Analysis of Research Hotspots and Frontiers of Geriatric Education Based on CiteSpace Knowledge Map

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ABSTRACT

In this paper, a comprehensive search of CNKI geriatric education-related literature, after manual screening, finally included 424 high-quality Chinese literature, using CiteS pace6.1.R6 bibliometric tools, to draw the author distribution, institutional distribution, keyword co-occurrence, keyword clustering, keyword time map, keyword emergence and other geriatric education research knowledge map. The results show that the number of papers published on geriatric education research has risen sharply, and the research heat is getting higher and higher; the cooperation between research institutions needs to be strengthened; the practicality and applicability of research hotspots need to be strengthened. In the future, China's geriatric education research needs to further broaden the research field, innovate the research methods of geriatric education, and strengthen scientific research cooperation.

Keywords: Geriatric education, Research hotspots, Frontier analysis, CiteSpace.

1. INTRODUCTION

Since 1999, China has entered an aging society, and the scale of the aging population is getting larger and larger, and the degree of aging is getting deeper and deeper. As of June 2022, China's elderly population over 60 years old reached 267 million, accounting for 18%. The degree of population aging is further deepened. According to the forecast of authoritative organizations, the proportion of the elderly population over 60 years old in China will exceed 300 million by 2025, accounting for more than 20% of the total population, and China will enter a super aging society.[1][2] In recent years, a large number of valuable literature on geriatric education has emerged, but there are few relevant literature reports on metrology. Based on the measurement and analysis of the existing literature, this paper predicts the research trends and frontiers of geriatric education in China by combining relevant literature and emergent word spectrum, and at the same time, it can understand the development status and hot topics of geriatric education in China.[3][4]

2. RESEARCH METHODS

The research methods in this section include literature sources, inclusion criteria, exclusion criteria, and data processing.

2.1 Literature Sources

This paper is from China National Knowledge Infrastructure (CNKI), using the advanced search method, the search keyword is set as "geriatric education", the search condition is set as "accurate", the time range is from January 1, 2012 to December 31, 2022, and the journal categories are selected from core journals and CSSCI journals. A total of 465 articles were retrieved.

2.2 Inclusion Criteria

The research topics correspond to relevant journal articles on geriatric education research in the field of adult education.

2.3 Exclusion Criteria

In order to improve the scientificity and accuracy of the data, the literature of medicine, conference reports, newspapers and periodicals, news, political commentary, literary and artistic works, repeated publication and incomplete information that obviously did not meet the relevant requirements of the theme were excluded by manual screening, and 424 literatures were finally included.

2.4 Data Processing

The literature in CNKI database was exported in Refworks format, and the CiteSpace6.1.R6 software was used to analyze the visual atlas of the literature. The software set the time slicing as 2012-2022, and the year per slice as 1 year; The node types are author, institution and keyword; pathfinder, pruning the merged network and prunning sliced networks are used to simplify the map.

3. RESULTS

The research results provide explanations for publication trends, author collaboration, institutional collaboration, keyword co-occurrence analysis, keyword clustering and time series diagrams, and keyword emergence analysis

3.1 The Trend of Issuing Documents

The annual number of published papers is an important evaluation index to evaluate the development stage of scientific research in this field and to predict the future development trend.[5] The annual publication trend of geriatric education literature in the past ten years is shown in "Figure 1". The period from 2012 to 2013 is a period of steady development (15 articles per year); The period from 2013 to 2017 is a period of rapid development, especially after 2014, the number of published articles shows a rapid development trend (43 articles per year), fluctuates from 2017 to 2022, declines briefly in 2018 (41 articles per year), reaches a peak in 2020 (62 articles), and has little change in 2021 and 2022. On the whole, the academic research on geriatric education has been very hot in the past decade.
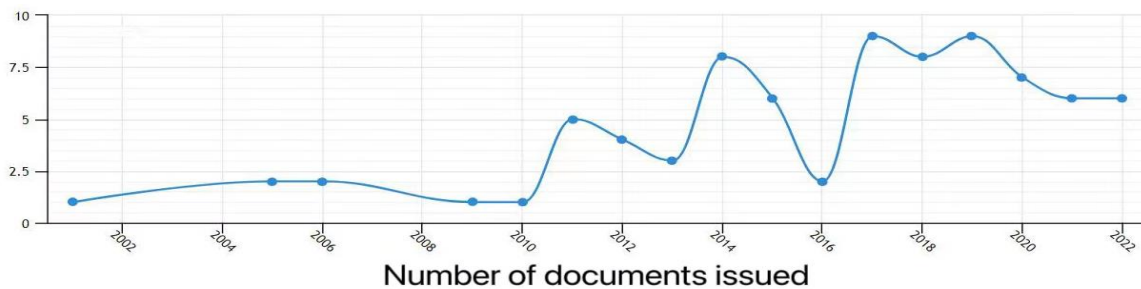

Figure 1 Annual document issuance trend.

3.2 Author Cooperation

The included 424 articles were visually analyzed by CiteSpace6.1.R6 software, and the author statistics table ("Table 1") and the author distribution visualization map ("Figure 2") in the field of Chinese geriatric education were generated. The node of the author collaboration map is "author", the size of the node is proportional to the number of articles published by the author, and the connection and thickness between the nodes represent the collaboration relationship and closeness between different authors, respectively.[6] The top 10 authors in terms of the number of published articles are shown in "Figure 3". The

knowledge map consists of 415 nodes, 287 links and a density of 0.0033.

Core authors refer to the authors who publish a large number of articles in a certain research field and have great influence. The number of papers published refers to the number of papers published by the author in a journal in a certain period, which is an important indicator to measure the contribution of the author to the journal.[7]According to Price's law M = 0.749 (NPMAX) 1/2, M is the number of the fewest papers published by the core authors in a period of time; NPMAX is the number of papers published by the most published authors. From 2012 to 2022, the authors who published the most articles

published 13 papers, and according to the formula, the core authors in this research field had at least 5 or more papers. From 2012 to 2022, among the authors of 424 high-quality documents published in the field of geriatric education in China, only five scholars, including Cheng Xianping of Zhejiang Radio and Television University, Ouyang Zhongming of Jiangxi Normal University of Science and Technology, Sun of Ningbo University, Le Chuanyong of Ningbo University and Guo Hui-man of Shanghai Academy of Educational Sciences,

published more than five articles. They are core authors in the field of geriatric education research.

As can be seen from "Figure 2", there are academic exchanges between Cheng Xianping and Sun Lixin, Le Chuanyong and Xia Xianwei, Sun Lixin and Le Chuanyong, Ouyang Zhongming and Ge Xiaotong in the author group, which shows that there is a certain cooperative relationship between the core authors. In 2021 and 2022, there is less cooperation among authors, and there is no large-scale cooperation group.

Table 1. Statistics of Gao Fawen's Authors

Serial number	author	Number of documents issued
1	Cheng Xianping	13
2	Ouyang Zhongming	9
3	Sun lixin	9
4	Le Chuanyong	6
5	Guo Huinan	5
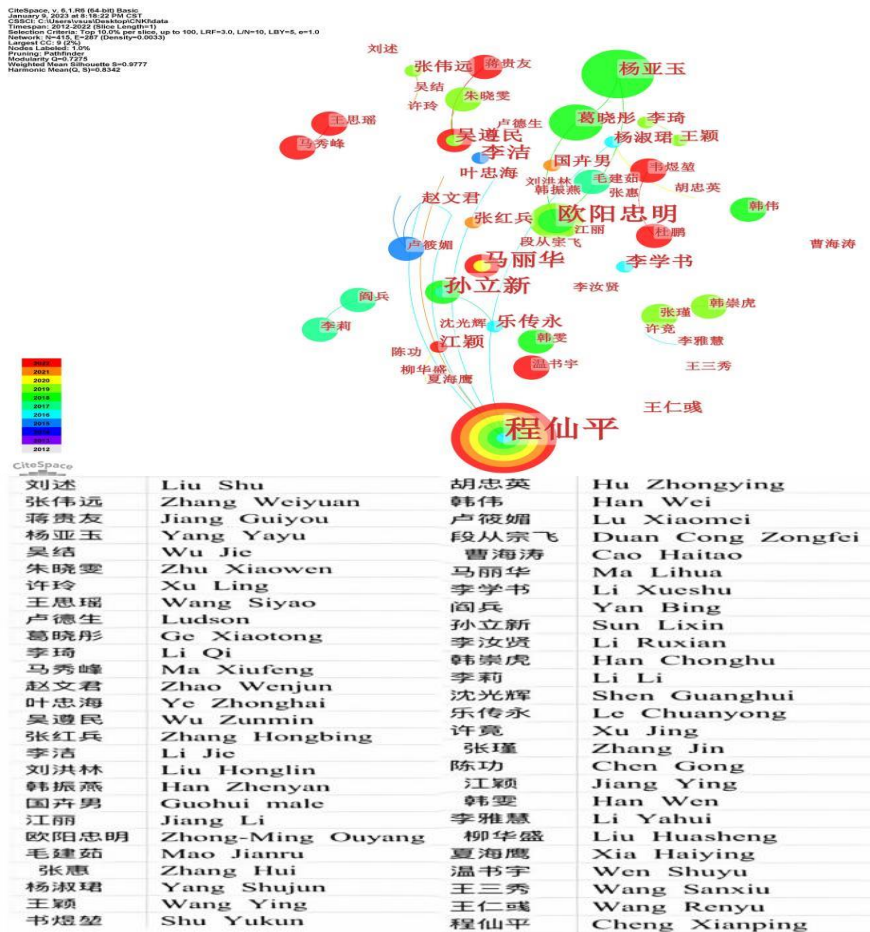
Figure 2 Visualization map of author distribution.

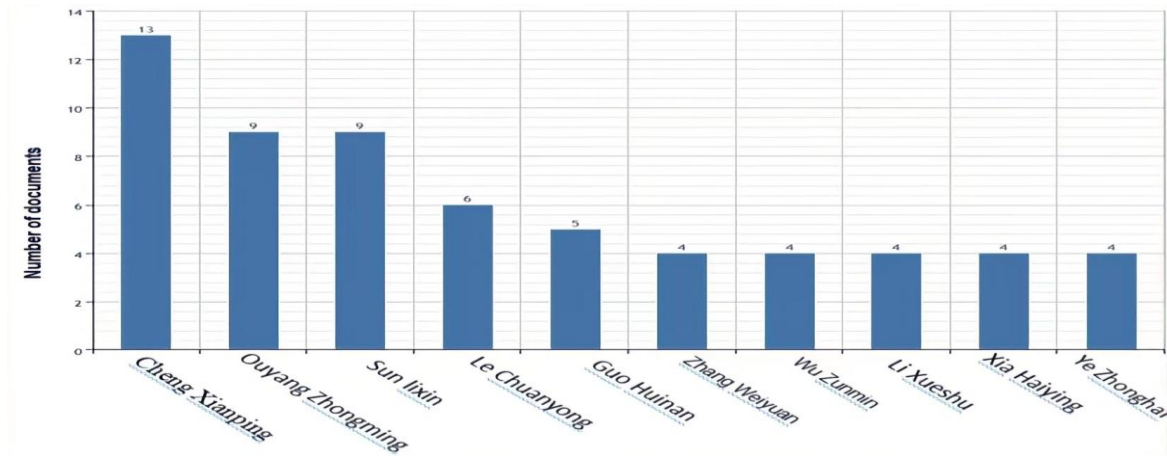|			
刘述	Liu Shu	胡忠英	Hu Zhongying
张伟远	Zhang Weiyuan	韩伟	Han Wei
蒋贵友	Jiang Guiyou	卢筱媚	Lu Xiaomei
杨亚玉	Yang Yayu	段从宗飞	Duan Cong Zongfei
吴结	Wu Jie	曹海涛	Cao Haitao
朱晓雯	Zhu Xiaowen	马丽华	Ma Lihua
许玲	Xu Ling	李学书	Li Xueshu
王思瑶	Wang Siyao	阎兵	Yan Bing
卢德生	Ludson	孙立新	Sun Lixin
葛晓彤	Ge Xiaotong	李汝贤	Li Ruxian
李琦	Li Qi	韩崇虎	Han Chonghu
马秀峰	Ma Xiufeng	李莉	Li Li
赵文君	Zhao Wenjun	沈光辉	Shen Guanghui
叶忠海	Ye Zhonghai	乐传永	Le Chuanyong
吴遵民	Wu Zunmin	许竞	Xu Jing
张红兵	Zhang Hongbing	张瑾	Zhang Jin
李洁	Li Jie	陈功	Chen Gong
刘洪林	Liu Honglin	江颖	Jiang Ying
韩振燕	Han Zhenyan	韩雯	Han Wen
国卉男	Guohui male	李雅慧	Li Yahui
江丽	Jiang Li	柳华盛	Liu Huasheng
欧阳忠明	Zhong-Ming Ouyang	夏海鹰	Xia Haiying
毛建茹	Mao Jianru	温书宇	Wen Shuyu
张惠	Zhang Hui	王三秀	Wang Sanxiu
杨淑珺	Yang Shujun	王仁彧	Wang Renyu
王颖	Wang Ying		
书煜堃	Shu Yukun	程仙平	Cheng Xianping

Figure 3 Top 10 authors in the number of published articles.

3.3 Institutional cooperation

CiteSpace was used to analyze the institutions of 424 papers in the field of geriatric education in China from 2012 to 2022, and the statistical chart of institutions with high number of papers ("Table 2") and the distribution chart of research institutions ("Figure 4") were obtained.

See "Table 2" for the top 10 in terms of the number of articles published. The number of articles published by institutions reflects the influence of institutions in this research field. From "Table 2" and "Figure 4", it can be seen that the most influential institutions are East China Normal University (35 articles) and Zhejiang Radio and TV University (22 articles), followed by Shanghai Open University (19 articles). These three universities are the backbone of the research field of geriatric education in China. Ningbo University, Shanxi University, Jiangxi Normal University of Science and Technology, Beijing Normal University and other research institutions also have certain influence.

The visualization map of institutional cooperation is shown in "Figure 4". The results show that East China Normal University, which has the largest number of publications, has close cooperation with Shanghai Open University, Shanxi University and Shanghai Normal University. There were fewer links between other institutions, and the density of the map (0.0028) indicated that the collaboration between institutions was generally fragmented. According to Price's law, M = 4.43, the threshold value of the number of papers published by high-yield institutions is 4.43 (that is, institutions with more than 5 papers are high-yield institutions), and the total number of papers published by all high-yield institutions is 214, accounting for 19.81%, which shows that although the research institutions of geriatric education have formed a few core research units, they have not yet been established. However, it has not yet cultivated a number of high-yielding and highly influential research institutions.

Table 2. Statistical chart of high volume organizations

Serial number	Issuing agency	Number of documents issued
1	East China Normal University	35
2	Zhejiang Radio and Television University	22
3	Shanghai Open University	19
4	Ningbo University	15
5	Shanxi University	12
6	Jiangxi Normal University of Science and Technology	11
7	Beijing Normal University	11
8	Wenzhou City University	9
9	Renmin University of China	9
10	Ningbo Radio and Television University	8

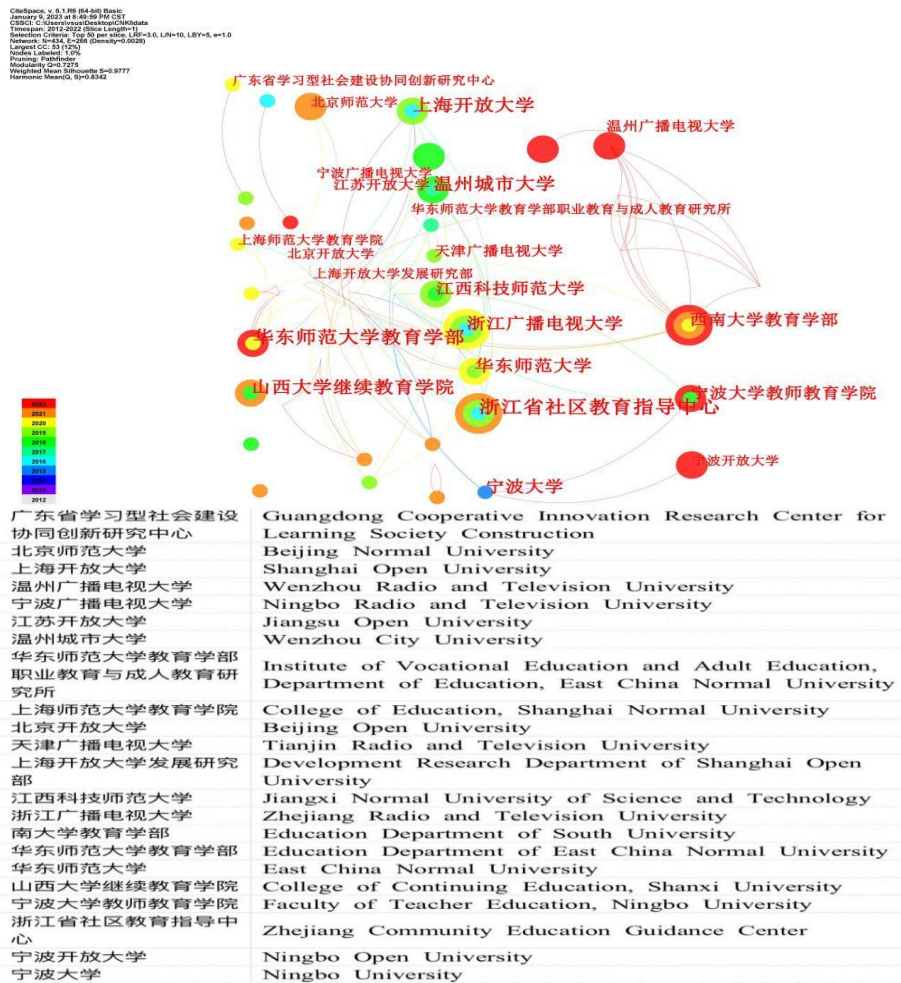| 广东省学习型社会建设协同创新研究中心	Guangdong Cooperative Innovation Research Center for Learning Society Construction
北京师范大学	Beijing Normal University
上海开放大学	Shanghai Open University
温州广播电视大学	Wenzhou Radio and Television University
宁波广播电视大学	Ningbo Radio and Television University
江苏开放大学	Jiangsu Open University
温州城市大学	Wenzhou City University
华东师范大学教育学部职业教育与成人教育研究所	Institute of Vocational Education and Adult Education, Department of Education, East China Normal University
上海师范大学教育学院	College of Education, Shanghai Normal University
北京开放大学	Beijing Open University
天津广播电视大学	Tianjin Radio and Television University
上海开放大学发展研究部	Development Research Department of Shanghai Open University
江西科技师范大学	Jiangxi Normal University of Science and Technology
浙江广播电视大学	Zhejiang Radio and Television University
南大学教育学部	Education Department of South University
华东师范大学教育学部	Education Department of East China Normal University
华东师范大学	East China Normal University
山西大学继续教育学院	College of Continuing Education, Shanxi University
宁波大学教师教育学院	Faculty of Teacher Education, Ningbo University
浙江省社区教育指导中心	Zhejiang Community Education Guidance Center
宁波开放大学	Ningbo Open University
宁波大学	Ningbo University

Figure 4 Distribution of research institutions.

3.4 Keyword Co-occurrence Analysis

Key words are the core of the research content of a document and the summary of the research theme. CtieSpace can quickly spy on the key points of the document by extracting key words, which provides strong support for finding research hotspots.[8] The keyword co-occurrence network of geriatric education research literature is shown in "Figure 5", consisting of 375 nodes and 696 links, with a density of 0.0099. The top 10 keywords are shown in "Table 3", and the top 5 are geriatric education, geriatric university, community education, lifelong education and lifelong learning. CtieSpace is a bibliometric tool. If the intermediary centrality of a node is greater than 0.1, it is defined as a core node, and its value is proportional to its influence. From "Table 3", it can be seen that geriatric education (1.02), community education (0.12) and lifelong education (0.12). It shows that the research hotspots are mainly the basic theory research of aged education, the form development research of aged education, the research of community education mode, the exploration of developing aged education under the background of lifelong education, and the development of aged education in a learning society.

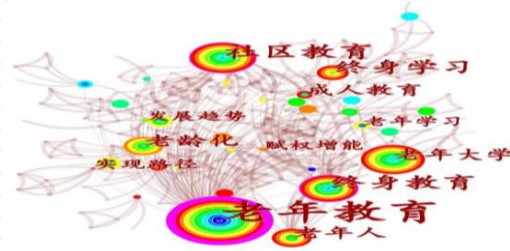| 老年教育 | Education for the elderly |
社区教育	community education
老年大学	University for the elderly
终身教育	Lifelong education
老年人	aged
老龄化	Aging
成人教育	Adult Education
发展趋势	Development trend
老年学习	Old age learning
实现路径	Implementation path
赋权增能	Empowerment and empowerment
终身学习	Lifelong learning

Figure 5 Keyword co-occurrence network.

Table 3. Key words frequency, centrality, year

Serial number	frequency	Centrality	particular year	key word
1	235	1.02	2012	Education for the elderly
2	30	0.06	2013	University for the elderly
3	28	0.12	2013	community education
4	28	0.12	2013	Lifelong education
5	19	0.09	2015	Lifelong learning
6	18	0.05	2013	Aging
7	16	0.06	2013	old people
8	7	0	2016	Learning needs
9	7	0	2016	Continuing Education
10	7	0.04	2016	Adult Education

3.5 Keyword Clustering and Timeline Map

The cluster atlas of LLR algorithm is analyzed for 375 keywords in the literature, as shown in "Figure 6", and 15 effective clusters are generated. The cluster module value (Q) = 0.6953 (Q > 0.3 indicates that the cluster structure is significant), and the average contour value (S) = 0.8086 (S > 0.7 indicates that the cluster is reasonable), indicating that the clustering results are more reliable. The key words clustering has map superposition, which shows that although there are differences among the clusters, they are closely related to each other. The distribution of the keyword cluster map shows that the research on geriatric education involves a wide range of fields and topics are scattered, and there

may be some problems to be improved for the research in specific fields.

The time span analysis of the cluster map is shown in "Figure 7". The hot keywords from 2012 to 2016 are "geriatric university", "community education", "learning society", "geriatric education" and "development trend"; From 2017 to 2022, the hot keywords are "Internet +", "open education", "coordinated development", "digital divide" and "learning needs" and "education policy". It can be seen that the focus of research in different periods is different. Among them, the research on "old age university", lifelong education and community education started early and has a large span of time and space.[9] They have been a hot topic for a long time.

老化与老年	Aging and aging
基本公共服务体系	Basic public service system
中国	China
继续教育改革	Continuing education reform
成人教育	Adult Education
影响因素	influence factor
老年教育	Education for the elderly
老年大学	University for the elderly
可视化	Visualization
路径	route
启示	enlightenment
终身教育	Lifelong education
老年人	aged
继续教育	Continuing Education

Figure 6 Keyword cluster atlas analysis.

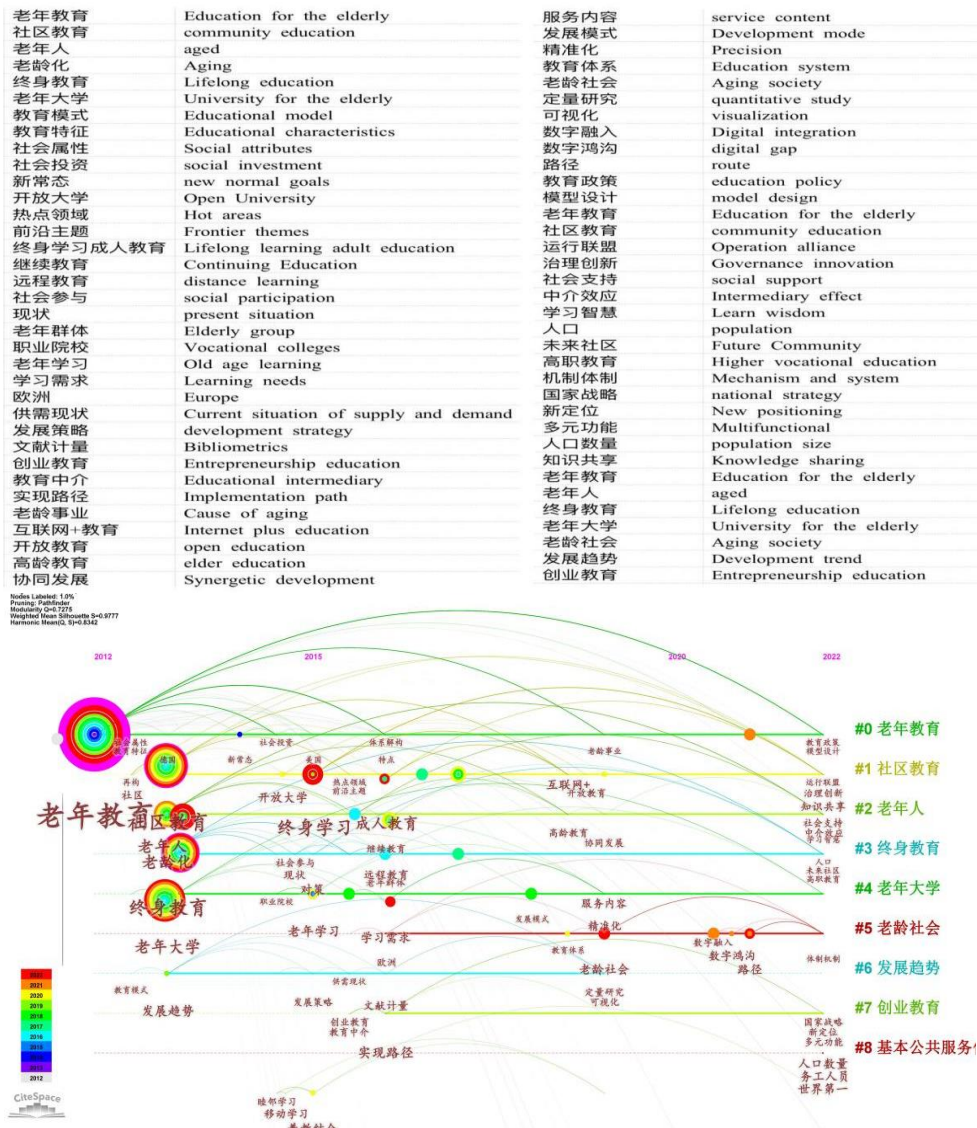| 老年教育	Education for the elderly		服务内容	service content
社区教育	community education		发展模式	Development mode
老年人	aged		精准化	Precision
老龄化	Aging		教育体系	Education system
终身教育	Lifelong education		老龄社会	Aging society
老年大学	University for the elderly		定量研究	quantitative study
教育模式	Educational model		可视化	visualization
教育特征	Educational characteristics		数字融入	Digital integration
社会属性	Social attributes		数字鸿沟	digital gap
社会投资	social investment		路径	route
新常态	new normal goals		教育政策	education policy
开放大学	Open University		模型设计	model design
热点领域	Hot areas		老年教育	Education for the elderly
前沿主题	Frontier themes		社区教育	community education
终身学习成人教育	Lifelong learning adult education		运行联盟	Operation alliance
继续教育	Continuing Education		治理创新	Governance innovation
远程教育	distance learning		社会支持	social support
社会参与	social participation		中介效应	Intermediary effect
现状	present situation		学习智慧	Learn wisdom
老年群体	Elderly group		人口	population
职业院校	Vocational colleges		未来社区	Future Community
老年学习	Old age learning		高职教育	Higher vocational education
学习需求	Learning needs		机制体制	Mechanism and system
欧洲	Europe		国家战略	national strategy
供需现状	Current situation of supply and demand		新定位	New positioning
发展策略	development strategy		多元功能	Multifunctional
文献计量	Bibliometrics		人口数量	population size
创业教育	Entrepreneurship education		知识共享	Knowledge sharing
教育中介	Educational intermediary		老年教育	Education for the elderly
实现路径	Implementation path		老年人	aged
老龄事业	Cause of aging		终身教育	Lifelong education
互联网+教育	Internet plus education		老年大学	University for the elderly
开放教育	open education		老龄社会	Aging society
高龄教育	elder education		发展趋势	Development trend
协同发展	Synergetic development		创业教育	Entrepreneurship education

Figure 7 Key words Timeline atlas analysis.

From the basic theory and attribute description to the theory and practice research, and then to the development of healthy aging, the research theme of education for the aged in China has been constantly enriched, and the problem consciousness has become increasingly prominent.[10] The research of theory and application has been further coordinated.

3.6 Keyword Emergence Analysis

Keyword is a concentrated expression of the essence of research, and it is the rapid increase of research results on the hot topics represented by keywords in a certain period of time, which can predict the research frontier in this field.[11] The starting and ending time of keywords are "begin"

"end" ", and the relationship between strength and the influence of research hotspots is positively correlated. The keyword emergence analysis of geriatric education research is shown in "Figure 8".[12] From the time axis of the research, the research before 2017 mainly focused on the new normal, the enlightenment brought by other countries, countermeasures and suggestions, learning strategies, development, and continuing education of geriatric universities;[13] After 2017, the research focus has shifted to aging, rural areas, education system, geriatric education, lifelong education and the elderly.[14] Among them, the emerging words that will last until 2022 are "lifelong learning", "education for the elderly" and "the elderly". [15] These prominent words foreshadow the frontiers in the field of geriatric

education research in China, namely, geriatric universities, continuing education, community education, the transformation of geriatric education,

population aging, how to develop geriatrics education in the context of lifelong learning, and the development of human resources for the elderly.

Top 13 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2012 - 2022
新常态	2014	1.72	2014	2015	
启示	2015	1.71	2015	2016	
对策建议	2016	1.41	2016	2017	
学习需求	2016	2.64	2017	2018	
发展	2017	2.06	2017	2018	
老年大学	2013	1.95	2017	2018	
继续教育	2016	1.68	2017	2020	
老龄化	2013	1.78	2018	2022	
农村	2019	1.39	2019	2020	
教育体系	2019	1.39	2019	2020	
老年教育	2012	6.98	2020	2022	
终身学习	2015	5.6	2020	2022	
老年人	2013	3.19	2020	2022	

新常态	New Normal
启示	enlightenment
对策建议	Countermeasure suggestions
学习需求	Learning needs
发展	development
老年大学	Elderly University
继续教育	Continuing Education
老龄化	Aging
农村	countryside
教育体系	Education system
老年教育	Elderly education
终身学习	Lifelong learning
老年人	aged

Figure 8 Keyword Emergence Analysis.

4. RESEARCH REVIEW AND PROSPECT

This section contains research reviews and research prospects

4.1 Research Review

In this study, CiteSpace, a bibliometric tool, was used to visually analyze the literature on geriatric education since 2012 from the perspectives of volume, keywords, authors and institutions. The results show that the number of papers on geriatric education has shown a steady upward trend year by year, and the linear fitting growth trend is obvious, which shows that the research enthusiasm of scholars on geriatric education has lasted for a long time, and the value of Geriatric Education is constantly being excavated. Research hotspots and frontiers pay more attention to practice and application. It is necessary to further strengthen academic exchanges among core authors and research institutions to produce more scientific research results.

4.1.1 Geriatric Education Research Continues to Rise

"Let every elderly person enjoy his old age" is a new direction for the development of geriatric education after the 18th National Congress of the Communist Party of China.[16] The report of the Nineteenth National Congress of the Communist Party of China points out that "to speed up the process of modern education and do a good job in education" points out that "to do a good job in community geriatric education is beneficial to the present and the future".[17] It is an important grasp

to improve the quality of the people. The number of papers published on geriatric education has increased year by year since 2012 (except for a slight decline in 2018), reaching a peak of 61 in 2020, which fully proves that the research on geriatric education in China continues to rise.

4.1.2 Cooperation Between Research Institutions Needs to Be Strengthened

The map of institutional cooperation shows that the geriatric education publishing institutions have formed high-yield and core publishing units. The core authors include Cheng Xianping, Ouyang Zhongming, Sun Lixin, Le Chuanyong and Guohui Men, and the influential research institutions include East China Normal University, Zhejiang Radio and Television University, Shanghai Open University, Ningbo University and Shanxi University. However, there is little cooperation between the core authors and institutions, and no large-scale cooperative group has been formed.

4.1.3 The Practicality and Applicability of Research Hotspots Are Enhanced

The practice and application of the hot spots of the research on the education for the aged in China have been continuously strengthened, which has changed from focusing on theory in the past to combining theory with practice. From the teaching mode of university for the aged to the theory and application of distance education for the aged, which combines online and offline.[18] It has practical and application value for the exploration of geriatric education mode, the construction of geriatric education platform and the integration of resources.

4.2 Research Prospects

Based on the current research status, the following three aspects of research should be strengthened in the field of geriatric education in China in the future.

4.2.1 Broadening the Research Field

At present, China's geriatric education is still mainly concentrated in the field of offline community geriatric education and geriatric universities.

The research in the field of online distance education for the elderly is not paid enough attention.[19] In today's increasingly prominent aging problem, community education and geriatric universities and other forms of offline geriatric education have been difficult to meet the learning needs of the elderly.[20] Therefore, it is necessary to strengthen the research in the field of distance education for the elderly in the future.

4.2.2 Strengthening Scientific Research Cooperation

Most of the researches on the elderly education in China adopt qualitative research methods such as case studies and literature studies, and quantitative studies are relatively few. In the future, the research on education for the aged in China should combine qualitative research with quantitative research, and break through the research method based on qualitative research.[21] While strengthening the basic construction of geriatric education, it is also necessary to vigorously carry out the reform and innovation of teaching mode and teaching methods of geriatric education in China.

4.2.3 Innovative research methods

At present, there is no large-scale cooperation network in the field of geriatric education research in China, and there is a lack of academic cooperation between core authors and research institutions, which also hinders the further development of geriatric education research to a certain extent. Therefore, future research on geriatric education needs to further strengthen academic exchanges and cooperation between core authors and institutions, so as to promote the systematic and diversified development of research in the field of geriatric education in China.

5. CONCLUSION

This paper uses CiteSpace software to visually analyze the literature characteristics of geriatric education research, intuitively reflects the focus and current situation of geriatric education research from 2012 to 2022, and draws the following conclusions: The hot topics of the research are the basic theory research of the aged education, the form development research of the aged education, the community education mode research, the exploration of the development of aged education under the background of lifelong education, and the development of aged education in a learning society; Secondly, the university for the aged, continuing education, community education, the transformation of geriatric education, population aging, how to develop geriatric education under the background of lifelong learning, and the development of human resources for the aged are the current research frontiers.

Through the combing of the visual knowledge map and the analysis of the development of geriatric education research, we can provide appropriate inspiration and realistic basis for the follow-up research in the field of geriatric education in China. In the future, the research content in the field of geriatric education should pay more attention to practice and application, and the academic exchanges among the core authors and institutions in the field of geriatric education should be further strengthened.

AUTHORS' CONTRIBUTIONS

This paper is independently competed by Rui Liu.

REFERENCES

[1] The Central Committee of the Communist Party of China and the State Council Issued the National Medium and Long-term Plan for Actively Responding to Population Aging [EB/OL]. (2019-11-21)[2022-08-25].

[2] National Bureau of Statistics.. China Statistical Yearbook 2022 [M]. Beijing: China Statistics Press, 2022: 31-36.

[3] Gao Ying. Cite Space Knowledge Mapping Analysis of Research Hotspots and Trends of Chinese Philosophy [J]. History of Chinese Philosophy, 2018 (1): 16-22.

[4] Lu Qiang. Research Status and Progress of Learning Community in China [J]. China Distance Education, 2012 (5): 29-35.

[5] Zhang Hui. The Transformation of Education for the Aged in China from the Perspective of Active Aging. Vocational Education Forum, 2017 (18): 65 - 69.

[6] Li Jie, Chen Chaomei. Citespace Technology Text Mining and Visualization [M]. Beijing: Capital University of Economics and Business Press, 2016.

[7] Huang Keyuan, Zhang Haojun. An Analysis of Domestic Cross-border Education Research Hotspots and Trends Based on CiteSpace — Taking Sino-foreign Cooperation in Running Schools and Overseas Education in China as Examples [J/OL]. Journal of Southwest Jiaotong University (Social Science Edition): 1-12 [2023-01-18]. Http://kns.cnki.net/kcms/detail/51.1586.c.202 20916.1150.016.html.

[8] Wu Jie. Analysis on the Evolution and Expansion of the Function of Education for the Aged from the Perspective of Sociology [J]. Adult Education, 2021, 41 (3): 45 - 50.

[9] Zhang Hongbing, Wu Yifan, Meng Xiangbin. A Review of Research on Education for the Aged Based on Content Analysis [J]. Adult Education, 2021, 41 (5): 42 - 49.

[10] Gioppe. The transformation of elderly education in lifelong education from the perspective of active aging [J]. China Adult Education, 2016 (4): 130-133.

[11] Pech Gerson, Delgado Catarina. Screening the most highly cited papers in longitudinal bibliometric studies and systematic literature reviews of a research field or journal: Widespread used metrics vs a percentile citation-based approach [J]. Journal of Informetrics, 2021,(03).

[12] Fan Lihua, yuan Xiangjun, Lv Zheng, et al. Research on the mode and development trend of education for the aged [J]. Educational Exploration, 2013 (3): 65 - 66.

[13] Li Guang, Zhao Yu. From "University for the Aged" to "Learning Community for the Aged": New Thoughts on Aged Education in the New Era [J]. Vocational Education Forum, 2021, 37 (6): 103 - 108.

[14] Ma Lihua, Ye Zhonghai. Evolution Logic and Future Trend of China's Education for the Aged [J]. Nanjing Social Sciences, 2018 (09): 150-156. DOI: 10. 15937/J. CNKI. Issn1001-8263.2018.09.021.

[15] Xu Daozhen, Wang yuan, Ma Xiaofei. A Review of the Research on Education for the Aged in China in the Past Two Decades: Visual Analysis Based on Knowledge Mapping [J]. Adult Education, 2021, 41 (6): 33 - 39.

[16] Lai Li. Thoughts on the Development of Human Resources for the Elderly Based on Community [J]. Vocational Education Forum, 2014 (33): 50-55.

[17] Hu Qinglian, Song Wansheng. Research on the Development Model of Elderly Education in China from the Perspective of Lifelong Education [J]. Journal of Shanxi Radio and TV University, 2016 (4): 2-6.

[18] Chen Chunmian, Zheng Zhi. Web-based Distance Education for the Aged: Model Innovation, Problems and Strategies — a Case Study of Aged Education in Wenzhou [J]. Continuing Education Research, 2012 (2): 74-77.

[19] Sun Lixin, Le Chuanyong. Evolution and Reflection: 70 Years of Adult Education Theory Research [J]. Educational Research, 2019 (5): 123-132.

[20] Zhang Bo, Wang Zhenglu. Transformation and Reform of Geriatric Education Supply under the "Internet +" Strategy [J]. Adult Education, 2018, 38 (12): 45 - 49.

[21] Ou Qunhui. Toward Multiple Educational Research Methods: Comparison of Qualitative Research and Quantitative Research [J]. Journal of Yunnan Normal University, 2001, 05.