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A bibliometric analysis and visualization of acupuncture and moxibustion therapy for herpes zoster and postherpetic neuralgia

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Abstract

Objective: To identify major contributors, current research status, and to forecast research trends and future development prospects on acupuncture and moxibustion therapy for herpes zoster (HZ) and postherpetic neuralgia (PHN).

Methods: A systematic search was conducted on the China National Knowledge Infrastructure (CNKI), Weipu, WanFang databases, and the Web of Science Core Collection (WoSCC), PubMed, and Scopus databases. The search strategy included relevant terms for HZ, PHN, acupuncture, and moxibustion. The reference type was limited to articles or reviews, with a publication date from January 1, 2014 to December 31, 2023. Data analysis was performed using CiteSpace software, focusing on author, institution, source, and keyword distributions, and temporal trends.

Results: A total of 1612 publications were identified from both Chinese and English databases. The analysis revealed a rising trend in publication numbers in the English database, with a significant increase observed in 2020. In the Chinese database, publication activity exhibited two peaks in 2019 and 2023. Guohua Lin and Jingchun Zeng were the most prolific authors in the Chinese and English databases, respectively. The Chengdu University of TCM and Zhejiang Chinese Medicine University were the most

Jianhua Chen and Chao Luo contributed equally to this work.

active institutions. The keyword analysis revealed "herpes zoster" as the most frequent keyword in the Chinese database, while "postherpetic neuralgia," "acupuncture," and "management" were prominent in the English database. The study also identified several therapeutic approaches, including fire needle therapy and electroacupuncture, which have shown efficacy in treating HZ and PHN. Animal studies provided insights into the mechanisms of these therapies, suggesting potential modulation of neuroinflammatory markers and intracellular signaling pathways.

Conclusion: The bibliometric analysis underscores the growing interest in acupuncture and moxibustion therapy for HZ and PHN. It highlights the contributions of key authors and institutions while pinpointing potential areas for future research. The study advocates for the necessity of large-scale, multi-center clinical trials and further basic mechanical research to optimize these therapies. Moreover, it also emphasizes the importance of international collaboration to strengthen the evidence base and expand the global impact of this traditional treatment modality.

KEYWORDS
acupuncture, bibliometric analysis, CiteSpace, data visualization, herpes zoster, moxibustion, postherpetic neuralgia

1 | INTRODUCTION

Herpes zoster (HZ), also known as shingles, affects approximately 3‰–5‰ population each year.[1,2] It is caused by the varicella-zoster virus (VZV), and is commonly triggered by factors such as advanced age, immunosuppression, or physical stress. The clinical manifestation of HZ is characterized by the presence of painful fluid-filled vesicles along specific dermatomes, typically occurring unilaterally, accompanied by neuropathic pain.[1,3]

Postherpetic neuralgia (PHN) is a condition that is typically defined as persistent pain lasting for more than 90 days following the onset of HZ.[4,5] The pathogenesis of PHN is multifactorial and not completely understood, but it is believed to involve both peripheral and central sensitization mechanisms.[5] Peripheral sensitization occurs when damage to the sensory nerves leads to increased spontaneous activity and lowered thresholds for evoked responses. On the other hand, central sensitization involves changes in the dorsal horn of the spinal cord, where the hyperexcitability of neurons results in amplified pain signals being transmitted to the brain. Additionally, the loss of inhibitory interneurons and changes in the expression of various ion channels, such as sodium channels, contribute to the persistent pain experienced in PHN.

The management of HZ and PHN involves a multi-modal approach aimed at symptom relief, viral replication reduction, and of complications prevention.[6] Antiviral therapy is the cornerstone of treatment and should be initiated as soon as possible after the onset of HZ, ideally within 72 h, to maximize be most effectiveness in reducing rash duration, pain severity, and PHN risk.[7] When pharmacological interventions are insufficient, procedures such as nerve blocks or ablation may be considered.[8] In addition, non-pharmacological approaches such as cognitive-behavioral therapy, relaxation techniques, and certain complementary therapies may provide adjunctive pain relief for some patients.[6]

Acupuncture and moxibustion are two non-pharmacological approaches based on traditional Chinese medicine (TCM) that have been used for thousands of years to treat a variety of health conditions.[9] Recognized by the World Health Organization (WHO) as complementary and alternative therapies, acupuncture and moxibustion have increasingly integrated into conventional healthcare settings, addressing issues like chronic pain.[10] Acupuncture entails the insertion of thin, sterile needles into acupuncture points on the body; while moxibustion involves the burning of a herb, typically mugwort (*Artemisia argyi*), to warm these points. According to TCM principles, illness or pain results from an imbalance or blockage of Qi (vital energy), and these approaches aims to restore balance by stimulating acupuncture points to promote the flow of Qi and blood, thereby regulating the body's internal systems.[9]

In the context of HZ and PHN, acupuncture and moxibustion have been explored as potential treatment options.[11] Studies have shown that acupuncture can modulate the neuroendocrine and immune systems, leading to the release of endorphins and other neuromodulatory substances that have analgesic and anti-inflammatory effects. A systematic review and meta-analysis of randomized controlled trials (RCTs) have demonstrated the efficacy of acupuncture and moxibustion in reducing pain intensity in patients with PHN.[12,13] Moreover, moxibustion has been reported to have fewer side effects compared to pharmacological interventions, making it an attractive option for patients who are unable to tolerate the side effects of conventional pain medications or who are seeking a non-pharmacological approach to pain management.[13]

Bibliometrics is the field that involves the measurement and statistical analysis of scientific publications, reports, books, and other

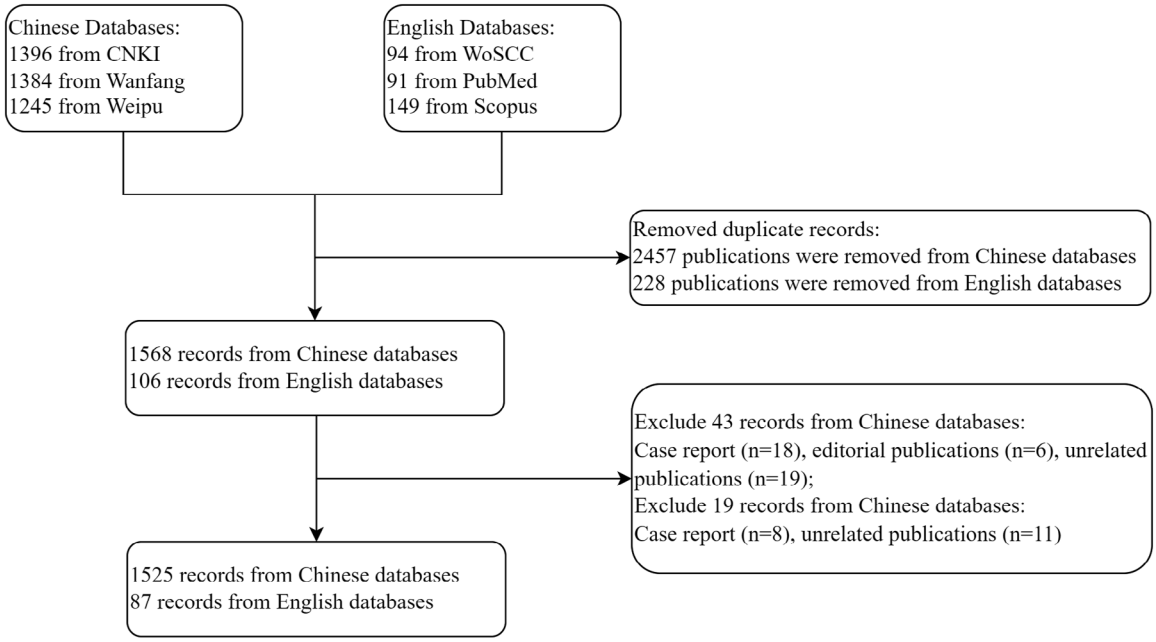

FIGURE 1 Publications screening flowchart.

forms of intellectual property. It utilizes mathematical and statistical methods to evaluate the status quo and hot topics of research performance, identify trends, map the structure of scientific fields, and provide insights for further directions.[14] Although a few bibliometric studies on HZ or PHN have been conducted in recent years, a comprehensive bibliometric analysis of acupuncture and moxibustion therapy for HZ and/or PHN has not been carried out.[15] To fill this knowledge gap, this study aims to perform a bibliometric analysis of publications on acupuncture and moxibustion therapy for HZ and PHN over the last decade (from 2014 to 2023). The analysis will identify major contributors, current research status, and anticipate research trends and future development prospects in this field.

2 | METHODS

2.1 | Data sources and search strategy

We conducted the Chinese literature search on the China National Knowledge Infrastructure (CNKI) database (https://www.cnki.net/), Weipu database (http://www.cqvip.com/), and WanFang database (https://www.wanfangdata.com.cn/); and the English literature search on the Web of Science Core Collection (WoSCC) database (https://www.webofscience.com/wos/woscc/basic-search), PubMed database (https://pubmed.ncbi.nlm.nih.gov/) and Scopus database (http://www.scopus.com). The search strategy was "(TS = (herpes zoster) OR TS = (postherpetic neuralgia)) AND (TS = (acupuncture) OR TS = (moxibustion))" for relevant publications, and the reference type was "article or review". The published year span was "January 1, 2014–December 31, 2023". All data were acquired on April 1, 2024, to avoid the prejudice caused by the database update (Figure 1).

2.2 | Data analysis

CiteSpace is a freely available computer program written in Java for visualizing and analyzing literature of a scientific domain. The method was described in our previous study.[16,17] Briefly, the downloaded files from Chinese and English databases were imported into Citespace V6.3.R1. The parameters were set as follows: (1) Timespan: 2014–2023 (Slice Length = 1); (2) selection Criteria: g-index ($k = 25$); (3) the node type was set as author, institution, source, and keyword respectively; (4) choosing "Pathfinder" and "Pruning the merged network" for keyword analysis; while choosing "Pruning the sliced network" for other information. The quantitative data were presented by Microsoft Excel 2019.

3 | RESULTS

3.1 | Bibliometric analysis of the temporal distribution

According to the search strategy, 1396, 1384, and 1245 publications were retrieved from CNKI, Wanfang, and Weipu databases, respectively; while 94, 91, and 149 publications were retrieved from WoSCC, Pubmed, and Scopus, respectively. After removing the duplicates, 1525 and 87 publications on acupuncture and moxibustion therapy for herpes zoster and postherpetic neuralgia were retrieved from Chinese and English databases between 2014 and 2023 (Figure 1). As shown in Figure 2, the number of publications in the English database showed a generally growing trend, exceeded 10 for the first time in 2020, and the number has remained stable in the last 3 years; while in the Chinese

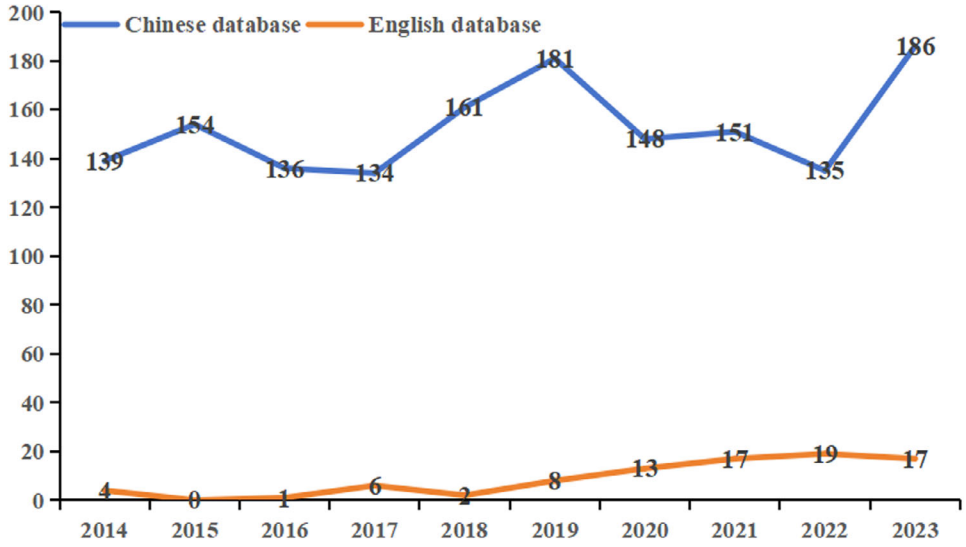

FIGURE 2 Annual publication trends on acupuncture and moxibustion therapy for herpes zoster and postherpetic neuralgia.

TABLE 1 Top five prolific authors in the Chinese and English databases.

Rank	Chinese database				English database			
	Name	Publications	Been cited	Year of publications	Name	Publications	Been cited	Year of publications
1	Lin, Guohua	17	259	2016–2023	Zeng, Jingchun	7	35	2019–2022
2	Zeng, Jingchun	11	94	2018–2023	Lin, Guohua	6	35	2019–2022
3	Sun, Zhongren	8	140	2014–2023	Fang, Jianqiao	5	11	2020–2023
4	Mao, Hongrong	8	127	2015–2022	Sun, Ruohan	5	11	2020–2023
5	Yan, Zhangren	8	66	2015–2022	Han, Dexiong	4	9	2021–2023

database, the number reached the first peak in 2019 and reached the second peak in 2023.

3.2 | Bibliometric analysis of the author's distribution

The top five most prolific authors in both Chinese and English databases are shown in Table 1. The most prolific (n = 17) author in the Chinese database was Guohua Lin from the First Affiliated Hospital of Guangzhou University of TCM, China. He is mainly engaged in the clinical and basic research of fire needling therapy for HZ with southeast China characteristics for decades. The most prolific (n = 7) author in the English database was Jingchun Zeng, also from the First Affiliated Hospital of Guangzhou University of TCM, China. Her career is just beginning, and her main research methods included bibliometric analysis and systematic review. Co-author analysis showed networks of authors who had co-authorship in Chinese (Figure 3A) and English databases (Figure 3B); the larger spot indicated more publications, the thicker line indicated more co-authorship, and the lighter line indicated later collaborative year. In Chinese databases, there are two major networks led by Guohua Lin and Hua Liu, respectively. There are five major networks in English databases, the biggest one was led by Jingchun Zeng from China.

3.3 | Bibliometric analysis of the institution's distribution

The top five most prolific institutions in both Chinese and English databases are shown in Table 2. The Chengdu University of TCM, China was the most prolific (n = 58) institution in the Chinese database and the third (n = 7) in the English database. Zhejiang Chinese Medicine University, China was the most prolific (n = 11) institution in the English database. All institutions in the Chinese database were from China. In the English database, institutions from China had the most publications (n = 68), followed by the USA (n = 9) and Australia (n = 6) (Table 3). The institutions from the USA had the highest degree score (4) and centrality (0.07), which indicated that these institutions had more collaboration with other countries and a higher impact in this field. Co-institution analysis showed networks of institutions that had collaborated in the Chinese (Figure 4A) and English databases (Figure 4B). In the Chinese database, most of these collaborations were from medical universities in south China. In the English databases, most of these collaborations were limited to medical universities and their affiliated hospitals in China; only Guangzhou University of TCM had an international collaboration with the Royal Melbourne Institute of Technology (RMIT) University, Australia. The Guangzhou University of TCM had the highest centrality (0.02 and 0.02, respectively)

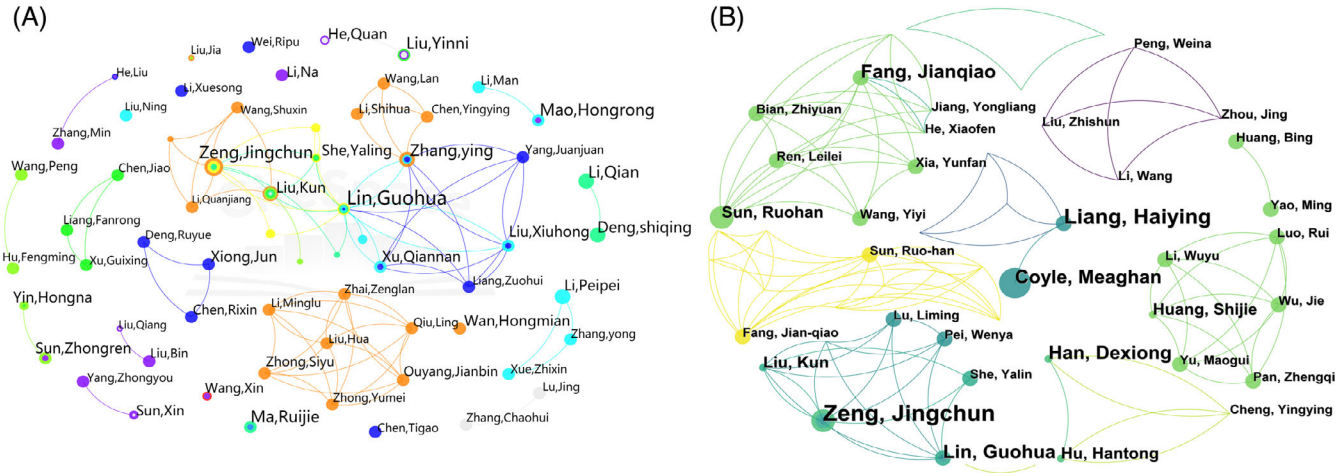

FIGURE 3 Authors collaboration map on acupuncture and moxibustion therapy for herpes zoster and postherpetic neuralgia from the Chinese (A) and English (B) databases.

TABLE 2 Top five prolific institutions from the Chinese and English databases.

Rank	Chinese database				English database			
	Institution	Publications	Degree	Centrality	Institution	Publications	Degree	Centrality
1	Chengdu Univ Tradit Chinese Med, China	58	11	0.02	Zhejiang Chinese Med Univ, China	11	5	0
2	Guangxi Univ Chinese Med, China	43	8	0.01	Guangzhou Univ Chinese Med, China	9	7	0.02
3	Guangzhou Univ Chinese Med, China	42	13	0.02	Chengdu Univ Tradit Chinese Med, China	7	6	0.01
4	Jiangxi Univ Chinese Med, China	39	6	0.01	China Acad Chinese Med Sci, China	6	5	0.02
5	The First Affiliated Hosp of Guangzhou Univ of Chinese Med, China	36	11	0	RMIT Univ, Australia	6	5	0.02

TABLE 3 Top five prolific countries in the English databases.

Rank	Publications	Degree	Centrality	Country	First publication year
1	68	2	0.02	China	2014
2	9	4	0.07	USA	2014
3	6	0	0	Australia	2017
4	5	3	0	South Korea	2014
5	2	1	0	Italy	2016

and degree (13 and 7, respectively) in both the Chinese and English databases.

3.4 | Bibliometric analysis of co-occurring keywords

The occurrence of high frequency and high centrality of keywords show the focus of most authors in a period, that is, the hot spots and frontiers of research. The top 10 keywords in both Chinese and English databases are shown in Table 4. In Chinese databases, the highest frequency, highest degree, and highest centrality keyword was "herpes zoster" ($n = 607$, 68, and 0.96, respectively). In the English databases, the highest frequency, highest degree, and highest centrality keywords were "postherpetic neuralgia" (n = 185), "acupuncture" (16), and "management" (0.42), respectively. The network of co-occurring keywords in Chinese and English databases is shown in Figure 5.

The clustered network analysis functions to summarize the co-occurring keywords by a scientific calculation method. The silhouette

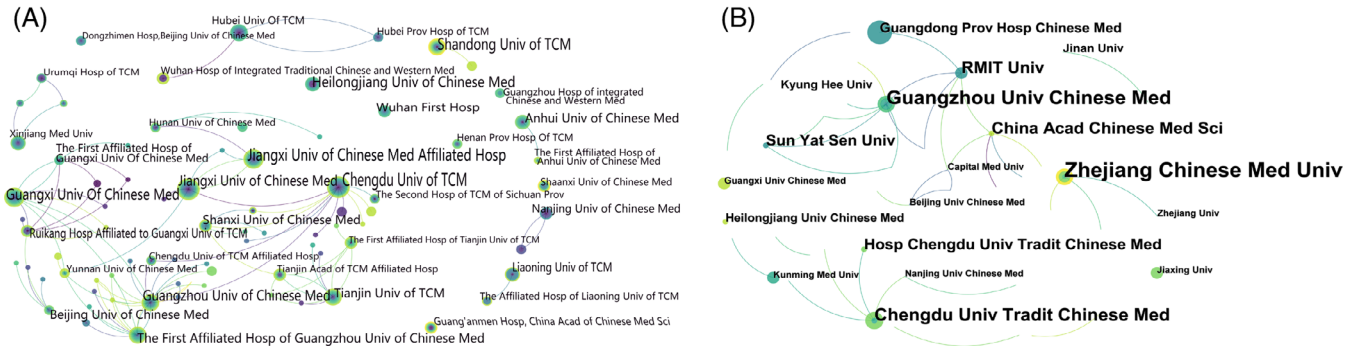

FIGURE 4 Institutions collaboration map on acupuncture and moxibustion therapy for herpes zoster and postherpetic neuralgia from the Chinese (A) and English (B) databases.

TABLE 4 Top 10 high-frequency keywords from the Chinese and English databases.

Rank	Chinese database				English database			
	Frequency	Degree	Centrality	Keywords	Frequency	Degree	Centrality	Keywords
1	607	68	0.96	Herpes zoster	44	6	0.2	Postherpetic neuralgia
2	195	45	0.14	Fire needle	42	7	0.28	Herpes zoster
3	163	42	0.17	Acupuncture	19	14	0.42	Management
4	110	29	0.11	Moxibustion	17	16	0.25	Acupuncture
5	98	24	0.12	Electroacupuncture	14	14	0.23	Neuropathic pain
6	94	32	0.05	Neuralgia	12	13	0.19	Randomized controlled trial
7	87	30	0.07	Cupping	12	10	0.21	Systematic review
8	74	24	0.03	Clinical effect	9	11	0.23	Risk factor
9	73	35	0.03	Systematic review	9	12	0.18	Double blind
10	48	31	0.03	Skin disease	8	11	0.12	Epidemiology

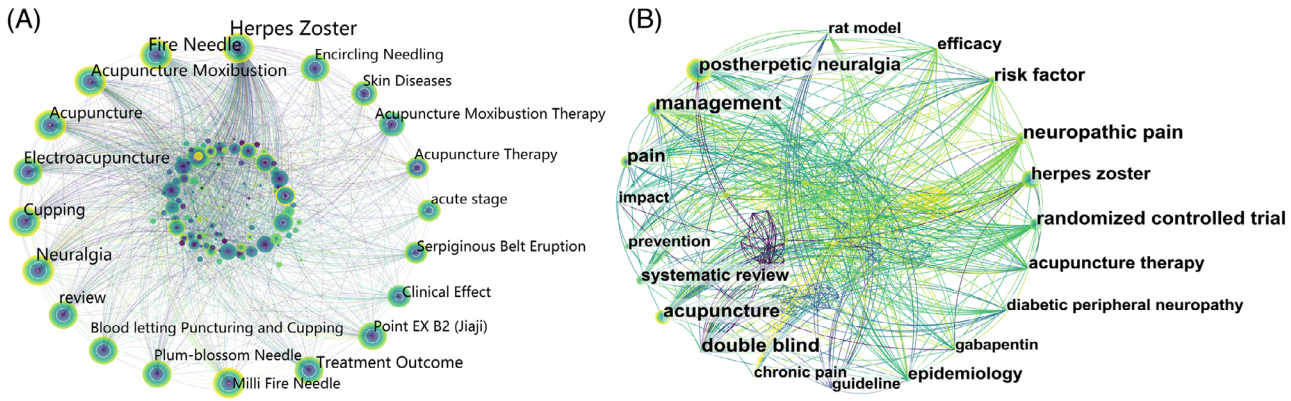

FIGURE 5 Bibliometric analysis of the keywords of publications from the Chinese (A) and English (B) databases.

score above 0.7 is considered an efficient and convincing cluster.[16] There were seven (silhouette score = 0.7419) and eight (silhouette score = 0.8896) clusters produced by the log-likelihood ratio in the Chinese and English databases, respectively (Figure 6). The clusters were comprised of keywords with different colors; the #0 cluster contains the largest number of keywords, and the overlap indicated the keyword belonged to more clusters simultaneously. Therefore, the fire needle was the primary concern in the Chinese database, while the systematic review was the primary concern in the English database.

The top 10 keywords with the strongest citation bursts are presented in Figure 7. The light blue line indicates the time interval, the blue line indicates the period when a keyword appeared, and the red

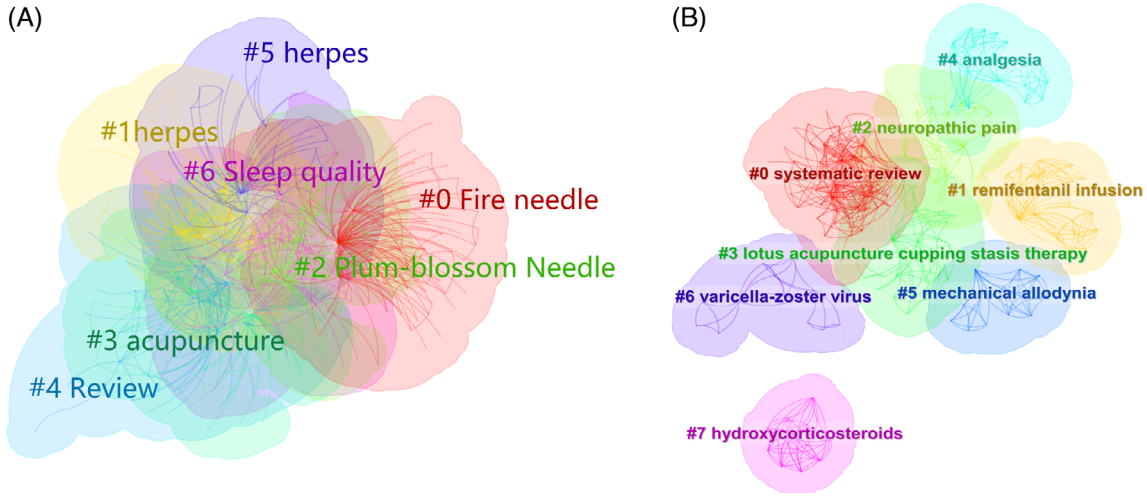

FIGURE 6 The keyword clusters produced from the Chinese (A) and English (B) databases.

(A)

Top 10 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2014-2023
herpes zoster	2014	3.98	2014	2015	
acupuncture	2014	3.5	2014	2015	
blood-letting therapy	2014	2.39	2014	2015	
fire needle	2015	2.6	2017	2018	
clinical outcome	2014	3.93	2019	2021	
systematic review	2019	3.47	2021	2022	
adverse effect	2019	2.53	2021	2024	
data mining	2021	1.76	2021	2023	
quality of life	2018	3.22	2022	2023	
mechanism	2018	1.33	2022	2023	

(B)

Top 10 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End
double blind	2014	0.73	2014	2018
acupuncture	2017	1.2	2017	2019
systematic review	2018	1.1	2018	2019
randomized controlled trial	2019	1.12	2019	2022
fire needle	2019	1.01	2019	2021
placebo	2020	1.12	2020	2021
case report	2020	0.74	2020	2021
clinical efficacy	2021	0.62	2021	2022
acupuncture analgesia	2022	1.4	2022	2023
bibliometric analysis	2022	0.7	2022	2023

FIGURE 7 Top 10 keywords with the strongest citation bursts from the Chinese (A) and English (B) databases.

line indicates the period when a keyword had a burst. These burst keywords were detected based on the increase in the frequency of the publications in that year, regardless of the total usage. The keyword with the strongest citation burst in the Chinese database was "herpes zoster" (strength 3.98), while the keywords with the latest burst were "quality of life" and "mechanism" (from 2022 till now). In English databases, the keyword with the strongest citation burst was "acupuncture analgesia" (strength 1.4), and the keywords with the latest burst were "acupuncture analgesia" and "bibliometric analysis" (from 2022 till now).

4 | DISCUSSIONS

4.1 | General information

In this study, a bibliometric analysis was conducted on publications related to acupuncture and moxibustion therapy for HZ and PHN from 2014 to 2023. A total of 1612 publications were yielded from both Chinese and English databases. The English database exhibited a rising trend in publication numbers, surpassing 10 publications in 2020 and maintaining a steady pace. The Chinese database showed two peaks in publication activity, notably in 2019 and 2023. While the overall trend indicated a yearly increase in publications, there were fluctuations possibly influenced by the COVID-19 pandemic.[18]

Guohua Lin and Jingchun Zeng from the First Affiliated Hospital of Guangzhou University of TCM led the authorship in the Chinese and English databases, respectively. Co-authorship networks revealed two major networks in the Chinese database and five in the English database, all led by authors from the First Affiliated Hospital of Guangzhou University of TCM. The Chengdu University of TCM was the most active institution in the Chinese database, while Zhejiang Chinese Medicine University topped the English database. Given the origins of acupuncture and moxibustion therapies in China, most studies were conducted by Chinese institutions, with limited international collaboration, despite some contributions from the USA and Australia.

Due to the similarity in expression of HZ and PHN in Chinese, the most frequent and highest centrality keyword in the Chinese

database was "herpes zoster". In the English database, key terms such as "postherpetic neuralgia", "acupuncture", and "management" were prominent. Generally, the citation bursts revealed "quality of life" and "acupuncture analgesia" as the strongest recent trends in the Chinese and English databases, respectively.

4.2 | Hot spots and frontiers

The choice of acupoints for treating HZ and PHN is guided by TCM principles, which emphasize the flow of "Qi" and "blood" through meridians or channels in the body. A previous study revealed that Ashi points (extra-meridian acupoints located at sites of tenderness or discomfort) and Jia Ji acupoints (EX-B2) were the most frequently used acupoints in the treatment of PHN.[19] Jia Ji points are particularly effective due to their proximity to the Du meridian and the Bladder meridian, which are believed to be related to PHN development.[20] The researchers also noted the importance of specific points, particularly the He points (a type of five transport points) from the liver, gallbladder, and spleen meridians, which are known for their effectiveness in promoting blood circulation and reducing stasis.[21]

In addition to standard acupuncture and direct moxibustion, other acupuncture and moxibustion therapies have unique indications and mechanisms of action, and they are also effective for patients with HZ or PHN. Fire needle is a technique where sterilized needles are heated and then quickly inserted into specific acupuncture points or skin areas. In the treatment of HZ or PHN, the heat from the needle not only stimulates the acupoints but also increases local blood circulation, promoting the healing process and reducing inflammation. Compared with gabapentin, the filiform fire needle combined with mild moxibustion has superior immediate analgesia effects and fast pain relief for PHN patients, with fewer adverse effects and lower costs.[22] Another study also showed that filiform fire needling plus cotton moxibustion therapy was effective in the treatment of patients with HZ by significantly reducing pain intensity, reducing herpes skin lesions, and improving sleep efficiency.[23] A systematic review and sequential analysis showed that fire needle as a primary treatment approach can significantly relieve pain, shorten the pain duration, and reduce the incidence of PHN.[24] A recent clinical study revealed that the early application of fire needling combined with cupping therapy is effective in treating acute stage HZ, relieving pain, and reducing the incidence of PHN. This effect may be related to the reduction in Th17 and Treg cell levels, as well as the Th17/Treg ratio in peripheral blood.[25]

In comparison, fire needle therapy is characterized by its use of heat and more intense stimulation; whereas electroacupuncture provides a more adjustable and continuous form of stimulation, which can be beneficial for those requiring prolonged treatment. Electroacupuncture involves the transmission of electrical impulses through acupuncture needles to intensify point stimulation. This method has been found to be effective in treating various types of pain, including PHN, by promoting blood circulation and reducing inflammation in the affected area. A randomized controlled trial showed that the combined treatment of electroacupuncture at Jia Ji acupoints, moxibustion, and intermediate frequency can relieve the pain and anxiety symptoms of PHN.[26] Furthermore, a systematic review and meta-analysis found that electroacupuncture could offer certain advantages in treating acute pain in herpetic neuralgia patients.[27]

Moreover, a Bayesian network meta-analysis showed that electroacupuncture plus antiepileptics is the best acupuncture-related technique for improving PHN-related insomnia and depression symptoms.[28] Existing evidence suggests that the collateral-pricking and bloodletting cupping combined with electroacupuncture had efficacy in pain relief, improvement of sleep quality, and enhanced therapeutic outcomes for patients with PHN.[29] Blood-letting, or pricking, involves the release of a small amount of blood from a vein or by puncturing the skin. Cupping involves placing cups on the skin, either directly or over a small flame or heated air to create a vacuum. The vacuum pressure causes the cups to suction onto the skin, which can increase blood flow to the area and is thought to help with pain relief, relaxation of muscles, and the removal of "stagnation". In the context of HZ and PHN, blood-letting and cupping were used simultaneously to reduce the heat and toxins that are believed to accumulate in the affected area, leading to pain and inflammation. A Bayesian network meta-analysis also showed that pricking and cupping plus antiepileptics, are the most effective acupuncture-related techniques for pain relief.[28] Another systematic-review and meta-analysis showed that bloodletting puncture and cupping was superior to antiepileptics in relieving pain and improving the sleep quality of patients with PHN with a lower incidence of adverse effects.[30] Despite numerous meta-analyses on acupuncture and/or moxibustion therapy for HZ and/or PHN, the strength of evidence remains insufficient. The potential clinical study directions include the following: (1) comparative effectiveness studies: performing head-to-head comparisons between different acupuncture and moxibustion techniques to identify the most effective approach for specific PHN patient subgroups, considering factors such as disease severity and comorbidities. (2) Combination therapies: Investigating the synergistic effects of combining acupuncture and moxibustion with other non-pharmacological treatments, such as cognitive-behavioral therapy or physical therapy, to enhance pain management in PHN. (3) Long-term outcomes: assessing the long-term efficacy and safety of acupuncture and moxibustion in PHN management, including their impact on quality of life, sleep patterns, and mental well-being. (4) Economic evaluation: conducting cost-effectiveness analyses to compare acupuncture and moxibustion with conventional treatments, considering both direct healthcare costs and indirect costs such as the burden of disease.

In animal models, acupuncture and moxibustion have been extensively studied for their potential therapeutic effects on HZ and PHN, with several significant findings that provide insights into the mechanisms. Li et al.[31] established a PHN rat model by VZV injection for continuous 21 days. Fire needle treatment was started from the 7th day, once every other day. At the end of the experiment, the treatment group had increased paw withdrawal threshold (PWT) and lower expression of NF-κB in spinal cord tissue compared to the control group. Wang et al.[32] induced a PHN model in rats with a single intraperitoneal resiniferatoxin (RTX) injection. SD rats were randomly

divided into the normal group, RTX group (200 μg/mL RTX), solvent group (RTX + 10 mL/kg saline), FA group (RTX + fire needle treatment), and GBP group (RTX + 100 mg/kg gabapentin). The fire needle group received daily treatments at Jia Ji acupoints for 2 weeks, effectively relieving peripheral neuralgia in PHN rats and activating the PKA-TRPV1 pathway, which indicated that its analgesic mechanism may be related to the expression of PKA, TRPV1, and pTRPV1 proteins in the dorsal root ganglia.

In RTX-induced PHN rats, Wu et al.[32] found that electroacupuncture stimulation at 2 Hz significantly reduced the expression of VEGF in dorsal horns of the lumbar spinal cord, which indicated that this intensity of stimulation was the best for relieving PHN. Jiang et al.[33] discovered that electroacupuncture can inhibit the activation of brain astrocytes in RTX-induced PHN rats, and it may reduce pain by inhibiting NO expression and iNOS release. Another study also revealed that electroacupuncture inhibits iNOS release and neuron cell autophagy in RTX-induced PHN rats by upregulating miR-223-3p expression.[34] Medicated thread moxibustion, a traditional Zhuang ethnic medical technique in China, involves the application of a thread soaked in medicinal herbs to specific acupoints, followed by the burning of the thread to stimulate the points. A recent study showed that both electroacupuncture and medicated thread moxibustion have a significant impact on increasing the mechanical pain threshold in rats and reducing PHN induced by RTX. Moreover, the combination of these two therapies can play a synergistic role. The analgesic mechanism may be related to the down-regulation of NR1 and NR2B levels in the brain.[35] These findings suggest that acupuncture may be a viable adjunct or alternative therapy for PHN, offering a non-pharmacological approach to manage pain. The mechanisms underlying acupuncture's effects are multifaceted, involving the modulation of neurotransmitters, inflammation, oxidative stress, and intracellular signaling pathways. Further research is warranted to elucidate the specific mechanisms according to acupuncture protocols for clinical application.

4.3 | Advantages and shortcomings

To the best of our knowledge, this is the first bibliometric analysis on acupuncture and moxibustion therapy for HZ and PHN using data from both Chinese and English databases. This analysis provides valuable insights into the research hot spots and future trends in this field, enabling researchers to gain a comprehensive understanding of the topic. However, this study also had some limitations. First, the analysis period of this study is limited to the past 10 years, which cannot reflect the earlier research changes in this field. Second, because of the different expressions of search terms in Chinese and English, the relevant publications might not be exhaustively identified. Third, due to the low citation frequency of recently published studies, there is a possibility that emerging research and trends may not have been adequately represented in this analysis. Overall, while this study provides valuable insights, it is important to consider these limitations and conduct further research to gain a more comprehensive understanding of the emerging research hotspots and accurately predict future trends in this field.

5 | CONCLUSIONS

In this study, we analyzed research on acupuncture and moxibustion therapy for HZ and PHN using both Chinese and English databases by CiteSpace software. We identified key authors, institutions, and research trends in this field. The findings of this study provided a valuable reference for future research directions. Based on the results of our analysis, we suggest several potential directions for future research as follows: strengthen cross-regional cooperation and exchanges between authors and organizations; conduct some multicenter randomized controlled clinical studies with large sample sizes; conduct more basic mechanical research on acupuncture and moxibustion therapy for HZ and PHN. By pursuing these research directions, we can continue to advance our knowledge and improve the clinical application of acupuncture and moxibustion therapy for HZ and PHN.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest regarding the publication of this paper.

DATA AVAILABILITY STATEMENT

Data available on request.

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