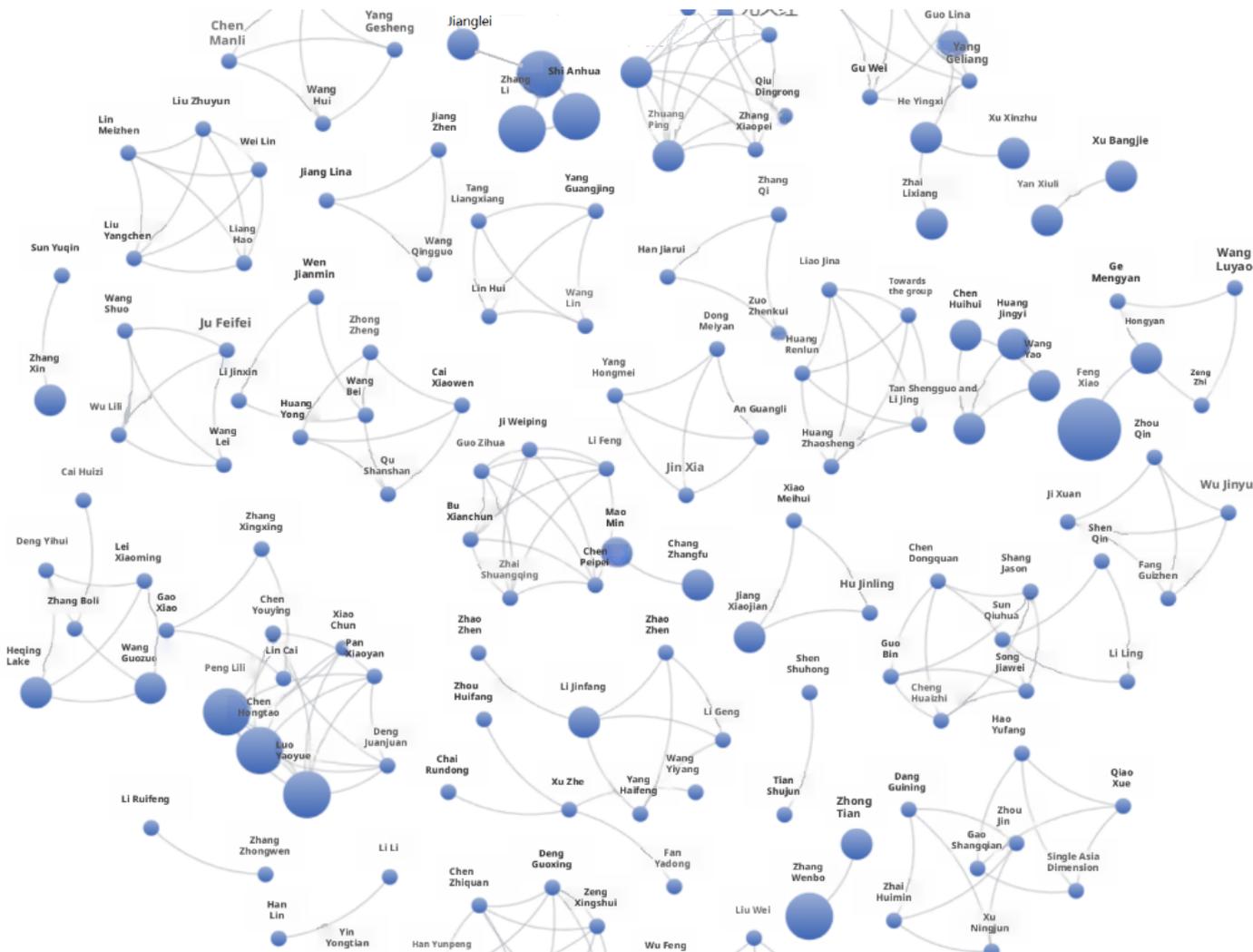


Figure 2. Author's cooperation network diagram.

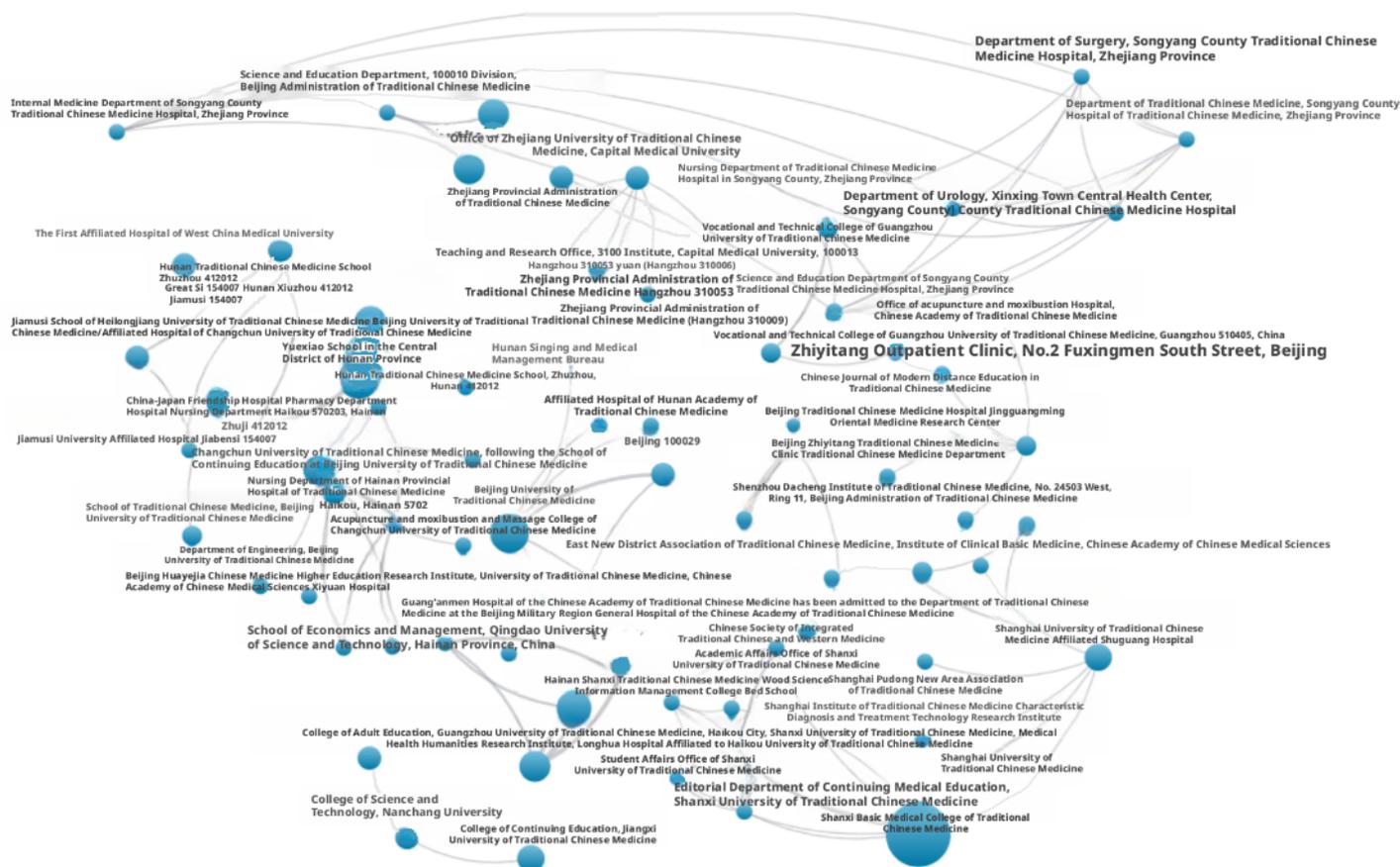


Figure 3. Institutional cooperation network.

Provincial Hospital of Traditional Chinese Medicine has collaboration strengths of 30 and 25 with "Hainan University of Traditional Chinese Medicine" and "Haikou Municipal Hospital of Traditional Chinese Medicine," respectively, highlighting its core position in regional collaboration. Additionally, institutions such as Beijing University of Chinese Medicine and the Teaching and Research Office of the College of Traditional Chinese Medicine at Capital Medical University have secured important positions in the network through frequent collaboration. Particularly, Beijing University of Chinese Medicine has a collaboration strength of 9 with "Chinese Academy of Traditional Chinese Medicine," reflecting its active participation in academic exchanges. From a geographical distribution perspective, core institutions are primarily concentrated in China, especially in regions such as Beijing, Hainan, and Hunan, forming a collaborative cluster centered around Beijing and radiating across the country.

3.4 Journal Analysis

Research Evolution and Reflections on Traditional Chinese Medicine Vocational Education: This topic has a total of 600 published articles, involving 231

Table 3. Number of journal publications.

No.	Journals	Number of Publications
1	Journal of Traditional Chinese Medicine Management	64
2	Modern Distance Education of Chinese Medicine	62
3	Health Vocational Education	30
4	Chinese Medicine Education	24
5	Continuing Medical Education	21
6	Chinese Medicine Herald	13
7	Modern Vocational Education	13
8	Journal of Guangxi University of Chinese Medicine	8
9	China Continuing Medical Education	7
10	Education and Teaching Forum	7

journals, covering multiple publications such as Traditional Chinese Medicine Management, Modern Distance Education of Traditional Chinese Medicine in China, Health Vocational Education, and Continuing

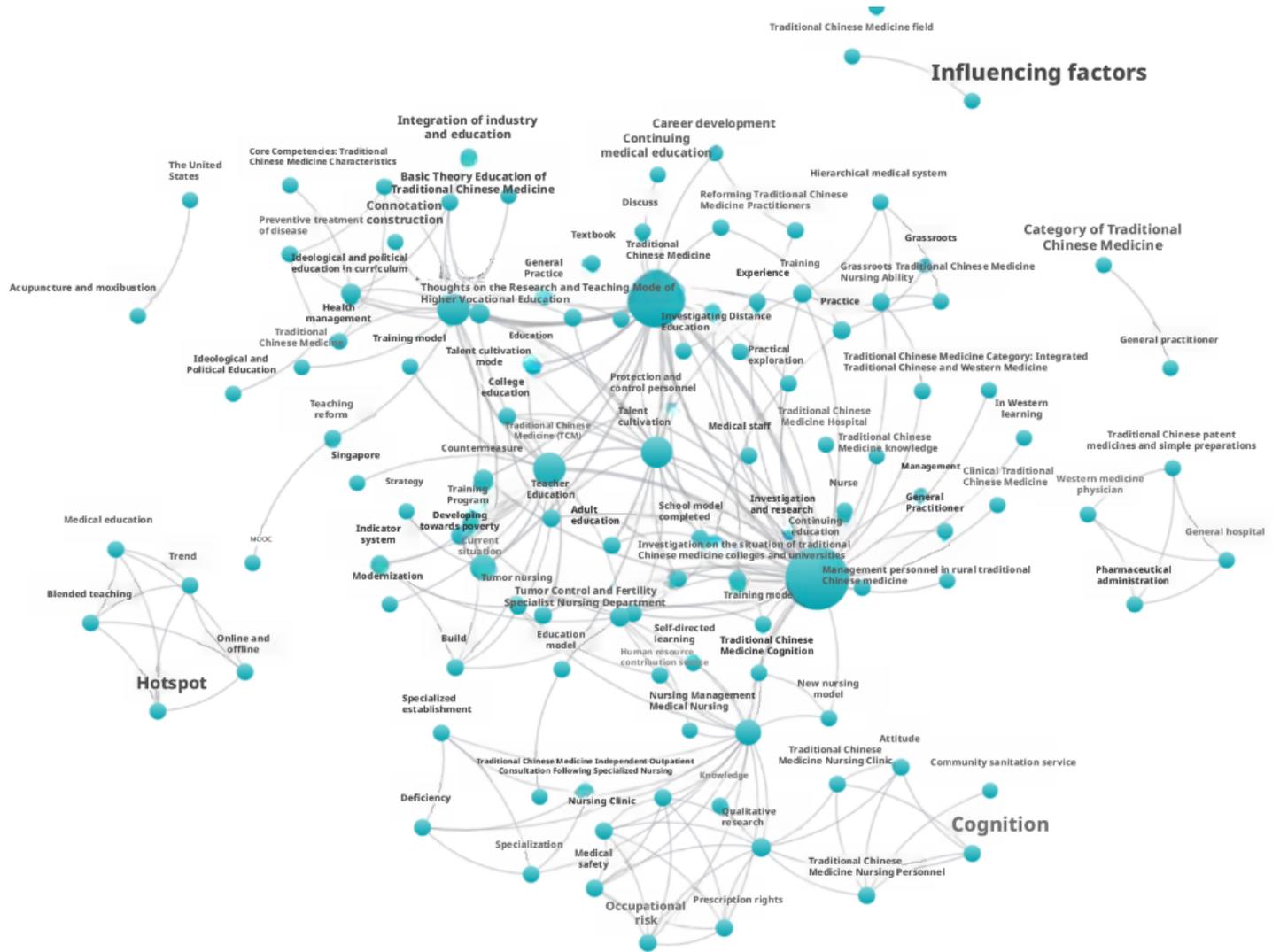


Figure 4. Keyword collinear network.

Medical Education (Table 3). The publication trends in these journals reflect the widespread attention given to this topic within traditional Chinese medicine education and management, as well as its interdisciplinary research characteristics. Among the top 10 journals, the one with the highest number of publications is the Journal of Traditional Chinese Medicine Management, with 64 articles, followed by Modern Distance Education of Traditional Chinese Medicine in China with 62 articles. Both are journals focused on traditional Chinese medicine education, indicating a high research intensity in this topic within the fields of traditional Chinese medicine management and education. Additionally, the journals Health Vocational Education and Chinese Journal of Traditional Chinese Medicine Education have also published a significant number of articles, 30 and 24 respectively, further confirming the importance of this topic in vocational education and traditional Chinese medicine education.

3.5 Keyword Analysis

3.5.1 Keyword Co-occurrence Analysis

Keyword co-occurrence network analysis in traditional Chinese medicine vocational education research shows (Figure 4) that the field includes 120 nodes and 228 connections, indicating the breadth and relevance of research topics. Node size represents the frequency of keyword occurrence, while connections reflect the co-occurrence relationships between keywords. Keywords with higher frequency and more connections occupy a more central position in the research network. The analysis found that "continuing education" (145 occurrences), "TCM" (129 occurrences), and "vocational education" (51 occurrences) are the keywords with the highest co-occurrence frequency, forming the basic framework of the research. Among them, "continuing education" and "TCM" have the highest co-occurrence frequency (25 occurrences), indicating their close relationship

in research and reflecting the importance of TCM continuing education in the vocational education system. Additionally, the frequent co-occurrence of "talent cultivation" (48 occurrences) with keywords such as "continuing education" and "vocational education" highlights the central role of talent cultivation in TCM vocational education.

3.5.2 Keyword cluster analysis

This study employs the Louvain algorithm for clustering analysis of keywords, constructing a co-occurrence network map of keywords (Figure 5). The network structure parameters show a total of 45 nodes and a modularity Q value of 0.712, indicating that the clustering results have high internal cohesion and external independence. Through clustering analysis, 6 major clustering themes were identified, numbered #0 to #5. Among them, the #0 cluster is centered around "continuing education," including keywords such as "integrated traditional Chinese and Western medicine" and "Chinese medicine hospitals," reflecting the widespread application of continuing education in the field of traditional Chinese medicine. The #1 cluster focuses on "vocation education," involving keywords like "teaching reform" and "teaching mode," highlighting the importance of vocation education in traditional Chinese medicine education. The #2 cluster is themed around "Chinese medicine," covering keywords such as "Chinese medicine education" and "training model," emphasizing the development direction of Chinese medicine education. The #3 cluster revolves around "Chinese medicine hospitals," including keywords like "training" and "practice," underscoring the role of Chinese medicine hospitals in practical training. The #4 cluster is centered on "Chinese medicine and pharmacy," involving keywords such as "continuing medical education" and "talent training model," showcasing the diversified development of Chinese medicine and pharmacy education. The #5 cluster focuses on "higher vocation education," including keywords like "curriculum ideological and political education" and "ideological and political education," reflecting the exploration of higher vocation education in ideological and political education. #

3.6 Keyword Burst Analysis

Keyword burst map analysis is a tool used to identify keywords that suddenly appear and have a high impact in research fields, revealing the dynamic changes and trend shifts in research hotspots. Under the theme "Evolution and Reflections of TCM Vocational

Education Research Based on Knowledge Graphs" (Table 4), keyword burst map analysis shows that the top two keywords with the highest burst intensity are "Traditional Chinese Medicine" (burst intensity 6.72) and "Continuing Education" (burst intensity 3.95). Among them, "Traditional Chinese Medicine" burst started in 2002 and ended in 2004, while "Continuing Education" also started in 2002 but ended in 2003. This indicates that "Traditional Chinese Medicine" was a relatively early-burst keyword, whereas "Continuing Education" had a shorter burst period. In terms of the relationship between burst keywords and high-frequency/high-centrality keywords, "Traditional Chinese Medicine," as the keyword with the highest burst intensity, may be closely related to the core content of TCM vocational education, reflecting the emphasis on TCM knowledge in this field between 2002 and 2004. Meanwhile, "Continuing Education" may point to the ongoing learning and skill enhancement needs in TCM vocational education, highlighting the focus on lifelong learning concepts in vocational education.

Table 4. Keyword burst analysis.

Keywords	Year	Strength	Begin	End
Continuing education	2000	3.95	2002	2003
Traditional Chinese Medicine	2000	6.72	2002	2004

4 Discussion

This study systematically reviews the evolution and trend characteristics of research on traditional Chinese medicine vocational education based on knowledge graphs through bibliometric and visual analysis. The findings reveal that the number of publications in this field shows a significant phased growth, progressing from initial exploration to rapid development and then to stable growth, indicating strong sustainability and development potential of the research, with further room for deepening in the future. This observation aligns with the research by Yang et al. [7] on the development of medical vocational education, confirming the emphasis and progress of medical vocational education in China.

Analysis of core authors and institutions shows that institutions such as Hunan University of Chinese Medicine and Zhejiang University of Chinese Medicine hold dominant positions in research, and the author collaboration network is relatively dense, reflecting close cooperation and interdisciplinary characteristics of the academic community. Core authors from affiliated medical institutions of

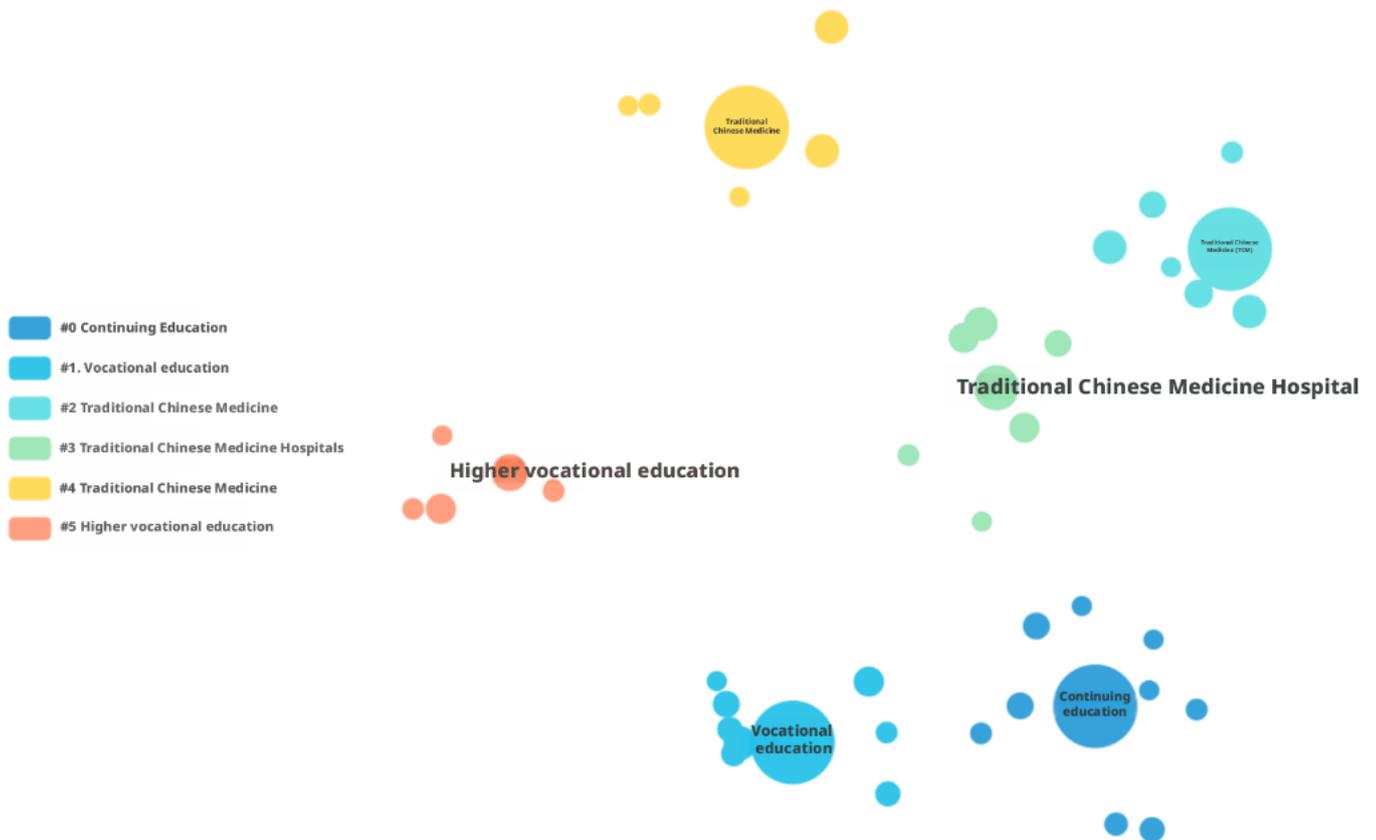


Figure 5. Keyword cluster analysis.

universities such as Hainan Provincial Hospital of Traditional Chinese Medicine, Guangdong Provincial Hospital of Traditional Chinese Medicine, and Beijing University of Traditional Chinese Medicine Affiliated Beijing Hospital of Traditional Chinese Medicine also demonstrate high research activity, reflecting the deep integration of TCM vocational education research in clinical practice and continuing education. These high-impact authors play a core role in TCM vocational education research. They not only form a close academic network through frequent collaboration but also provide important support for theoretical construction and practical application in the field through high-quality research outcomes. Chan from Zhejiang University of Chinese Medicine [8] has achieved significant results in the innovation of TCM education models and the application of knowledge graphs, and his research provides a theoretical basis for the digital transformation of TCM vocational education. Among them, the paper “Research and Practice on Cultivating Grassroots TCM Talents” has been widely cited and has become one of the classic literatures in the field. Feng Xiao’s research not only promotes the informatization process of TCM education but also provides new ideas for the innovative development of TCM vocational

education. Li et al. [9] from the Continuing Education College of Yunnan University of Chinese Medicine have conducted in-depth exploration in the field of integrated traditional Chinese and Western medicine vocational education, proposing new strategies for curriculum design and teaching practice in integrated traditional Chinese and Western medicine vocational education. Their research outcomes are of great significance for enhancing the internationalization level of TCM vocational education. Lan et al. [10] from Hunan University of Chinese Medicine have made outstanding contributions in the construction of TCM curriculum systems and the reform of teaching methods, and their research provides practical guidance for the standardization and normalization of TCM vocational education. In terms of research institutions, Beijing serves as an important hub for TCM research, gathering several high-impact institutions such as the China Academy of Chinese Medical Sciences and Beijing University of Chinese Medicine. These institutions not only dominate domestic collaborations but also demonstrate a certain level of international cooperation breadth through partnerships with organizations like the World Federation of Chinese Medicine Societies and the American Society of Chinese Medicine. In

addition, institutions in Hainan and Hunan provinces have shown outstanding performance in regional collaborations, forming cooperative groups centered around local characteristics. Overall, the research backgrounds of core authors are diverse, covering fields such as TCM education, TCM clinical practice, and continuing education, reflecting the broad participation in this research topic.

Currently, the number of research papers on traditional Chinese medicine vocational education is gradually expanding. However, from the perspective of publication ratios in high-level journals, although the number of publications in national core journals accounts for a certain proportion, there is still room for improvement in overall representation, indicating that the depth and quality of research on this topic need to be strengthened. Maiga et al. [11] proposed the creation of an international cooperation model for TCM suitable techniques based on “technological integration and platform co-construction” for the international dissemination of TCM, suggesting that cultivating international talents capable of meeting the needs of overseas dissemination of TCM culture is a worthwhile new model to consider. From the perspective of comprehensiveness and interdisciplinary characteristics, this topic not only involves TCM but also integrates knowledge from multiple disciplines such as education and information science, demonstrating significant interdisciplinary attributes. Future research can further deepen the application mechanisms of informatization and interdisciplinary integration in TCM vocational education at the theoretical level, explore more intelligent, data-driven, and industry-education integrated technical means at the methodological level, and strengthen alignment with international education systems at the practical level to promote the global development of TCM vocational education [12].

From the perspective of keyword aggregation trends, research in TCM vocational education has progressively shifted from macro-level discussions on “current situation” and “countermeasures” toward the design of specific educational pathways and mechanisms, such as “curriculum system,” “education model,” and “training model.” This evolution reflects a deepening transition from theoretical construction to practical application within the field.

The keyword co-occurrence network further illustrates this developmental trajectory, revealing a clear progression from foundational theories to applied

innovations, thereby providing directional guidance for future research. The clustering network’s structural parameters (modularity $Q = 0.712$) confirm a high degree of research concentration, with significant correlations observed among the identified thematic clusters.

An in-depth examination of the clusters reveals meaningful intersections. For instance, Cluster #0 (“Continuing Education”) and Cluster #4 (“Traditional Chinese Medicine”) converge prominently in the domain of “continuing medical education.” This overlap underscores the central role of continuing education in TCM practice, which is closely tied to the widespread dissemination of TCM appropriate technologies in hospitals and community healthcare settings. Meanwhile, Cluster #1 (“Vocational Education”) and Cluster #5 (“Higher Vocational Education”) share common ground in areas such as “teaching reform” and “ideological and political education in curricula.” This intersection reflects a shared focus across vocational and higher vocational institutions on innovating both teaching content and pedagogical approaches.

The emergence of new keywords such as “curriculum-based ideological and political education” and “blended teaching” further highlights the field’s active exploration of integrating modern educational technologies with value-oriented education [13–16]. These developments are inseparable from the national emphasis on fostering virtue through education, reflecting heightened expectations for students’ moral cultivation within TCM vocational training.

Based on the keyword burst analysis, it is anticipated that research foci will continue to evolve—from the traditional transmission of TCM knowledge toward more comprehensive investigations emphasizing continuing education and professional competency development. With the deepening application of artificial intelligence and big data technologies, future research on TCM vocational education is likely to further integrate digital and intelligent methodologies, thereby promoting innovation and optimization of educational models [17, 18].

In summary, the evolution of research hotspots—from macro-level conceptual discussions to the design of specific pathways and mechanisms—reflects the field’s ongoing maturation from theoretical exploration toward practical implementation. These findings not only elucidate the current research landscape but also provide valuable insights into the future development

trajectory of TCM vocational education.

5 Conclusions and Prospects

Through literature analysis and visualization, this study found that the number of publications in the field of traditional Chinese medicine vocational education in China has shown a phased growth trend, initially exploring, rapidly developing, and then stabilizing and increasing. A close collaboration network of high-impact authors has gradually emerged. Institutions in Beijing, Hainan, Hunan and other places have formed regional collaboration clusters. The core authors' backgrounds cover fields such as traditional Chinese medicine education and clinical research. The participation of university-affiliated medical institutions reflects the deep integration of clinical and continuing education, highlighting the interdisciplinary nature. The trend of key words shows that the research has shifted from macro-level discussions such as "current situation" and "countermeasures" to specific path design such as "curriculum system" and "education model". Emerging keywords include "curriculum ideological education" and "hybrid teaching", and hotspots have focused on continuing education and vocational ability improvement. It will further combine with digital and intelligent means. This study provides a reference for the overall grasp of the development trend of domestic traditional Chinese medicine vocational education, and points out the direction for the research group to carry out in-depth research in the later stage. In the future, we will focus on the curriculum construction, talent training mode and the combination of artificial intelligence and other micro and micro fields of traditional Chinese medicine vocational education.

Looking to the future, with the in-depth application of artificial intelligence and big data technologies, the research on traditional Chinese medicine vocational education should further integrate digital and intelligent methods to promote the innovation and optimization of the educational model. At the same time, the research should strengthen its alignment with the international education system, enhance the internationalization level of traditional Chinese medicine research, and focus on cross-disciplinary integration, exploring more intelligent and data-driven technical means to promote the global development of traditional Chinese medicine vocational education.

Data Availability Statement

Data will be made available on request.

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Conflicts of Interest

The authors declare no conflicts of interest.

AI Use Statement

The authors declare that no generative AI was used in the preparation of this manuscript.

Ethical Approval and Consent to Participate

Not applicable.

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