

# Knowledge map of rural elderly health research at home and abroad

## - Visualized bibliometric analysis based on CiteSpace

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**Abstract:** By using CiteSpace 6.1.R6 literature measurement software, the 1184 literatures included in WOS and 417 literatures included in CNKI database were retrospectively analyzed and mapped in terms of co-citation, author, publication institution, keyword co-occurrence, keyword emergence, keyword frequency and other indicators. To summarize the hot spots and changing trends in the research on rural elderly health at home and abroad, so as to provide a basis for the research on rural elderly health under the rural revitalization. The analysis results show that: (1) The research on the health of the rural elderly at home and abroad shows an annual trend of “fluctuating rise”, but the research development process at home and abroad is different. (2) In terms of inter-institutional cooperation and inter-author cooperation, domestic and foreign research shows low network density and intermediary centrality, research forces are scattered, and collaborative results are few. (3) There are some differences between domestic and foreign research hotspots on rural elderly health, but from the perspective of keyword cluster analysis, the research hotspots involve many fields. The research on the health of the rural elderly is also an important reflection of the strategy of rural revitalization, and the depth and breadth of the research on the health of the rural elderly should be further expanded in the future.

**Key words:** population aging; Rural area; Health of the elderly; Visual metrology; CiteSpace

## I. Introduction

The health of the rural elderly has become an important means to implement healthy aging. Through the research and literature review, it is found that there are few literature review articles on the health of the rural elderly in the academic circles at home and abroad, and there are not many articles on the health of the rural elderly in the form of knowledge graph analysis using bibliometric software. At present, literatures on rural elderly at home and abroad mainly focus on family pension, social capital, public health, chronic diseases of rural elderly and loneliness in mental health, etc. In terms of research methods, the selection of variables is relatively simple, and the cooperation and communication between core authors and core research institutions is relatively small. In this study, the latest version of CiteSpace6.1.R6 document measurement software was used to analyze the basic status quo, research hotspot distribution and research development trend of rural elderly health research in the form of knowledge graph. Through the visual knowledge graph analysis, the emphasis on the health research of the rural elderly is improved, and certain references are provided for the research and development of solving the health of the rural elderly in the background of aging.

## II. Data source and research design

### 1. Data sources

#### (1)CNKI retrieval

The China National Knowledge Network (CNKI) database was selected as the data source platform. In order to ensure the comprehensiveness and reliability of the original data, an advanced retrieval method was used to search the keywords with the theme or article titled “health of the rural elderly”. The retrieval time was December 2022, and 1517 literatures were obtained. By manually selecting dissertations, conferences, newspapers, books, achievements, etc., 975 journal papers were obtained. In order to select high-quality literatures, the source categories of periodicals were selected as Peking University Core and Chinese Social Science English Index CSSCI. A total of 417 literatures were finally obtained from CNKI. Refworks were exported as the basic data of this study, and the Refworks format data were converted by CiteSpace. No duplicate literature was found in the analysis except for duplicate literature.

#### (2)WOS search

Using the Web of Science (WOS) database to search with the keyword “Health of the elderly in rural areas”, the new version of WOS can export 1000 pieces of literature information at a time, and set the basic search conditions: Select database = (“ web of science Core Collection “), Citation Index Science Citation Index Expanded (SCI-EXPANDED)-- 2002-present, Social Sciences Citation Index (SSCI)--

2018-present, Social Sciences Citation Index (SSCI)-- 2018-present, Current Chemical Reactions(CCR-EXPANDED)-- 1985-present, Index Chemicus(IC)-- 1993-present, Subject = (“ Health of the elderly in rural areas “), time span = (“ Time frame: 2002-2022 “). A total of 1196 articles were retrieved. Then set the “literature type” = huanan (“ paper, review paper, conference proceedings paper, online publication “), and finally obtain 1186 international sample literature on the study of rural elderly health. The plain text records were derived as full records and citations, and the remove duplicates function of CiteSpace 6.1R6 was used to remove duplicates. document types to retain were selected as article, review, export WOS and export doi, and the block size was selected as 500 to obtain 1184 documents.

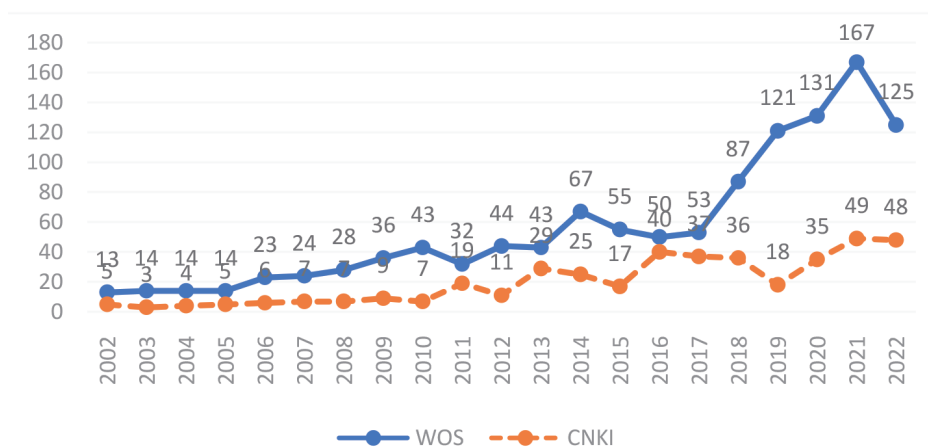
## 2. Research methods

### (1) Analysis of the influence of literature citation

In the WOS core collection, through the analysis of the citations and influence of the included literatures, it is found that the top five are journal articles, which mainly involve the incidence and mortality of novel coronavirus and the susceptibility and resistance of the elderly in rural America, the willingness of the new coronavirus vaccine in Bangladesh, and the relationship between the neighborhood dietary environment and dietary changes of the elderly in rural communities in Japan. In the CNKI retrieval platform, it mainly involves the aging of the elderly in rural China, the needs of the elderly in rural areas for retirement, and the impact of economic support, social support, medical insurance and other factors on the health of the elderly in rural areas.

### (2) Annual trend of literature quantity

From 2002 to 2022, according to Figure 1, the number of domestic and foreign literatures and the slope of the growth curve, the research process of rural elderly health can be divided into three stages. At the beginning of the first stage, the health research of the rural elderly did not receive much attention from domestic and foreign scholars in the early stage. In the core set of WOS, the annual number of published papers was less than 30 before 2008, while in the CNKI data set, the annual number of domestic published papers was less than 10 before 2010. This was mainly due to medical, geographical, economic and other factors that led to the rural elderly paying less attention to health than the urban elderly, which did not attract the attention of domestic academic circles and few researchers. The second stage was the period of slow rise (2010-2016), with an increase in the number of domestic and foreign research literatures, including 67 articles in WOS collection in 2014 and 29 articles in CNKI network platform in 2013, showing a trend of slow growth on the whole; In the third stage of rapid growth, the number of published papers in the WOS core showed a rapid growth from 2016 to 2021, reaching 166 in 2021, while the number of published papers in the CNKI platform showed a rapid growth from 2019 to 2021. In 2017, the report of the 19th CPC National Congress put forward the rural revitalization strategy, and the “three rural issues” such as the health of the rural elderly have received certain attention, and the domestic research strength has gradually strengthened, and the number of papers in 2021 reached 49. The reason why the number of published papers in 2022 is only 48 is that the number of published papers in 2022 is ignored because the number of years has not expired.



**Figure 1 Number of publications per year in the country on research on the health of rural older persons**

### (3) Distribution by country and region

The research literature on the rural elderly included in the WOS Core collection comes from 315 countries, 3,968 research institutions, and 5,796 authors. The distribution of the top 10 countries and top 10 research institutions with the largest number of journal publications

is shown in Figure 2 and Figure 3 respectively. As can be seen from Figure 2, the number of published papers in China ranks first with 410, accounting for 38% of the total literature volume, which is much higher than that of other countries. As can be seen from Figure 3, among the top 10 research institutions, except for University of London (24 articles), Seoul National University (15 articles) and University of Carolina (15 articles), the remaining 7 universities (158 articles) are all from China. This shows that there are more institutions in China studying the health of the elderly in rural areas, and China has a certain scientific research status and international competitiveness in the field of rural elderly health.

The literature on the health of the rural elderly included in CNKI source journals comes from 300 domestic research institutions. As shown in Figure 4, the top 10 research institutions cover East China, North China, Central China, Northwest China and other regions, and are mainly distributed in areas with large rural population, indicating that the health problem of the rural elderly has attracted wide attention in the vast rural areas of China. At the same time, 7 of the 10 institutions are 985 universities, among which Renmin University of China (25 articles), Peking University (15 articles), Wuhan University (17 articles) and Shandong University (16 articles) are the top 4 universities with 985 articles, which also reflects the high level of scientific research institutions in the field of rural elderly health in China.

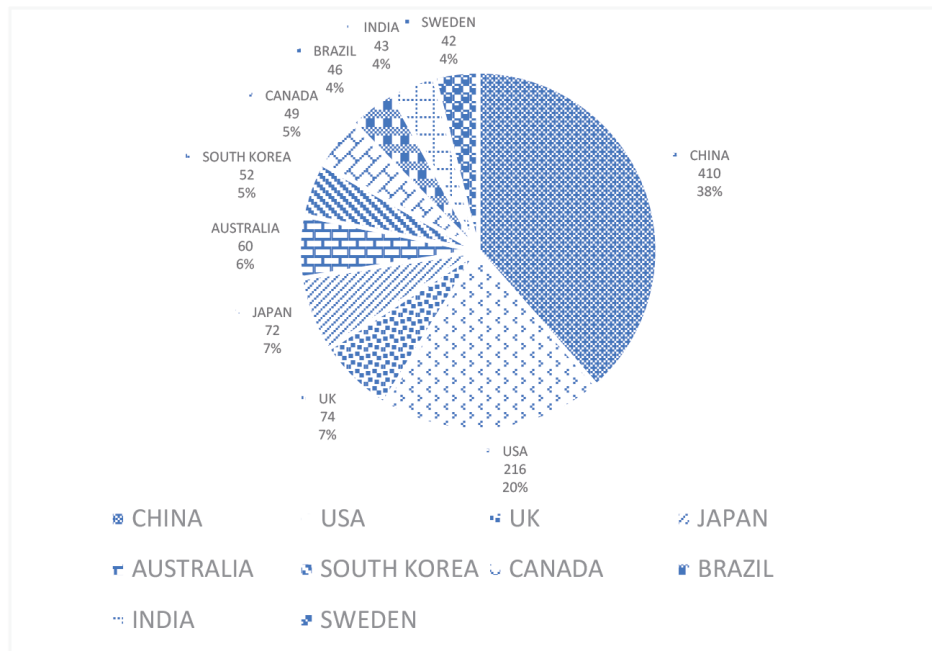


Figure 2 Top 10 countries in WOS data set with published papers (number and proportion)

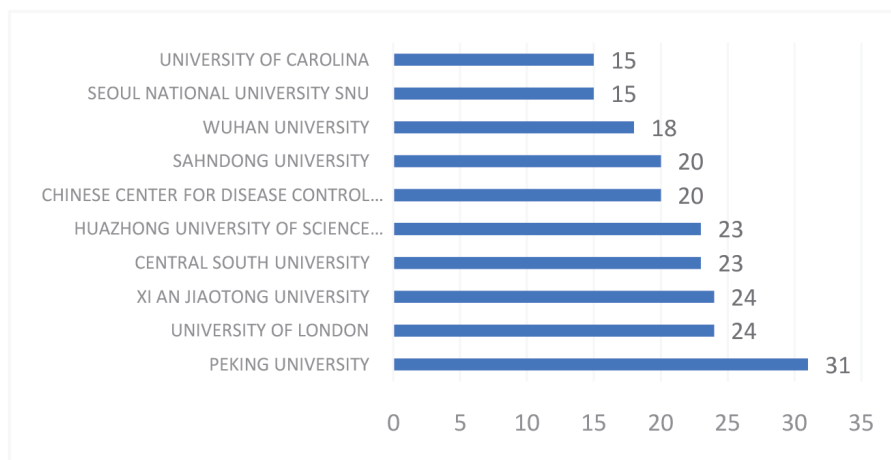
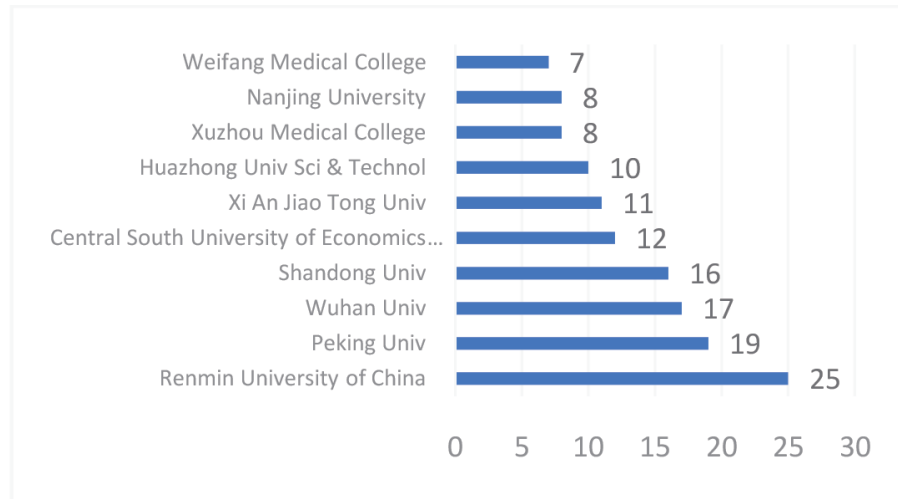


Figure 3 Distribution of core institutions in WOS data set (top 10 countries in number of publications)



**Figure 4 Distribution of core institutions in CNKI dataset (top 10 publications)**

(4) Source distribution of literature and periodicals

In the WOS core collection, 1184 articles are from 486 source journals, indicating that foreign journals studying the health of rural elderly people cover a wide range of disciplines. A total of 334 articles were published in the top 10 source journals of the WOS core collection, accounting for 28.21% of the total 1184 articles. Among the top 3 journals in terms of publication volume, INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH & PLOS ONE & BMC PUBLIC HEALTH accounts for 8.4%, 2.84%, and 2.49% of WOS core collections, respectively. The average five-year comprehensive impact factor of the top 10 source journals of the WOS core collection was 4.92, indicating that the health research of rural elderly has achieved certain academic achievements and has certain academic influence in the international research field.

Among the 417 literatures retrieved on CNKI platform, 377 were from core journals and 200 were from CSSCI source journals, indicating that domestic journals on rural elderly health cover a wide range of disciplines. The top 10 CNKI journals in terms of publication volume accounted for a total of 43 articles, accounting for 10.31% of the total 417 samples. Among them, Population Studies, China Population Science, China Rural Observation and Agricultural Technical Economics published more articles. The number of published articles accounted for 2.64%, 1.68%, 1.20% and 1.20% of the total Chinese literature samples, respectively. The average composite impact factor of the 19 journals with the highest number of publications was 7.17, and the composite impact factor of China Rural Economy and China Social Sciences was as high as 12.70 and 11.72, respectively, indicating that the health research of rural elderly in China has a high academic and influential level and can be published in high-level journals.

### III. Conclusions and Suggestions

1. The quantity and quality of rural elderly health research literature have been continuously improved, and the scope of disciplinary background has been continuously expanded

Under the background of the deepening of China's aging population and the strategy of rural revitalization, the academic circles at home and abroad have conducted continuous research on the health of the rural elderly from different perspectives. From the perspective of the number of published papers at home and abroad and the slope of the growth curve, the literature can be roughly divided into three stages: initial stage of research, slow rise and rapid growth. The quantity and quality of research in different research stages have been continuously improved. Journals with a higher number of publications generally have higher quality and a higher average composite impact factor. The composite impact factor of Chinese Rural Economy and Chinese Social Sciences is as high as 12.70 and 11.72 respectively, indicating that the research on the health of the rural elderly has a high academic level. In the report of the 19th National Congress of China, the rural revitalization strategy and the issues of "agriculture, rural areas and farmers" have been paid more and more attention. The domestic research force has gradually increased, the range of subject backgrounds involved has been expanding, and the research on the health of the rural elderly has gradually become a "blue ocean". Domestic scholars should pay more attention to the research on the health of the rural elderly, and help the implementation of rural revitalization.

2. There is less cooperation between the authors of core studies on the health of rural elderly and core research institutions

In terms of rural elderly health research, compared with foreign research, domestic research is more popular than foreign research,

but domestic and foreign research core authors, cross-research institutions, interdisciplinary cooperation is not active, from the central intermediary index can be seen that domestic and foreign research is mostly in a state of “alone”, “warm” less, from the number of papers, Domestic academic research forces are scattered, there is no clear research school and leading scholars in the field of rural elderly health research, and the cooperative relationship between institutions is weak, followed by the Centers for Disease Control and Prevention and the medical college. Compared with non-medical research institutions, these research institutions discuss the health of rural elderly people more from the professional perspective of disease. At the same time, they have high professional requirements for their medical or nursing knowledge, which leads to the situation of little cooperation between social science research institutions and medical research institutions. Therefore, the core authors and research institutions should strengthen cooperation and share research results to promote higher quality research on the health of rural elderly people.

### 3. Research hotspots of rural elderly health at home and abroad differ greatly and there are many fields

In the research hotspot of rural elderly health, the keyword popularity ranking shows that the elderly, rural elderly, mental health, rural, health status and other keywords are the most popular, which are highly concerned topics in the research field. However, apart from CNKI search terms, the focus of attention is relatively micro and single. Mainly biased to the rural elderly’s mental health and health status and other aspects of the research, in the WOS keyword popularity ranking, in addition to search terms, foreign research not only focus on mental health and other aspects, but also pay more attention to the epidemic and risk factors affecting the health of rural elderly. From the perspective of keyword emergence, domestic and foreign research hotspots in different periods differ greatly. Domestic research mainly focuses on the impact of chronic diseases in rural areas of China on the health of rural elderly people, as well as studies on the combination of medical and nursing care in social security, family pension, social capital, etc. Foreign research hotspots mainly focus on rural elderly groups in special areas. Such as the rural elderly in mountainous areas, the focus of attention is Alzheimer’s disease and the inner loneliness of the rural elderly. After 2020, the focus of foreign research has shifted to the Chinese rural areas and public health. It can be seen that domestic and foreign studies should pay attention to the medical factors and non-medical factors such as social support, family nursing, intergenerational care of the health of the rural elderly, and study the health problems of the rural elderly in an all-round way.

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