

CiteSpace Visual Analysis of Family Doctor Contracting Service in China based on CNKI

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Abstract: CiteSpace software was used for visual analysis to examine the development dynamics and research status of family doctor contracting service in China in the past decade. Using China Knowledge Network (CNKI) as the search source, a total of 498 papers from CSSCI, CSCD, and Peking University core source journals were selected for the study, and the core authors, major research institutions, research themes and contents, and research trends of family doctor contracting service were analysed.

Keywords: Family Doctor Contracting Service; Citespace; Visualization.

1. Introduction

The concept of the "family doctor" system first appeared in Europe in the late 1960s, and its essence is the process of family members independently choosing a team of family doctors or a medical team and signing an agreement between the two parties, according to which the team of doctors provides medical services to family members. This system was introduced into China at the beginning of this century and is referred to as "family doctor contracting service" in various policy documents. Family doctor contracting service is of great significance in promoting primary care and promoting the construction of hierarchical diagnosis and treatment system. In this paper, we use CiteSpace software to sort and analyse the journals about family doctor contracting service published in China Knowledge Network from 2012 to 2022, and present the current research status of family doctor contracting service in China.

2. Data Sources and Research Methodology

2.1. Data Sources

The data were mainly obtained from the China Knowledge Network (CNKI) database, and the process of searching and screening the literature was as follows:

First of all, the title of the search is "family doctor contracting service", and the time period of the search is "1 January 2012 - 31 October 2022", because the number of literature is small, so the data sources are selected as "CSSCI, CSCD, Peking University Core". Secondly, 498 literature samples were finally obtained by basic reading of article titles and article contents, and deleting journals not related to the topic.

2.2. Research Methodology

The analysis was mainly conducted with CiteSpace software, which was developed by Dr Chao-Mei Chen, and is widely used in the fields of science and technology, and which identifies and presents the research hotspots, research progress, and cutting-edge directions of the relevant fields, etc., by means of an intuitive knowledge map. Specifically, this study used this software to conduct econometric analysis of 498 sample documents obtained from screening, counting the frequency of occurrence of researchers, research

institutions, keywords, etc., and drawing keyword co-occurrence network mapping and keyword emergence mapping to show the current status of research and cutting-edge direction of family doctor contracting service.

3. Analysis of the Current Situation based on Spatial and Temporal Distribution

3.1. Literature Analysis of the Time Dimension

From the annual trend of the number of research literature, the number of papers published related to family doctor contracting service in the past ten years showed a trend of increasing and then decreasing. As shown in the figure, during the period of 2012-2015, the number of publications per year was less than 10, and the number of papers was small, but showed a slow growth trend. During the period of 2016-2018, the number of papers increased rapidly, and the number of papers in 2018 was more than 10 times of the number of papers in 2015. During the period of 2019-2021, the number of papers showed a fluctuating trend, but on the whole, the number of papers maintained at a high level. As of the end of October, 50 papers were published in 2022. In the past ten years, the number of articles published on "family doctor contracting service" has shown a trend of increasing and then decreasing, and the number of articles published in each of the past four years has remained at a high level, so that the field of family doctor contracting service will continue to attract attention in the future.

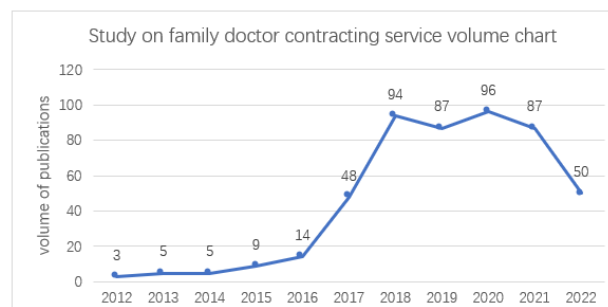


Figure 1. Trends in the number of articles published on family doctor contracting service research

3.2. Literature Analysis of the Spatial Dimension

3.2.1. Distribution of Core Authors

There are a total of 373 authors in 498 papers, and the author with the most publications is Prof Huang Jiao Ling, who has published a total of 22 papers (regardless of the order of authorship). According to Leps' law, the m-value of the number of publications by core authors is 3.51, so the authors who have published 4 or more articles are designated as core authors, and there are 48 authors in total, which is about 13%

of the total number of authors. According to statistics, in the past ten years, the top ten authors in terms of the number of published articles are Huang Jiaoling, Liang Hong, Zhang Yimin, Liu Shanshan, Yin Wenqiang, Chen Zhongming, Fang Hai, Qian Dongfu, Jiang Ping, and Lu Wei, and the number of their published literature is 22, 18, 17, 13, 12, 10, 9, 9, 9, and 8, respectively, which make these researchers have a certain degree of representativeness and authority in this field. At the same time, it can be seen that there is a large gap in the number of published literatures among scholars.

Table 1. Ranking of publications by selected core authors

No.	Author	volume of publications
1	Huang Jiaoling	22
2	Liang Hong	18
3	Zhang Yimin	17
4	Liu Shanshan	13
5	Yin Wenqiang	12
6	Chen Zhongming	10
7	Fang Hai	9
8	Qian Dongfu	9
9	Jiang Ping	9
10	Lu Wei	8

3.2.2. Distribution of Issuing Organizations

In terms of issuing institutions, the top ten in terms of the number of publications related to "family doctor contracting service" in the past ten years are the School of Social Development and Public Policy, Fudan University; School of Health Policy & Management, Nanjing Medical University; China National Health Development Research Center; Shanghai Pudong Institute of Health Development; PKU China Center for Health Development Studies; School of

Public Health, Shanghai Jiao Tong University; Weifang Community Health Service Centre, Pudong New Area, Shanghai; School of Public Health, Peking University; School of Health Management, Southern Medical University; School of Public Health, Fudan University, and the number of literature published by these research institutes is 19, 14, 14, 14, 10, 10, 9, 8, 8. These research organisations have paid more attention to family doctor contracting services as a research area.

Table 2. Ranking of research organisations in terms of publications

No.	issuing institutions	volume of publications
1	School of Social Development and Public Policy, Fudan University	19
2	School of Health Policy & Management, Nanjing Medical University	14
3	China National Health Development Research Center	14
4	Shanghai Pudong Institute of Health Development	14
5	PKU China Center for Health Development Studies	10
6	School of Public Health, Shanghai Jiao Tong University	10
7	Weifang Community Health Service Centre, Pudong New Area, Shanghai	10
8	School of Public Health, Peking University	9
9	School of Health Management, Southern Medical University	8
10	School of Public Health, Fudan University	8

3.3. Theme and Content

3.3.1. Thematic Clustering

Keywords are the condensed content of a piece of literature, which can show the core and focus of related research, and the frequency of keywords in a certain field can reflect the research hotspot of related fields to a certain extent. Run Citespace, set the node type as keywords, keep other settings unchanged, and select "LLR" to generate the keyword clustering knowledge graph, finally, there are 13 clusters in the research field of family doctor contracting service, which are family doctors, influencing factors, physicians, general

practitioners, contracting service, elderly, countermeasures, health poverty alleviation, satisfaction, health management, health policy, health care integration, primary care, and residents.

3.3.2. Research Content

While family doctors started early and developed relatively well in foreign countries, they are in their infancy in China. As an effective measure to rationally allocate medical resources and maintain the health of residents, family doctors and their system have received widespread attention, and scholars at home and abroad have done rich and in-depth research on them. China's family doctor system has attracted

the research of relevant scholars since its initial implementation. At present, domestic scholars' research on family doctors mainly focuses on the following aspects:

(1) Study on the Role of Contracted Family Doctor Services

Guan Zhijun, Wang Aiping et al. (2018) took 480 cases of elderly people with chronic diseases in Dongguan City as the research object, and set up the "intervention group" and the "control group", and used a self-administered questionnaire to understand the differences in the health knowledge of the elderly people in the two groups after the intervention. It was found that family doctor contracting service can improve the quality of life and health of empty-nested elderly people in the community [1]. Tan Yanmei (2017) took 300 cases of hypertensive patients in a community in Beijing as research subjects and set up "observation group" and "control group", after detailed observation and data analysis, it was found that the family doctor contracting service can play an obvious role in improving the blood pressure level of hypertensive patients [2]. Liu Liquan (2018) found by analysing the relevant data that the relative decline in the use of China's primary medical service institutions has had a negative impact on the construction of China's hierarchical diagnosis and treatment system, in this context, the development of family doctor contracting service can help China's hierarchical diagnosis and treatment system construction, at the same time, the policy has a significant role in the rational use of China's medical and health care resources, and to improve people's health level [3].

(2) Study on the Causes of Problems and Countermeasures of Contracted Family Doctor Services

The high quantity and low quality of family doctor contracting service signing is a typical problem in the process of promoting this policy. Many scholars have conducted in-depth studies on the reasons behind this problem and put forward some countermeasure suggestions.

Causes of the problem: Xiao Lei, Zhang Taihui et al. (2018) conducted an in-depth analysis from both the supply and demand sides, and concluded that insufficient number of general practitioners, lower income, excessive workload, and residents' lack of understanding of the content of the contracted services and mistrust of primary healthcare personnel are the causes of the supply and demand sides of the family doctor policy, respectively [4]. Besides, the lack of operational incentives and supervision mechanisms [5], the mismatch between the individual service packages provided by family doctors and the actual health needs of the residents and the local situation [6] are also important reasons for the low quality of the contracted services provided by family doctors.

Countermeasure suggestions: Wang Simin, Zheng Xian-Ling (2020) argued that strengthening communication and co-operation between multiple implementing departments, rationalising the work of each implementing department, and correcting distortions in the implementation of the policy is an important part of improving the quality of contracting [7]. Wu Qianqian, Yin Wenqiang et al. (2018), on the other hand, believe that further improving material support, including improving the training, assessment, and incentives for family doctors, and increasing the publicity of the policy are effective means to crack the problem of low contracting quality [8].

(3) Study on Typical Cases of Contracted Family Doctor Services

Since the implementation of family doctor contracting service in China, various regions have carried out diversified pilots and promotions in the light of local realities. Many scholars have conducted in-depth studies on the implementation of the policy in different regions and have extracted many valuable experiences. Zhu Renxian and Li Xin (2018) made a detailed study on the connotation of Xiamen's "three-division co-management" model, pointing out that the model has made innovations in the team model, grass-roots incentives, and supportive measures, which has promoted the contracting policy, and the experience is worthy of popularization [9]. Wu Jinglei (2017) describes in detail the practice and connotation of Shanghai's "1+1+1" contracting model, and points out that the introduction of supporting measures and the government's refined and transparent management are also important measures essential for the contracting model to achieve good results in the process of promoting the policy [10]. In addition, scholars in China have also conducted in-depth studies on the family doctor model in Hangzhou City, Zhejiang Province, Dingyuan County, Anhui Province, Dafeng District, Yancheng City, and Luohu District, Shenzhen Province, etc., in an attempt to extract more good experiences that are worthy of reference and promotion.

(4) Research Review

The family doctor system appeared earlier in foreign countries, and each country has formed its own system characteristics, and the relevant literature on family doctors is also very rich, which is worth absorbing and learning from. Scholars in China have been conducting corresponding research since the implementation of family doctor system in China, and the relevant research literature is relatively abundant, which has contributed to the development of family doctor contracting service in China. However, some of the studies in China are empirical studies in a certain region, and there are relatively few studies on family doctor contracting service in combination with relevant theories. At the same time, the geographical scope of the relevant studies is a bit narrow, mostly in a city or county, and the implementation of the policy in many regions of China has not been paid attention to and studied. Therefore, it is necessary to conduct more extensive and in-depth research on family doctor contracting service in the future.

4. Outlook for Research Trends

Using Citespace software to generate a list of emergent words of relevant studies (Table3), it can be seen that in 2012-2017, the emergent words of studies focused on contracted services, primary protection, contracting, community health, general practitioner, hierarchical diagnosis and treatment, general practice, and deepening healthcare reform; in 2018-2019, the emergent words of studies focused on physicians, healthcare consortia, consultation behaviour, and other aspects; in 2020-2022, the emergent words of the study focus on rural areas, policy implementation, indicator system, influencing factors and other aspects. From the above analysis, it can be seen that China's research on family doctor contracting service has been continuously refined and deepened, and China's research on family doctor contracting service may develop in the future towards the aspects of rural family doctor contracting service, policy implementation of family doctor contracting service and the influencing factors of implementation.

Table 3. Emerging words in the study of family doctor contracting services

No.	Keywords	Year	Strength	Begin	End
1	Contracted services	2012	2.77	2012	2016
2	primary protection	2012	1.97	2013	2017
3	contracting	2012	1.84	2013	2017
4	community health	2012	2.08	2015	2017
5	general practitioner	2012	2.69	2017	2017
6	hierarchical diagnosis and treatment	2012	2.57	2017	2018
7	general practice	2012	2.35	2017	2018
8	deepening healthcare reform	2012	2.31	2017	2017
9	physicians	2012	1.83	2017	2018
10	healthcare consortia	2012	2.14	2018	2018
11	consultation behaviour	2012	2.04	2018	2018
12	rural areas	2012	2.55	2020	2022
13	policy implementation	2012	1.8	2020	2020
14	indicator system	2012	2.27	2021	2022
15	influencing factors	2012	2.08	2021	2022

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