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Review Article

Research Hotspots and Trends in the Field of "Internet Plus Medical Health" at Home and Abroad Based on Citespace

Zhao Lei[1], Wei Lai[2*], Zhang Qingson[1], Tian Renfeng[1]

[1]School of Public Health, Zunyi Medical University, Zunyi 563000, People's Republic of China.

[2]School of Management, Zunyi Medical University, Zunyi 563000, People's Republic of China.

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Corresponding author: Wei Lai
Professor
Zunyi Medical University, Zunyi, Guizhou Province, 563000, People's Republic of China.
E-mail: weilaichn@aliyun.com

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Abstract

Understanding the status, hotspots, and development trends of "Internet Plus medical health" research at home and abroad. When exploring academic resource retrieval, the core resource sets of CNKI and WoS can be used as the starting point for search. it includes the "Internet Plus medical health "related documents published from January 1, 2014, to December 31, 2023, Use Citespace5.7. R5 and Excel for visual analysis of the included literature. Results: A total of 1435 Chinese and 5357 English articles were included. The number of publications in both Chinese and English has shown an overall fluctuating upward trend from 2014 to the present. Collaboration is partially close and overall dispersed, with foreign countries slightly outperforming China. Current hot topics revolve around the COVID-19 pandemic, Internet hospitals, Internet medical care and public hospitals. Compared to foreign countries, China currently has fewer publications, loose collaboration between research authors and institutions, and a lack of core authors, broader perspectives are required. Future research trends include focusing on hot and cutting-edge content, ensuring the data privacy of Internet hospitals, strengthening the supervision of Internet medical policies, and improving information exchange among medical alliances.

Keywords: Internet Plus Medical Health, Citespace, Research Hotspots, Visual Analytics, Bibliometrics.

Introduction

In July 2015, the State Council promulgated the 'Guiding Opinions on Actively Promoting "Internet Plus" Action', which clearly pointed out the two main development directions of Internet medical care. This initiative highlights the government 's forward-looking planning and overall consideration in the field of Internet medical care (Guo Wei & Xue Lan, 2016). The "Internet Plus medical" model, as a product of the deep integration of advanced technology and traditional medical services, effectively breaks the geographical boundaries, not only improves the efficiency of medical services, but also reduces the cost of medical treatment for patients, and further promotes the popularization, convenience and personalized development of medical services (Meng Qun, 2015). The innovative development model of "Internet Plus medical health" has brought far-reaching impact on the pharmaceutical industry. It not only drives the upgrading and transformation of the industry but also promotes the informatization and intelligentization of pharmaceutical circulation. At the same time, it has also spawned the development of emerging formats such as precision medicine and smart hospitals (Zhu Lilong & Rong Junmei, 2020). The purpose of this study is to conduct an in-depth analysis of the research results in the field of "Internet Plus medical health" at home and abroad by means of visualization, to reveal the current situation, hotspots and future development trends in this field, to provide useful reference and enlightenment for the sustainable development of this field.

Methods and Materials

Data Source

A comprehensive and systematic search of CNKI and WoS databases was conducted for the period from January 1,2014 to December 31,2023. In the CNKI database, "theme (precise)" was used as the search criterion, and "Peking University Core" and "CSSCI" were selected as the source categories for retrieval. The keywords used in the search included "Internet Plus medical health", "Internet medical", "Internet of things medical", "telemedicine", "mobile medical" and "medical big data". We used the Web of Science core collection as a data source, used the title search method, and referred to the keywords in the relevant research for retrieval (Maia, De Benedicto, & Do Prado, 2019; Ekeland, Bowes, & Flottorp, 2010; Oh, Jadad, & Rizo, 2005).

The search term was "TI = (e-health) OR TI = (mhealth) OR TI = (mhealth) OR TI = (telemedicine) OR TI = (telecare) OR TI = (telehealth) OR TI = (Online Disease Consultation) OR TI = (online diagnosis and treatment)". The type of included literature was selected as "article". The research literature and published literature on the related topics of "Internet Plus medical health" were excluded from the repeated published literature. In this study, we retrieved 10100 articles from the WoS database and 1609 articles from the CNKI database. After eliminating the documents that do not meet the requirements and repeat, a total of 6792 valid documents were screened out, including 1435 articles provided by CNKI database and 5357 articles provided by WoS database.

Research Methods

The retrieved documents were exported to RefWorks format and text format. Subsequently, in Citespace5.7. R5 software, the selected documents were duplication, format conversion and data processing. In this process, the key parameter set is the time range, specifically set from January 1, 2014, to December 31, 2023; the time slice was 1 year. The analysis content includes published authors, countries, institutions and keywords for metrological analysis and knowledge map generation.

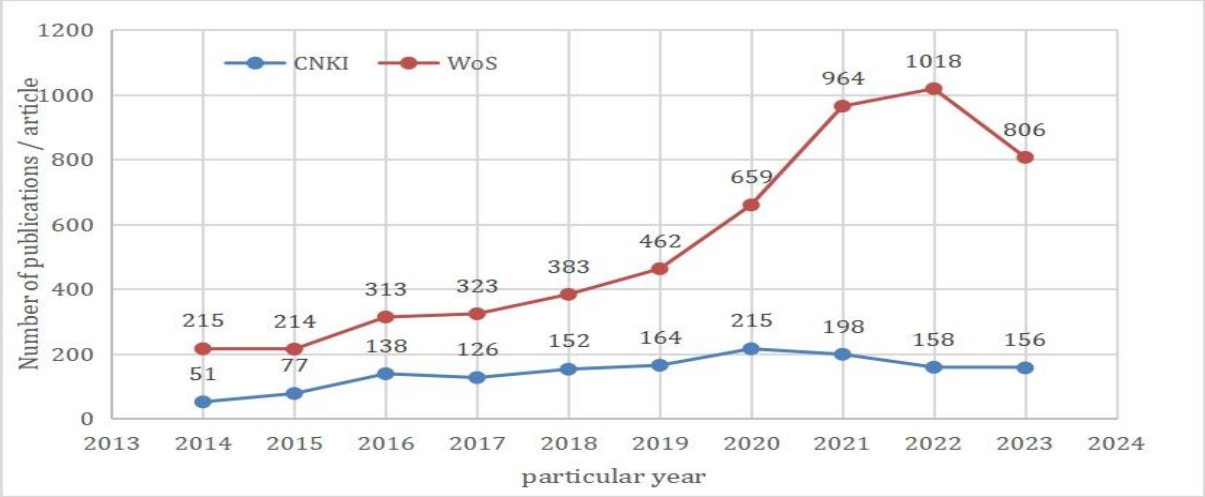
Results and Findings

Analysis of the Number of Inter-Annual Publications

From 2014 to 2023, the average annual number of articles published in CNKI database was about 143, showing a fluctuating upward trend. The number of articles published in WoS database showed a fluctuating upward trend, with an average annual number of about 536 articles. In 2020, CNKI had the highest number of published papers, which was 215; in 2022, WoS published the highest number of papers, which was 1018 (Figure 1).

Figure 1

The Number of "Internet Plus Medical Health" Related Research Publications from 2014-2023

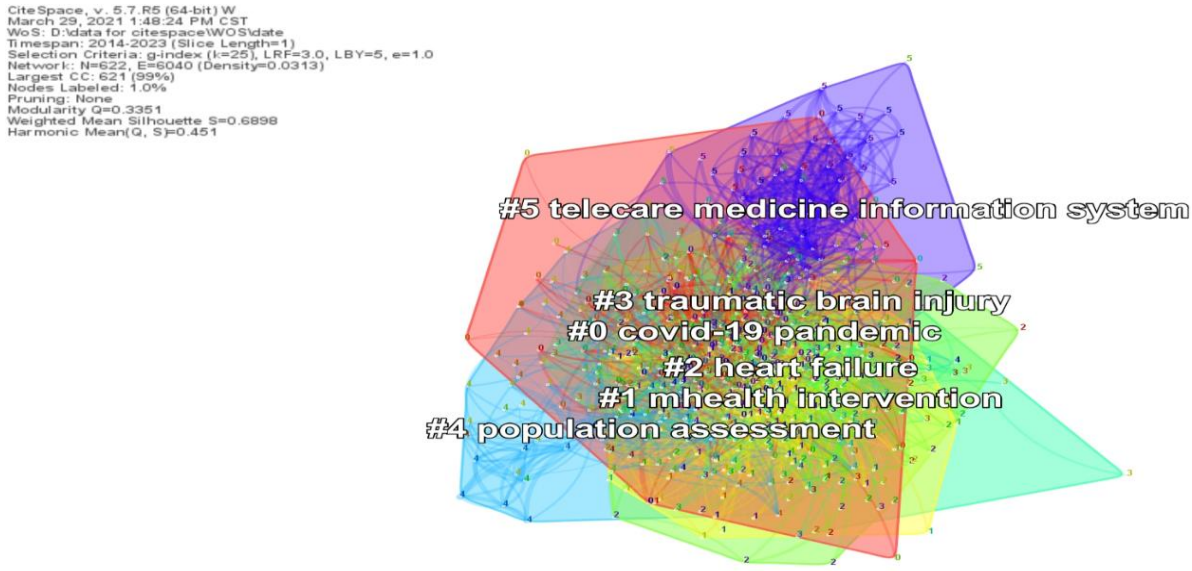


Keyword Cluster Analysis

To display the information more intuitively, we draw a keyword clustering knowledge graph. In this map, we present the high-frequency words and their corresponding frequencies in the relevant literature retrieved in the WoS database. The specific order is as follows: "telehealth" (1245 times), "telemedicine" (1090 times), "care" (694 times), "mhealth" (621 times), "covid-19" (418 times), "intervention" (406 times), etc. Keywords clustering analysis module value Q > 0.3, clustering structure is significant; the average contour value S = 0.6898, and the clustering credibility result is better (Figure 2).

Figure 2

WoS "Internet Plus Medical Health" Keyword Clustering Network Map

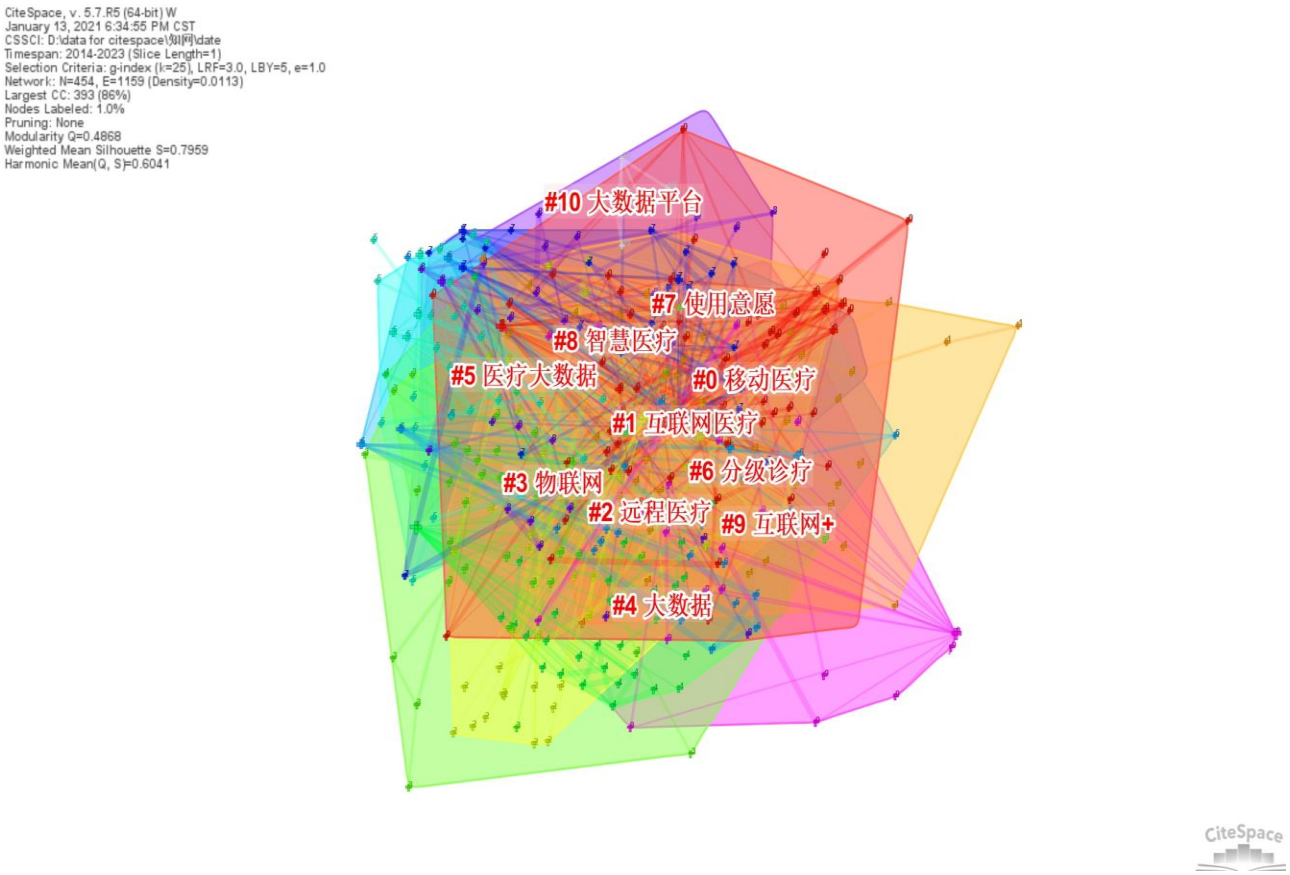


Note: The cluster map contains 6 clusters: "# 0-New Coronavirus Pneumonia Epidemic", "# 1-Mobile Health Intervention", "# 2-Heart Failure", "# 3-Traumatic Brain Injury", "# 4-Population Assessment", '" # 5-Telemedicine Information System".

Figure 3 and Table 1 present information about the 11 largest clusters. The keyword clustering analysis shows significant cluster structures with a modularity value Q > 0.3, while the average silhouette value S = 0.6041 indicates good clustering reliability (Figure 3). An in-depth analysis of keyword evolution patterns and their temporal progression was further conducted using the CNKI database (Table1).

Figure 3

CNKI "Internet Plus Medical Health" Keyword Clustering Timeline Map



Note: The cluster map comprises11clusters: "#0 mobile health", "#1 Internet healthcare", "#2 telemedicine", "#3 Internet of Things", "#4 big data", "#5 healthcare big data", "#6 hierarchical diagnosis and treatment", "#7 user acceptance", "#8 smart healthcare", "#9 Internet Plus", and "#10 big data platform".

Table 1

CNKI Keyword Clustering Information

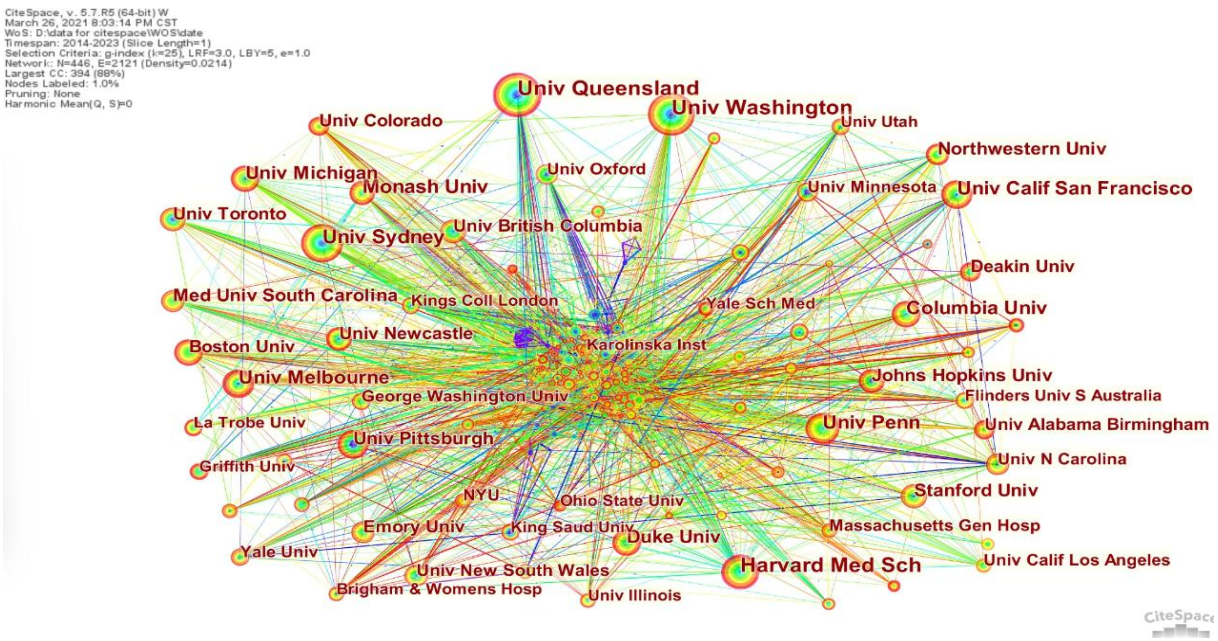
Cluster Name	Number of nodes	Silhouette	Year	Top terms (log-likelihood ratio, p-level)
#0 Mobile Healthcare	69	0.787	2018	Mobile Healthcare (89.56, 1.0E-4); Review (83.79, 1.0E-4); Application (30.18, 1.0E-4); Nursing (27.14, 1.0E-4); Continuity of Care (25.35, 1.0E-4); Mobile Application (18.06, 1.0E-4);
#1 Internet Healthcare	51	0.76	2018	Internet Healthcare (88.72, 1.0E-4); Internet Hospital (34.02, 1.0E-4); Medical Service (28.29, 1.0E-4); Mobile Healthcare (19.99, 1.0E-4); "Internet Plus Healthcare" (16.12, 1.0E-4);
#2 Telemedicine	47	0.712	2017	Telemedicine (130.68, 1.0E-4); Health Poverty Alleviation (18.08, 1.0E-4); Policy Evaluation (13.55, 0.001); PMC Index Model (13.55, 0.001); Big Data (11.04, 0.001);
#3 IoT	40	0.709	2016	IoT (92.9, 1.0E-4); Cloud Computing (21.81, 1.0E-4); Wireless Sensor Network (15.18, 1.0E-4); Secondary Prevention (10.11, 0.005); E-Government (10.11, 0.005);
#4 Big Data	37	0.777	2017	Big Data (118.08, 1.0E-4); Health Medicine (32.39, 1.0E-4); Personalized Medicine (18.45, 1.0E-4); Precision Medicine (13.82, 0.001); Data Analysis (13.82, 0.001);
#5 Medical Big Data	33	0.866	2019	Medical Big Data (44.99, 1.0E-4); Blockchain (38.81, 1.0E-4); Health Medical Big Data (36.71, 1.0E-4); AI (31.1, 1.0E-4); Machine Learning (25.79, 1.0E-4);
#6 Hierarchical Diagnosis	29	0.916	2018	Hierarchical Diagnosis (53.65, 1.0E-4); Medical Consortium (50.98, 1.0E-4); Internet (25.06, 1.0E-4);" Internet Plus "(22.72, 1.0E-4); Service Trade (11.2, 0.001);
#7 Usage Intention	29	0.858	2018	Usage Intention (41.73, 1.0E-4); Diabetes (36.15, 1.0E-4); Elderly (31.56, 1.0E-4); Type 2(25.97, 1.0E-4); Influencing Factors (25.62, 1.0E-4);
#8 Smart Healthcare	28	0.885	2017	Smart Healthcare (39.04, 1.0E-4); Mobile Internet (19.18, 1.0E-4); Medical Health (12.22, 0.001); IoT Technology (12, 0.001); Knowledge Graph (12, 0.001); rfid (12, 0.001); Smart Elderly Care (8.28, 0.005);
#9 Internet Plus	25	0.782	2018	Internet Plus (72.17, 1.0E-4); Medical Insurance Payment (19.66, 1.0E-4); Pharmaceutical E-commerce (18.39, 1.0E-4); Cloud Platform (13.99, 0.001); Service Delivery System (12.24, 0.001);
#10 Big Data Platform	5	0.974	2020	Big Data Platform (11.9, 0.001); Public Health (11.9, 0.001); Sports Health Industry (11.9, 0.001); Integration of Sports and Medicine (11.9, 0.001); Innovation (9.14, 0.005).

Analysis of the Number of Papers Issued by Institutions

To fully and deeply reveal the distribution of 446 research institutions in the field of cooperative research and the interaction between them, a map of cooperative co-occurrence is drawn (see Figure 4). The map uses a unique visual language to closely connect various research institutions through 2121 connections, and the formed network density reaches 0.0214. This data shows that although the overall cooperation network appears to be sparse, there is still a significant cooperative relationship between these research institutions. In the map, the three nodes of the University of Queensland, the University of Washington and Harvard Medical School are particularly prominent. They not only have a high frequency of publications but also play a key role in the network. In general, the institutional cooperation on "Internet Plus medical health" research in WoS database is relatively close.

Figure 4

Co-Occurrence Analysis of "Internet Plus Medical Health" Research Institutions in Wos.



The number of papers published by research institutions is regarded as a key indicator in scientific research evaluation, which can effectively reflect the output capacity of institutions, the depth of research and its influence in academia. A total of 861 papers were published by the top ten research institutions, which accounted for 16.1 % of the total number of papers, showing the excellent performance of these institutions in scientific research. They play an important role in promoting the development of this research field. Specifically, the University of Queensland had the highest number of papers, 114, followed by the University of Washington and Harvard Medical School.

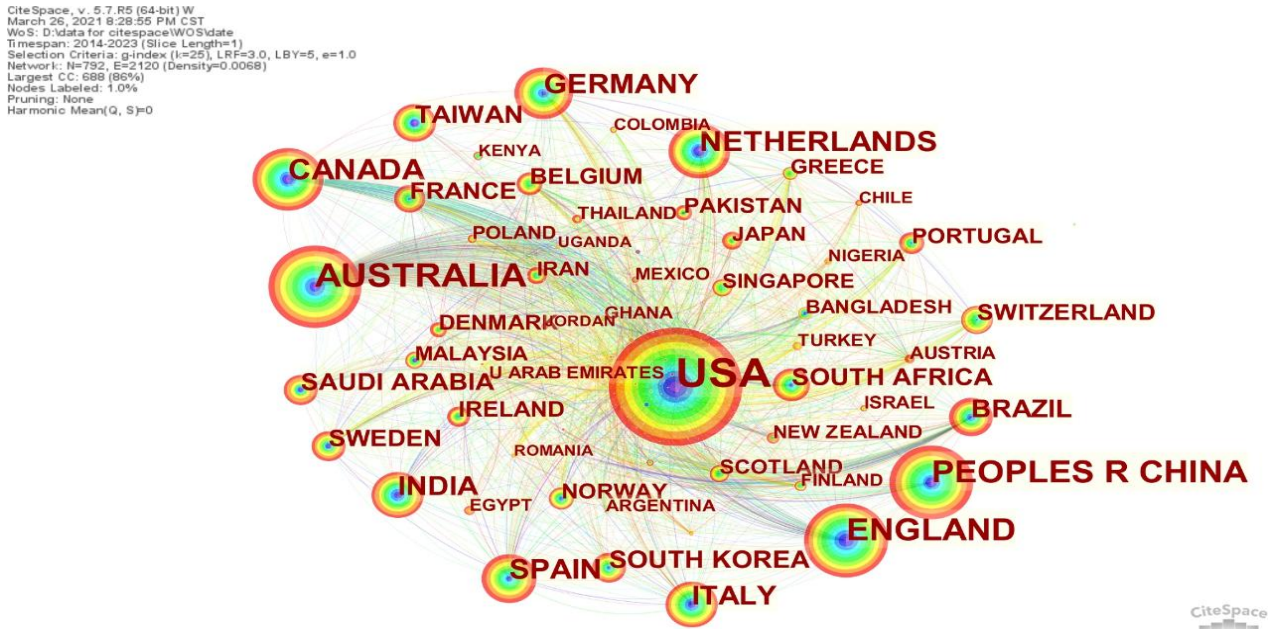
In CNKI (China National Knowledge Infrastructure), through the in-depth excavation and analysis of the literature records over the years, it was found that the institutions with the highest number of publications were the School of Medical and Health Management of Tongji College of Huazhong University of Science and Technology (n=11), the School of Management Engineering of Zhengzhou University (n=9) and the First Affiliated Hospital of Zhengzhou University (n=7). These data reflect the academic output capacity and achievement activity of these institutions in the field of medical research. However, overall, the number of papers published by CNKI is relatively scattered, and the degree of cooperation among research institutions is low.

Co-Occurrence Map Analysis of Countries/Regions

A co-occurrence map of institutional cooperation was drawn, with 792 nodes and 2120 connections, and the network density was 0.0068 (Figure 5). Among them, the United States, Australia and China have obvious nodes and numerous connections, indicating that the frequency of publications is high and there is more cooperation with other countries.

Figure 5

Co-Occurrence Analysis of "Internet Plus Medical Health" Research Countries in WoS.



According to the statistics of WoS database, the United States is in the leading position with 2142 papers in the field of "Internet Plus medical health", Australia has published 519 papers, China has 332 papers, the United Kingdom and Canada have published 307 and 212 papers respectively. Through collinear analysis, it can be further found that countries such as the United States, Australia and China not only show strong independent research capabilities, but also actively promote scientific research cooperation and exchanges around the world, contributing many high-quality research results to knowledge innovation and technological progress in this field (Figure 5).

Author Analysis

Author Distribution

Anthony, C. Smith (28 articles), Centalne, L. Snoswell (12 articles), and Liam, J. Caffery (10 articles) were the top three authors of "Internet Plus medical health" in the WoS database. In the CNKI database, Zhai Yunkai (48 articles), Zhao Jie (33 articles), and Gu Hai (13 articles). Based on Price's law, the core author group in the field of "Internet Plus medical health" from 2014 to December 2023 in WoS and CNKI databases was determined, that is, m = 0.749 (nmax) 0.5. In the statistical process, nmax represents the highest number of papers published by authors during the statistical period, and m is the minimum number of papers published by high-yield authors. The results show that the most productive authors in the WoS database published 28 papers, while the most productive authors in the CNKI database published 48 papers. Therefore, during this period, authors who published more than 3 papers in WoS database and more than 5 papers in CNKI database were regarded as high-yield authors in the field of "Internet Plus medical health". The WoS database has a total of 69 high-yield authors in this field, and the total number of articles published is 402, accounting for 7.50 % of the total research literature on "Internet Plus medical health". The number

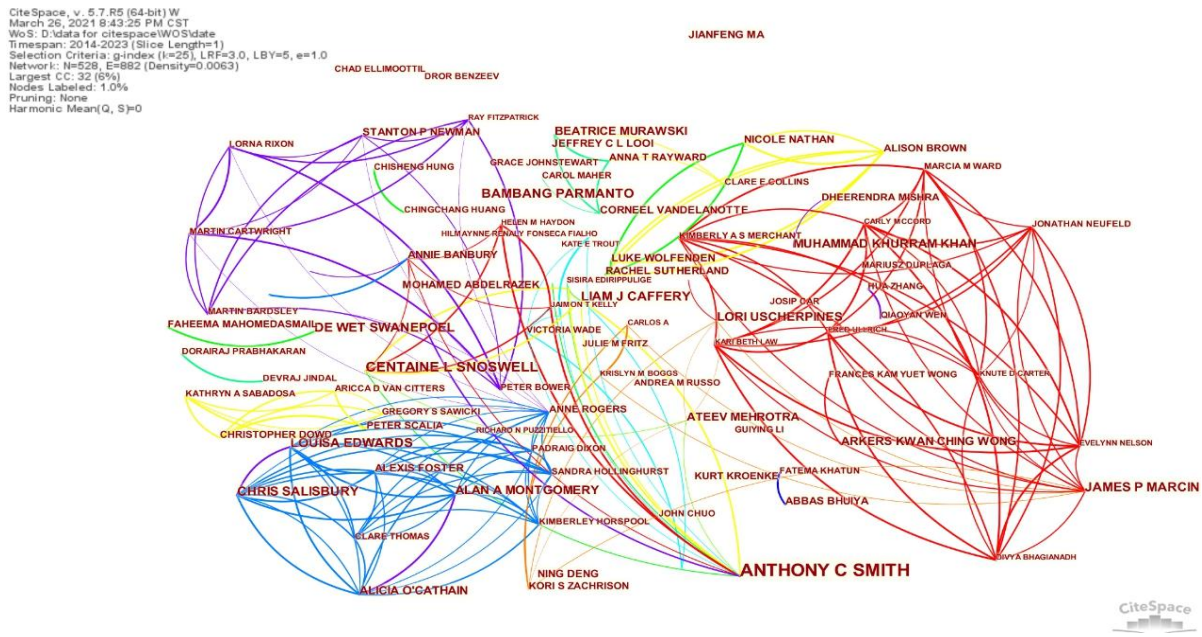
of high-yield authors in CNKI database is 17, and the total number of published articles is 200, which accounts for 13.94 % of the total number of "Internet Plus medical health" research. Compared with the 50 % of the number of publications that the core author group needs to reach, the gap is large (Zhang Yaru, Zhang Junbiao, & Zhang Zhao, 2018). This shows that although the research on "Internet Plus medical health" at home and abroad has attracted more scholars' attention, it has not yet formed a stable core author group.

Author Cooperation Analysis

By drawing the author's cooperation network map, the authors in the WoS database were analyzed for collinearity. The results show that a total of 528 nodes and 882 connections are identified, and the network density is 0.0063 (Figure 6). This density value is low, indicating that there is less cooperation among researchers in the field of "Internet Plus medical health" in the world. Although there is a cooperative relationship between some scholars, the overall network shows the characteristics of "overall dispersion and local concentration", the academic connection is weak, and the scientific research group with strong cohesion has not been formed. Through the analysis of the collinearity of CNKI authors, the results show that the distribution is relatively scattered, and the authors of different institutions lack sufficient collaboration, so it is difficult to form an ideal author collaboration network analysis map. The top three journals in the WoS database were "Telemedicine and e-Health" (288), "Jmir Mhealth and Uhealth" (197), and "Journal of Medical Internet Research" (158). In the CNKI database, "Internet Plus medical health" research journals are more dispersed, and '" Chinese hospital management", "Chinese general medicine" and "Chinese health management" are relatively more published, with a total of 270 articles.

Figure 6

Visual Analysis Map of Author Cooperation Network in Wos Database



Research Frontier Analysis

The results of keyword burst analysis showed that a total of 154 burst keywords appeared in the WoS database, of which the burst frequency of the top 20 keywords occurred in the time range of 1 to 5 years. The research hotspots between 2014 and 2019 focused on randomized controlled trials, data encryption, electronic health, telemedicine and

home telemedicine. The research hotspots between 2020 and 2023 focus on epidemics, novel coronaviruses, and novel coronavirus pneumonia (Figure 7).

Figure 7

Wos "Internet Plus Medical Health" Related Research Keyword Burst Analysis

Keywords	Year	Strength	Begin	End	2014 - 2023
telecare	2014	11.84	2014	2017	
telecare medicine information system	2014	11.52	2014	2015	
authentication	2014	11.07	2014	2016	
efficient	2014	10.81	2014	2017	
smart card	2014	10.31	2014	2015	
randomized controlled trial	2014	10.12	2014	2018	
cryptanalysis	2014	9.36	2014	2018	
home telehealth	2014	8.76	2014	2019	
e-health	2014	7.96	2014	2016	
security	2014	7.96	2014	2017	
support	2014	7.83	2014	2016	
anonymity	2014	7.71	2014	2017	
phone	2014	7.2	2015	2017	
recruitment	2014	7.11	2015	2017	
community	2014	6.84	2015	2019	
trial	2014	10.97	2016	2018	
electronic cigarette	2014	7.46	2017	2020	
pandemic	2014	10.31	2020	2021	
coronavirus	2014	7.5	2020	2021	
covid-19	2014	49.08	2021	2023	

Figure 8

CNKI "Internet Plus Medical Health" Related Research Keyword Burst Analysis

Keywords	Year	Strength	Begin	End	2014 - 2023
物联网	2014	12.5	2014	2016	
远程会诊	2014	2.82	2015	2017	
智慧城市	2014	2.76	2015	2016	
移动互联网	2014	3.18	2016	2018	
糖尿病	2014	2.76	2016	2019	
互联网+	2014	2.75	2016	2017	
移动医疗app	2014	3.41	2017	2020	
智慧医疗	2014	3.25	2017	2019	
综述文献	2014	3.22	2018	2019	
医联体	2014	2.43	2019	2023	
新冠肺炎疫情	2014	2.88	2020	2021	
互联网医疗	2014	7.12	2021	2023	
互联网医院	2014	5.48	2021	2023	
公立医院	2014	4.13	2021	2023	
数字健康	2014	2.4	2021	2023	

Note: 物联网（IoT）、远程会诊（Teleconsultation）、智慧城市（Smart City）、移动互联网 Mobile Internet）、糖尿病（Diabetes）、互联网 Plus （Internet Plus）、移动医疗app（Mobile Healthcare Apps）、智慧医疗（Smart Healthcare），综述文献（Review Literature）、医联体Medical Consortium）、新冠肺炎疫情（COVID-19 Pandemic）、互联网医疗（Internet Hospital、公立医院（Public Hospital）、数字健康（Digital Health).

There were 15 burst keywords detected in the CNKI database. Before 2019, the research hotspots focused on medical care, mobile Internet, Internet medical care, etc. The hotspots of research from 2019 to the present focus on medical associations, the COVID-19 epidemic, Internet hospitals, Internet doctors, and digital health (Figure 8).

Discussion and Conclusion

Research Characteristics of "Internet Plus Medical Health" At Home and Abroad

1. From a global perspective, the research in the field of "Internet Plus medical health" is undergoing rapid development, and the number of publications in the academic community has increased significantly. At home, the number of academic papers in this field has reached its peak in 2020, while at the international level, it has reached its peak in 2022. An in-depth exploration of cooperation in this field can effectively reveal the depth and breadth of research in this field (Wu Caiying, 2023). The co-occurrence map of countries clearly shows that the United States, Australia and China have successfully built relatively complete academic research networks. However, cooperation between these countries is still relatively small. In contrast, foreign multi-center cooperative research has been more mature, while China is still in the development stage in this regard. Looking forward to the future, to promote knowledge sharing and achievement promotion in the field of "Internet Plus medical health" and achieve innovative development and optimization and upgrading in this field, we need to further strengthen academic exchanges and research cooperation among multi-center, large-scale and multi-team.

2. Analysis of the characteristics of domestic and foreign publications: From the keyword clustering analysis, the Internet Plus medical and Internet hospitals in China have become research hotspots in the past two years. Relevant research at home and abroad has been extended to cryptanalysis, e-cigarettes, identity recognition and so on. From 2014 to 2017, teleconsultation and mobile medical care have become domestic research hotspots. Domestic scholars pay more attention to big data, diabetes and smart medical care; from 2018 to 2023, due to the promulgation of the policy of promoting "Internet Plus medical health", the advantages of domestic 5G, the outbreak of the epidemic, the overall victory of poverty alleviation and the rapid development of e-commerce and artificial intelligence, domestic scholars pay more attention to the combination of "Internet Plus medical health" and these fields. Compared with domestic research, foreign scholars' research focuses more on the application of "Internet Plus medical health" technology in the fields of health care, medical information and computer science. Based on the above analysis and considering the problems faced by the global "Internet Plus medical health" field, we can further put forward strategies and related suggestions to promote the development of global "Internet Plus medical health".

Research Hotspots and Frontier Analysis of ' Internet Plus Medical Health'

1. Policy regulation is the focus of Internet health care reform: literature review found that although domestic Internet health care started late, its development speed is fast. Since the deepening of medical reform in 2009, large hospitals have made some progress in establishing an integrated management system based on electronic medical records and developing telemedicine (Chen Gen, 2015). In contrast, foreign countries started earlier in Internet medical applications. The concepts of telemedicine and telehealth were introduced as early as the 1960s. Since the 1990s, many countries have actively promoted regional medical and health information construction, such as the European e-health action plan and the national health information network of the United States. The core goal of these plans is to realize the seamless flow of patient information among different medical institutions, to improve the continuity and efficiency of medical

services (Zheng Xi，He Huixiong，& Huang Shaowei, 2018). However, with the rapid development of Internet medical care, its relevant legal system is still not perfect, and there is a lack of unified and clear legal provisions and standards, which undoubtedly brings a lot of trouble to enterprises and consumers. At the level of policy supervision, there are also some shortcomings (Qu Mengke, 2015). Although some developed regions have begun to strengthen supervision (Lian Yingting. 2014), they still need to establish a more mature and perfect hierarchical management system (Zheng Xi，He Huixiong，& Huang Shaowei 2018). China still needs to strengthen the supervision of Internet medical policy, and we can learn from the experience of western countries based on the national conditions.

2. Since April 2018, the state has issued a series of policies to support "Internet Plus" medical health, the medical industry has begun to explore the construction of Internet hospitals (National Healthcare Security Administration, 2019). The outbreak of the novel coronavirus has further accelerated the development of the "Internet Plus" medical and health field (Cheng Hu，Zhou Qiong， & Liu Xiaoli, 2020；Zhang Hongxia, Ma Yanan， & Zhu Mingyu, 2021; Zhang Wuchen，Yang Lu，& Wang Jinfan, 2021). As an effective supplement to the traditional physical hospital model, Internet hospitals can significantly shorten the waiting time of patients for medical treatment, reduce the related costs of transportation and accommodation, and thus improve the efficiency of medical treatment and patient satisfaction (Yao Gang，Ge Shuai，& Su Yu, 2022). Literature and policy review found that Boyer and other scholars (Boyer, 2013) pointed out that the amount of health information on the Internet has surged, and users face multiple risks such as information authenticity, privacy disclosure, and data security when querying and sharing online. Massive information may lead to moral hazard, test the ethics of the medical industry, and challenge legal supervision. Based on the EU experience, Boyer recommends the introduction of third-party regulatory agencies to ensure accurate and complete information and protect user privacy. In 2022, China issued the "Measures for the Administration of Network Security in Medical and Health Institutions", aiming to strengthen information security protection and ensure the security of data and personal information of citizens. This approach points the way for the development of "Internet Plus healthcare" (Guo Xiangqian, 2022). At the same time, the "Healthy China 2030" Plan Outline proposes to build an information platform for medical quality management and control, aiming to innovate medical quality management, improve medical quality and services, and help the development of the health service industry (Chen Wu, Zhang Guo, & Lin Yingzhon, 2019). In this way, we hope to promote the high-quality development of Internet hospitals by improving the security and standardization of Internet hospital data information.

3. Deep integration of the Internet and the medical consortium to improve the efficiency of information exchange: The medical consortium (referred to as the medical consortium) is a key innovation to deepen the reform of the medical and health system, and it is also an important tool to promote the construction of the hierarchical diagnosis and treatment system (Yang Xiaoran, Zhang Shihong, 2024). Internationally, the term like the concept of medical consortium in China is "integrated medical system" or "integrated medical organization" (Miller, Glasby, & Dickinson, 2021). The concept was first proposed by the World Health Organization in 2015 (World Health Organization, 1996). In the 21st century, developed countries such as the United Kingdom and the United States have vigorously promoted the reform of medical and health information and optimized and innovated the medical alliance model to improve the current situation of insufficient medical and health resources in their countries. According to the data of "National Health Informatization Survey Report-Regional Health Informatization and Hospital Informatization (2021)", (Wu Shiyong, Hu Jianping 2021) as of 2021, China has made significant progress in supporting the medical consortium business by the regional health information platform. Nationwide, 30 provinces, autonomous regions and municipalities have established provincial health information platform, covering most of the administrative regions. Among these platforms, 17 have opened the collaborative function of hierarchical diagnosis and treatment business, which has played a positive role in optimizing the allocation of medical resources and improving the quality of medical services. Among the 339 cities surveyed, 213 have established regional health information platforms, but only 177 of them have opened collaborative services for hierarchical diagnosis and treatment. This shows that although the achievements of health information

construction are fruitful, there is still a certain gap with the deep integration of the hierarchical diagnosis and treatment system. Among the tertiary hospitals in the medical consortium, 61.3 % of the hospitals realized the sharing and exchange of information through information systems, while 31.1 % of the hospitals relied on the regional health information platform. These two have jointly promoted the flow of information within the medical association. However, it must also be pointed out that the regional health information platform still has shortcomings in supporting the business collaboration of the medical consortium. Nearly half of the regional health information platforms have not fully realized the collaborative function of the hierarchical diagnosis and treatment business (Yang Xiaoran & Zhang Shihong 2024). Moreover, some medical consortium members, especially primary health care institutions, still have problems such as insufficient technical facilities and imperfect information systems, which to some extent limit the collection, sharing, analysis of health care big data and its full application in public health services (Wang Yibing 2023). Therefore, we hope to establish a deeply integrated medical consortium Internet information platform to improve and strengthen the exchange and sharing of information.

Contributions

This study systematically constructed a knowledge graph framework for the field of "Internet Plus medical health" through the visual analysis of core domestic and foreign literature from 2014 to 2023 using Citespace. Addressing issues such as imperfect policy supervision and insufficient information exchange among medical alliances in China, this study proposed a policy optimization path of "hierarchical supervision Plus unified standards Plus incentive and restraint" based on the comparative results between domestic and foreign contexts. By integrating the CNKI and WoS databases, this study adopted a process of "precise topic retrieval Plus core journal screening Plus deduplication standardization", which addressed the problems of inconsistent keywords and uneven data quality in cross-database bibliometrics. The contributions of this study not only lie in systematically sorting out the current research status of the "Internet Plus medical health" field at home and abroad, but also in providing multi-dimensional value support for academic research, policy formulation, and industrial development in this field through theoretical refinement, practical implementation, and methodological optimization, promoting the development of "Internet Plus medical health" towards a more standardized, efficient, and inclusive direction.

Limitations

This paper mainly selects the literatures on "Internet Plus Healthcare" published from January 1, 2014, to December 31, 2023, and analyzes the research hotspots and trends in the field of "Internet Plus Healthcare" at home and abroad based on Citespace. The core resource collections of China National Knowledge Infrastructure (CNKI) and Web of Science databases are chosen as the starting point for the search. However, there are deficiencies in data timeliness and literature comprehensiveness.

Declarations

Ethical Approval and Consent to Participate: This study strictly adhered to the Declaration of Helsinki and relevant national and institutional ethical guidelines. Informed consent was not required since study was based in secondary sources. All procedures performed in this study were consistent with the ethical standards of the Helsinki Declaration.

Consent for Publication: The authors give their consent for publication.

Availability of Data and Materials: Upon request, the corresponding author will make the datasets used and/or analyzed during the current investigation available.

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