Analysis of Hot Spots in Community Health Education Research based on Bibliometrics

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Keywords: Community; Health education; Visual analysis.

Abstract: Objective: By analyzing the research and development of community health education, this paper provides reference for the development of community health education research in China. Methods: Based on the core in the database community health education literature as sample, using Citespace V software carries on the cooperation agency, keywords co-occurrence and the analysis of the evolution of time zones. Results: As a whole, the volume of literature shows a multi-peak trend, and it is expected that the fluctuation will decrease in the future. The literature discipline distribution is dominated by medicine and health science and technology, and the cross-discipline and cross-discipline research need to be developed. The field has not formed a certain scale of academic team, and many high-frequency publishing institutions are in an independent state in the cooperation map. The current research topics mainly focus on the status of residents' health literacy survey and suggestion guidance, innovation and application of community health education model and so on. Conclusion: Domestic research needs to further improve the quality and level of academic achievements. In order to promote the development of community health education research in China, the research institutes should strengthen the communication among organizations. The research content needs to be further enriched and innovated. For example, the research on residents' demand for community health education service and its influencing factors should be carried out, and more attention should be paid to community health service workers and residents' mental health education.

1. Background

Community health education is an organized, planned, measured and evaluated social activity with education as the center, community residents as the object, health knowledge education and intervention as the means to improve residents' health awareness, popularize health knowledge, cultivate health behavior and improve health quality [1]. It is pointed out in the outline of "Healthy China 2030" plan that improving the health level of Chinese people and achieving the goal of "Healthy China" have become the key content of national development. However, the aging process of the population is accelerating, chronic diseases are also gradually becoming younger, and residents' demands for health education and management are increasing, thus the role of community health education becomes more prominent. In view of this, this article is based on CNKI database, using visual analysis tools Citespace V, knowledge mapping of the domestic literatures in the field of community health educations distribution, distribution agencies, research hotspots and evolution trend analysis, in order to accurately grasp the domestic research achievements in the field of education and community health.

2. Data Sources and Research Methods

This research data originated from the Chinese Journal Full Text Database (CNKI), in order to ensure the authority, relevance and credibility of the data, this paper selected in the core journals and CSSSCI journals published in the academic papers. When searching in the database, with "community" and "health education" as the theme, the search year is unlimited, the search condition is "accurate", the search time is July 4, 2020, a total of 1587 documents were obtained. In order to ensure the scientific and accurate nature of the research data, through artificial screening,
elimination of book reviews, conference reviews and other non-research literature, as well as non-
author, duplicate documents, the final inclusion of the analysis of a total of 1446 documents.

This paper takes literature econometrics as the main research method, makes a measurement
analysis of the relevant literature in the field of community health education in China, and further
grasps the research status quo in this field by using Citespace V software to draw the cooperative
map of the organization, the keyword co-emergence map and the study of the time zone evolution
map of hot spots. In addition, Excel software is used as an auxiliary tool to describe the external
characteristics of the research in this field, such as the number of annual publications and the
distribution of journal sources. Bibliometrics is an interdisciplinary subject combining mathematics
and statistics. It describes and predicts the research status and future development trend of a certain
discipline or knowledge field by virtue of various characteristics of literature (such as keywords,
author cooperation, institutional cooperation, etc.) [2]. Citespace as an information visualization
software, mainly based on the total network analysis theory and find diameter algorithm of
literature metrology, specific areas to explore the evolution of subject areas critical path and the
turning point of knowledge, and through a series of visual map drawn form the analysis of the
subject evolution potential dynamic mechanism and subject development frontier detection [3].

3. Analysis Results of Community Health Education Research

3.1 Annual literature quantity statistics

According to the time data of literature publication, the publication in the research field of
community health education in China shows a multi-peak state, mainly going through three stages,
and still showing the characteristics of small fluctuations in the first and third stages (as shown in
Figure 1). In the first phase, from 1992 to 2002, the first paper was a study on the effects of
interventions in people with diabetes. In this stage, the number of studies on community health
education was small, with an average annual publication of 15 papers, reaching the peak of 42
papers in 1999, and then showing a small fluctuation trend, indicating that in the first stage,
domestic scholars' research strength in this field was insufficient and attention was not high. The
second stage is the active period of the research on community health education in China. From
2003 to 2012, the number of relevant research literatures increased rapidly and showed an
increasing trend year by year. The average annual publication volume reached 72, and reached the
peak of publication volume in this field in 2010 (116). Since 2006, introduced by the system reform
of the "state council on development guidance of urban community health service", China
vigorously promotes the construction of community health service system, encourages communities
to adhere to the nature of public welfare and carry out health education, prevention, health care,
rehabilitation and family planning technical services, which effectively arouse the attention of
domestic scholars to community health education; In the third stage, from 2013 to 2020, the amount
of literature on community health education in China fluctuated slightly, but the overall trend
showed a downward trend, with an average annual publication of 68 papers. To a certain extent, it
can be seen that China's research in this field has become increasingly mature, and scholars' attention to this field has declined accordingly, and the research boundary has gradually narrowed.
3.2 Distribution of source publication

Of the 1,446 valid data sources retrieved in this paper, a total of 63 are from CSSCMI journals, accounting for 4.36% of the total sample. The sources of journals are dominated by medical and health science, and a small part of journals also involve social science, philosophy and humanities, economics and management science, information technology and other disciplines, with cross-discipline and interdisciplinary research to be developed. The core journals of high-frequency articles include Chinese General Practice, Modern Preventive Medicine, Maternal and child health care of China, Chinese Journal of Gerontology, Chinese journal of public health, etc. (See Table 1 for details)

Table 1 Distribution of source journals in the field of Community health Education (publication volume ≥20)

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Name of Source publication</th>
<th>Number of published</th>
<th>Impact factor</th>
<th>Occupies compared</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chinese General Practice</td>
<td>261</td>
<td>1.988</td>
<td>18.05%</td>
</tr>
<tr>
<td>2</td>
<td>Modern preventive medicine</td>
<td>117</td>
<td>1.498</td>
<td>8.09%</td>
</tr>
<tr>
<td>3</td>
<td>Maternal and child health care of China</td>
<td>111</td>
<td>1.133</td>
<td>7.68%</td>
</tr>
<tr>
<td>4</td>
<td>Chinese Journal of Gerontology</td>
<td>74</td>
<td>0.997</td>
<td>5.12%</td>
</tr>
<tr>
<td>5</td>
<td>Chinese journal of public health</td>
<td>57</td>
<td>1.843</td>
<td>3.94%</td>
</tr>
<tr>
<td>6</td>
<td>Chinese Journal of Practical Nursing</td>
<td>54</td>
<td>0.936</td>
<td>3.73%</td>
</tr>
<tr>
<td>7</td>
<td>Health Education in China</td>
<td>53</td>
<td>1.594</td>
<td>3.67%</td>
</tr>
<tr>
<td>8</td>
<td>Prevention and control of chronic diseases in China</td>
<td>34</td>
<td>1.514</td>
<td>2.35%</td>
</tr>
<tr>
<td>9</td>
<td>Chinese health service management</td>
<td>20</td>
<td>1.856</td>
<td>1.38%</td>
</tr>
<tr>
<td>10</td>
<td>Chongqing medical</td>
<td>20</td>
<td>1.088</td>
<td>1.38%</td>
</tr>
</tbody>
</table>

3.3 Distribution of publishing agencies

As mentioned above, the literature on community health education included in the Chinese core and CSSCMI database was started in 1992. After nearly 30 years of exploration and discussion, this field has attracted extensive attention from the academic community, and a certain group of research institutions and authors has been formed. Through Citespace V visualization analysis, research institution cooperation pattern is as follows (Figure 2). The nodes in the Figure represent
the publishing institutions. The size of the nodes can show the amount of publishing, while the links between the nodes represent the academic cooperation between the institutions. Figure 2 includes representative high-frequency publishing agencies. For example, the academic team with the Medical School of Shihezi University as the main force represented by authors Wang Yuhuan (11 essays), Li Xinhui (7 essays), Jiao Nana (5 essays), Ma Zuchang (4 essays), etc. The team led by Capital Medical University published articles by Zhao Jie (5 papers) and Wen Xiuqin (5 papers). It can be found from the map of institutional cooperation that in the field of community health education in China, there are a variety of research institutions. In addition to the dominant universities, there are also university affiliated hospitals, community service centers, health bureums, maternal and child health centers, and centers for Disease Control and Prevention. At the same time, a few large academic teams in the atlas have also produced cross-institutional research cooperation. For example, the team led by Shihezi University involved the People's Hospital and the Chinese Academy of Sciences, and the team led by Capital Medical University also included community health Association and the Ministry of Health Emergency Response. On the whole, China's research forces in this field are relatively dispersed, large-scale academic teams are formed among institutions, and many high-frequency publishing institutions are in an independent state in the cooperation map, without academic sharing with other research institutions, which to some extent is not conducive to the in-depth discussion of this research.

![Figure 2 Map of cooperation among Domestic community health education research Institutes, 1992-2020.](image)

3.4 Domestic community health education research hot spot visualization analysis

In using Citespace V software, first of all need to use the data in the "export" function converts CNKI data to Wos data, then create a new project, the time span is 1992-2020, time slice is 1 year, choose "keyword" node type, threshold is set to (C, CC, CCV) = (3,1,20), (3,3,20), click "go" option can be mapped community health education research in the field of keywords co-occurrence mapping (as shown in Figure 3). The Figure contains a total of 81 nodes and 159 lines. The size of the circular nodes in the Figure reflects the frequency of keywords. The larger the nodes, the higher the weight of the keywords in the co-occurrence network. The connection between nodes represents the connection between keywords, and the more nodes have the connection, the more information is involved, thus becoming a hot spot in this research field. In addition to the frequency...
of keywords and the size of nodes in the map, the location of nodes in the map is a manifestation of the centrality. Generally, keywords with strong centrality (greater than 0.1) are in the central position of the map. Table 2 shows the frequency distribution Table of keywords in community health education.

As domestic scholars on the research of community health education, combined with the keywords co-occurrence graph (Figure 3) with the keyword frequency distribution Table (Table 2), you can see that "health education", "community health service", "community nursing", "high blood pressure", "the old" as keywords in the field appeared for the first time in years earlier and higher frequency, and in the co-occurrence graph plays a strong intermediary bridge role, for other keyword nodes have stronger control, which has become a hot research topic in the field.

![Keywords co-occurrence map of domestic community health education research.](image)

**Table 2 Keywords frequency distribution of domestic community health education (centrality > 0.1)**

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Word frequency</th>
<th>Centricity</th>
<th>Keywords</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>333</td>
<td>0.42</td>
<td>health education</td>
<td>1996</td>
</tr>
<tr>
<td>2</td>
<td>202</td>
<td>0.41</td>
<td>community health Services</td>
<td>1998</td>
</tr>
<tr>
<td>3</td>
<td>49</td>
<td>0.31</td>
<td>community care</td>
<td>1999</td>
</tr>
<tr>
<td>4</td>
<td>127</td>
<td>0.24</td>
<td>hypertension</td>
<td>2002</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>0.17</td>
<td>community residents</td>
<td>2006</td>
</tr>
<tr>
<td>6</td>
<td>52</td>
<td>0.16</td>
<td>the elderly</td>
<td>1999</td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td>0.12</td>
<td>health management</td>
<td>2012</td>
</tr>
<tr>
<td>8</td>
<td>56</td>
<td>0.11</td>
<td>chronic diseases</td>
<td>2009</td>
</tr>
<tr>
<td>9</td>
<td>27</td>
<td>0.11</td>
<td>influencing factors</td>
<td>2010</td>
</tr>
</tbody>
</table>

**3.5 Research trend analysis of community health education based on keywords time zone view**

The analysis of the research hotspots of community health education in China is helpful to grasp the research focus and future trend of the development process of this field. Based on the co-occurrence map of keywords drawn above (Figure 3), "Time Zone View" was selected to intuitively show the distribution of hot Time zones and research trends of domestic community health education research (Figure 4). The time zone of each keyword node in the map is the year when the keyword first appeared. The connection between each other reflects the correlation between the keywords, specifically, two keywords appear in the same or more articles, which can better reflect
the evolution and change of research hotspots with the passage of time. Based on the distribution of high-frequency keyword information and time zone map in each stage, the research on community health education in China can be divided into three stages according to time dynamics.

3.5.1 Embryonic development period (1996-2002)

In this stage, most of the studies were conducted among women, children and the elderly. In 1996, the thematic key word "health education" appeared for the first time, which laid a foundation for the subsequent studies. In addition, the hot keywords in this stage included "community service, maternal and child health care, community nursing, health education, hypertension", etc. The main research contents were as follows:

First of all, the community survey at this stage mainly focuses on women, children and the elderly. Some scholars [4] found that maternal and child health education in communities with women as the core and family as the best place can improve the health behavior and health awareness of key groups and reduce infant mortality rate. Other scholars [5] conducted a survey on the demand for maternal and child health services in the community, and the results showed that the systematic management of pregnant women and children in the city had reached a relatively high level in quantity, but there were still many deficiencies in quality. It was suggested to improve the quality of maternal and child health personnel at the street level and carry out various forms of health education. With the development of health education services in the community, scholars are gradually studying the health education for the elderly. Such as some scholars [6] from the jurisdiction of the extract part of the elderly in the community health demand investigation, and found that the object of study the onset age are big, but have a strong health knowledge demand and a desire to health, health education should make full use of the information resources, to help the patient to form healthy consciousness, healthy behavior and way of life, make the good quality of life.

Secondly, scholars in this stage emphasized the importance of health education in community health services and made a preliminary exploration. Some scholars [7] believe that the organization and implementation of health education must be combined with community health services and the needs of the majority of residents. They suggest strengthening the construction of community health education front, taking the establishment of healthy families as the starting point, and promoting the in-depth development of community health services. Some scholars [8] also pointed out that health education is an effective means to improve social benefits and the first choice to solve the major social health problems. Compared with treatment, they found that health education and preventive health care are a cause with low investment and high yield, and the only bridge to realize self-health care ability.

3.5.2 Rapid development period (2005-2012)

After a period of embryonic development, the research on community health education in China has stepped into a rapid development stage, accompanied by a rapid increase in the volume of literature. Appear on the stage of keywords also gradually diversified, hot keywords are "diabetes, effect evaluation, chronic diseases, influence factors, awareness, disease management, health management" and so on, that at this stage the domestic scholar's more deeply on the study of community health education, begin to pay close attention to the health education effect evaluation, and for community residents to carry out the health knowledge awareness survey, the factors influencing health behavior present situation analysis and research.

On the one hand, it is about the effect evaluation research of community health education mode. Some scholars [9] found that after 6 months of the hypertension self-management health education program, participants' self-management behavior, self-efficacy, partial health status, visits to the doctor and blood pressure level could be improved. Other scholars [10] conducted investigations on water health education, and the results showed that carrying out water health education in the community could effectively improve residents' knowledge of water and health, change bad behaviors and lifestyle, and at the same time, it should cooperate with government departments to share health education resources and carry out education in diversified ways. Some scholars [11]
also conducted educational intervention research on parents in the community in the light of children's unintentional injuries, and the results indicated that parents' cognitive level of injuries was improved after the intervention. Compared with before intervention, the incidence of all kinds of injuries (mechanical injury, poisoning, accidental fall) decreased. Therefore, education intervention on preschool children and their parents about accidental injury can effectively prevent the occurrence of children's accidental injury.

On the other hand, it is about the survey of residents' health knowledge, the status analysis of health behavior and the study of influencing factors. Some scholars [12] found that community residents surveyed health knowledge awareness is low, have different understanding of individual health knowledge, about the specific quantitative indicators and risk factors of disease is low, the correct answer rates proposal should be through various channels, and combined with professional guidance to carry out health education, especially should focus on health related knowledge refinement and specialized education. Some scholars [13] also found that the awareness rate of hypertension prevention and treatment knowledge in patients with hypertension was low, and multiple factors affected patients' awareness of prevention and treatment knowledge and formation of healthy behaviors, such as gender, age, per capita family monthly income, whether to attend chronic disease knowledge lectures and whether to participate in hypertension health management, etc. Combining this COVID-19 outbreak, some scholars [14] in the community to carry out the community residents COVID-19 protection knowledge present situation investigation, the results showed that the community residents COVID-19 protection knowledge is good, but in disease transmission, mobile electronic devices need to strengthen the disinfection, the authors suggest the community managers should improve the disease prevention and control publicity channels, strengthening disease progress, focus on the low degree of community residents COVID-19 protection situation, raise the level of community residents overall protection.

3.5.3 Flat development period (2013-2019)

This stage of the main hot keywords is "health literacy", "health behavior", "home visit", "self-management behavior", "health", "community health nursing", "house", etc., scholars mainly probes into the community residents of health literacy status quo investigation and Suggestions to guide, emphasis on the health and health management consciousness, part of scholars to carry out the innovation and application of the health education model.

First of all, it is about the status of health literacy survey and advice guidance. Some scholars [15] conducted a study on the status quo and influencing factors of residents' health literacy, and the results showed that education level was an influencing factor of health literacy level, and the improvement of health literacy should focus on the groups with lower education level. The overall social capital and social network and social support in the dimension of social capital may have a certain correlation with the level of health literacy, so it can be considered to improve the level of health literacy of residents through improving social capital, so as to improve the health status of residents. Some scholars [16] also found that residents' cancer health literacy was affected by various factors, and people with high cancer health literacy were more likely to choose healthy behaviors and lifestyles, so comprehensive intervention strategies should be developed and implemented to gradually improve the level of community residents' cancer health literacy.

Secondly, it is about the innovation and application of health education model. Such as "green mode" [17], "bloom target type" [18], "the doctor of traditional Chinese medicine keeping in good health" [19], "motivation interview type" [20], "problem-oriented type" [21], and so on. Some scholars [17] in green mode as the theoretical framework, from the perspective of multi-level and multi-dimensional to evaluate target groups, to find the influence factors of breast cancer screening behavior, it is found that green mode of health education to help women improve breast cancer screening, on the basis of knowledge, change beliefs, promote the formation of breast cancer screening behavior. Also have scholars [20] about motivation interview type health education on behaviors and the influence of lung function, the results show that motivation interview type health education can effectively improve stabilization self-management behavior of patients with
obstructive lung disease and lung function, is a kind of effective disease management strategy.

4. Conclusion and Suggestions

4.1 Conclusions

Based on hownet core and CSSCI database community health education in Chinese literature as sample, using Citespace V software for visual analysis, the study found that: First of all, the amount of literature on community health education in China shows a multi-peak trend, and it is predicted that it will fluctuate in the future. The discipline distribution of literature is dominated by medicine and health science, and a small part involves social science, philosophy and humanities, economy and management science and other fields. There are a variety of research institutions, but a certain scale of academic team has not been formed in the field of community health education in China, and many high-frequency publishing institutions are in an independent state in the cooperation map. Secondly, in the field of the evolution of the theme of the course, the object of study by the women's and children's population expanded to the elderly, young people, the research content from the community health education present situation investigation into the way of education effect evaluation, the construction of the model, the application and innovation, focus by residents to the high incidence of disease of community intervention evolution aware of knowledge about health status, health behavior. The current research topics mainly focus on the status of residents' health literacy survey and suggestion guidance, innovation and application of community health education model and so on.

4.2 Suggestions

4.2.1 Improve the quality and level of academic achievements

The research results of community health education come from a wide range of journals, including some well-known academic journals. According to the number of publications and the distribution of journal sources over the past years, it is not difficult to see that only 10 core journals publish more than 20 articles. In addition, only 63 CSSCI journals were included in this analysis, accounting for 4.36% of the total research literature volume. This indicates that the research on
community health education in China needs to be further deepened, and the high-level achievements are few, which requires researchers in this field to improve their theoretical knowledge base, expand the depth and breadth of research, and thus improve the overall quality of research in this field.

4.2.2 Strengthen the communication between organizations to jointly promote the research and development of community health education in China

With the rapid growth of knowledge and the rapid development of the Internet, community health education involves more and more related disciplines, and scientific research cooperation should become the mainstream research method, which is conducive to realizing the cross-organizational flow of knowledge, condensing ideas, enhancing the thinking leap of researchers, and cultivating innovative talents. As can be seen from the map of institutional cooperation, only a few institutions have academic exchanges, and only a small scale cooperative network has been formed. The overall cooperative force is scattered, and the network connectivity is not strong. Therefore, this article suggested that domestic scholars are paying attention to community health education at the same time, should also pay attention to the academic cooperation with other organizations, knowledge resources across the organization flow, thus forming has certain research institutions of power network, improve innovation ability and scientific research level, for our country community health education research, provide strong theoretical guidance.

4.2.3 The research content needs to be further enriched and innovated

First of all, research on residents' demand for community health education services and its influencing factors should be carried out. In recent years, with the acceleration of the aging process of the population, chronic diseases have gradually become the main risk factors for residents' health, and people begin to pay attention to their own and their families' physical and mental health. As one of the community health services, health education takes health knowledge education and intervention as the means, with the overall goal of reducing the risk factors of chronic diseases and improving the health literacy of residents, and carries out some organized, planned and measured health education activities, so as to meet the health education needs of community residents. After sorting out the literature, it was found that in this field, there were only 74 domestic studies on the health education needs of residents' communities, accounting for 5.19% of the total literature volume, indicating that there were still some gaps in this research perspective. Addressing needs and exploring their influencing factors will help communities deliver health services more accurately. Some scholars [22] found that push messages, health education lectures and medical staff are the main ways for community residents to acquire health education knowledge. At the same time, chronic disease management, physical examination, exercise guidance and diet management are health education knowledge that residents pay more attention to. Therefore, appropriate innovation of targeted health education mode is conducive to enhancing residents' health awareness and improving their overall health literacy.

Secondly, more attention should be paid to community health service professionals, such as their work pressure, willingness to work, psychological status, professional competence level, training needs, etc. There are only 87 literatures involving this content in the field of community health education by Chinese scholars, accounting for 6.00% of the total literature volume. The research mainly focuses on the training mechanism and effect of this population, professional ability evaluation system, etc. On the one hand, the formulation of professional competence standards for health education personnel and the vocational qualification certification system, to a large extent, guarantee the knowledge and skills of health education professionals, and play a huge role in improving the quality of health education and standardizing the development of health education and health promotion [23]. On the other hand, the pressure and willingness to work, working environment and psychological conditions of the population can also affect the quality of health services they provide to the population. Some scholars [24] have found that the psychological pressure of community workers is mainly caused by the factors of high medical risks, heavy work tasks and high demands of patients. Therefore, an in-depth study of this group will be beneficial to
the community health sector to provide better health education services.

Thirdly, the mental health education of community residents is also worthy of attention. In the research field of community health education, there are a total of 24 related literatures on mental health education, less than 2.00% of the total literature volume, indicating that this field has not received attention from domestic scholars. The research and discussion on the systematic mode of community mental health work will promote regional stability and social harmony to the greatest extent and improve the quality of mental health services more effectively [25]. Through carrying out mental health education in the community, some scholars [26] found that the mental health level of residents was significantly enhanced, and they gradually began to pay attention to self-cultivation, self-maintenance and exercise, and attach importance to mental health. Some other scholars [27] proposed the establishment of a training mechanism for mental health service workers, the implementation of a qualification examination and recognition mechanism for mental health service personnel, and the establishment and improvement of a supervision mechanism for mental health service personnel in view of the lack of specialization and standardization of the personnel currently engaged in mental health service in China.

References


