

# Visualized Analysis of Web of Science Documents on General Practice Based on Citespace

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**Abstract:** the Aim of This Paper is to Understand the Evolution Route and the Research Front of General Practice in Medical Health, Health Service and Community Health. the Paper Used the Citespace 5.2 Software and the Web of Science Database as the Search Source; the Key Words Included “General Practice”, “Medical and Health Services” and “Community Health Services”. Core Papers on General Practice Published on the Web of Science Were Searched and Sorted out; Statistical Analysis Was Carried out. through the Spatial Map, the Key Words Co-Occurrence Map and the Time Sequence Map of Research Front, Current Hot Spots on General Practice, Medical and Health Services and Community Public Services Researches Were Revealed in an Intuitive Way. It is Found That the Research of General Practice Mainly Focuses on the Provision of Basic Medical and Health Services, the Diagnosis and Treatment of Common Diseases and Chronic Diseases, as Well as the Management of Community Public Health. General Practice is Developing in the Direction of Benefiting the People. the General Practice Share out the Work with Other Departments Providing Medical and Health Service and Cooperate with Them.

## 1. Introduction

General Practice is a Comprehensive Medical Discipline Oriented to Communities and Families; It Integrates the Clinical Medicine, the Preventive Medicine, the Rehabilitation Medicine as Well as Humanities and Social Sciences. General Practice is a Secondary Clinical Discipline; It Covers People of All Ages and Genders, as Well as Various Organ Systems and Diversified Diseases. Its Main Purpose is to Realize the Long-Term, Comprehensive and Responsible Health Care System Which is People-Centered, Family-Based and Community-Based, and Develops in the Direction of Overall Health Maintenance and Promotion, and Integrates Individual Health with Group Health. the General Practitioner, Also Known as the Family Physician, is a New Type of Doctor Who Has Received Special Training in General Practice; They Are Health Service Providers Who Perform General Practice. They Provide High-Quality, Convenient, Economical, Effective and Integrated Health Care Services for Individuals, Families and Communities, and Carry out All-Round and Responsible Management of Life, Health and Disease. General Practitioners Are the Basis of Grass-Level Medical and Health Services; They Are the Health Gatekeepers of the Community and the Family. Mastering the Development Process of General Practice is Conducive for Us to the Better Understand the Social Status and Work Responsibilities of Family Physicians.

## 2. Literature Review

In This Paper, Core Papers Published on the Web of Science Were Searched and Sorted out through the English Keyword “General Practitioner”; the Time Span Was from 2009 to 2017. the Indexes Included Sci, Expanded, Ssci, a&Hci, Cpci-s, Cpci-Ssh, Esci, Ccr-Expanded and Ic. the Search Result Was 18031. in the Nine Years from 2009 to 2017, Research Papers on General Practitioners Have Been Increasing Year by Year. from 2009 to 2014, the Growth Was Relatively Stable; But by 2015, the Research of General Practitioners Showed a Substantial Growth. Therefore, 2015 to 2017 Was the Period of Rapid Development of General Practitioner Research. in the Past

Three Years, There Were More Than 2000 High-Quality Research Papers on General Practitioner Published Every Year. Although the Number Declined in 2017, More Than 2500 Research Literatures on General Practitioners Were Also Found.

We Analyzed the 18032 Articles on General Practitioners. from the Nationality of the Authors, We Chose the Top 25 Countries with the Largest Number of Published Papers, among Them the UK Ranked First with More Than 3500 Papers; Australia Ranked Second with More Than 3250 Papers; the United States Ranked Third with More Than 2500 Papers; the Netherlands Ranked Fourth, Followed by Germany, France, Canada, Denmark, Belgium, Scotland, Norway, Sweden, Spain, Switzerland, China, Ireland, New Zealand, Wales, India, Poland, Australia, South Africa, Iran and Finland. among Them, the Top Four Countries Published More Than Half of the Research Papers on General Practitioners in the Whole World. It Can Be Seen That the Research of General Practice is Concentrated in North America and Europe, Where the Countries Have Relatively Complete and Developed Medical and Health Service System as Well as Relatively Small Population, Such as Denmark, Belgium, Scotland, Norway, Sweden, Spain and Switzerland. There Are Also a Few Countries with Large Populations, Such as China, India, South Africa and Other Developing Countries. We Analyzed Journals Which Published Literature on General Practitioners; the Four Journals with Largest Number of Relevant Papers Are Medicine General Practitioners, Primary Health Care, Public Environment and Health Care Science.

### **3. Methodology**

We Used the Citespace 5.2 Literature Analysis Software as Well as Keywords Related to “General Practice” to Explore the International Development and Evolution of General Practice, and Provided Basis for the Prediction on the Future Development of General Practice. Citespace is a Scientific Document Analysis Tool Jointly Developed by Dr. Chaomei Chen of the School of Information Science and Technology of Drexel University and the Wise Laboratory of Dalian University of Technology. This Software Can Carry out Visual Research on a Large Number of Documents. It Can Draw Time Distribution Maps According to the Number of Documents, the Year of Publishing, the Number of Authors, and the Input-Output Ratio of Each Year, So That Researchers Can Make Full Use of the Spatial Distribution of Institutions, Authors and Journals Involved in the Documents to Analyze the Development Trend of Some Disciplines through Key Words Co-Occurrence Network, Research Fronts Time Sequence and Other Contents. the Conclusions Are Presented in the Form of Graph to Vividly Reveal the Development of Things. We Sorted out 18032 Documents We Found. in Order to Further Focused on the Research, We Further Narrowed Down the Scope of These References. the Three Key Words of General Practitioner, Medical and Health Services and Community Health Services Were Employed to Carry out the Research.

### **4. Results**

In the Results, We Detected 249 References about General Practitioners in Medical and Health Services and Community Health Services. from the Perspective of Keyword Resonance, the Top One Keyword of These 249 Papers is Service. This is Inseparable from the Basic Functions of General Practitioners (Family Physicians). General Practitioners (Family Physicians) Provide Medical and Health Services for Patients. Therefore, Service Has Become the First Research Core of General Practitioners (Family Physicians). from the Resonance of Key Words, the Following Keywords Are Also Frequently Mentioned: Career Choice, Older People, Fine Mixture Model, Retention, Germany, Older Prisoners, Research and Disadvantage.

We Continued to Explore the Specific Distribution of Research Trends through Analyzing researchers' Enthusiasm for Each Key Word in Each Year. in Order to Distinguish the Research Trend, We Defined the Research Trend of General Practice (Family Physicians) and Community Service in This Decade by Six Variables: Key Words, Benchmark Year of Start, the Research Intensity, the Start Year, the End Year and the Position on the Time Axis. the Top 22 Key Words

Are, Community from 2009 to 2012, Depression from 2009 to 2011, Medical Care from 2009 to 2011, Epidemic from 2010 to 2011 and Medical Care from 2010 to 2013. the Research Focus Changed from the Community Medical Service to the Education of Medical Students and Training Quality.

In Order to Further Deduced the Trend of Researches on General Practice (Family Physicians) and Community Service Intuitively, We Combined the Time Axis and Key Words Resonance, in Which the Lines Represent the Resonance Situation. Finally We Came to the Conclusion That the Study on General Practice (Family Physicians) and Community Service Develops in the Direction of Cooperation. the Results Are Shown in Figure 1. Due to the Refinement of Social Division of Labour, It is Impossible for General Practitioners (Family Physicians) to Undertake All the Medical and Health Services in the Community. Especially in the Context of Hierarchical Diagnosis and Treatment, General Practitioners (Family Physicians) Need to Cooperate with Other Departments to Jointly Promote the Development of the Medical and Health Undertakings.

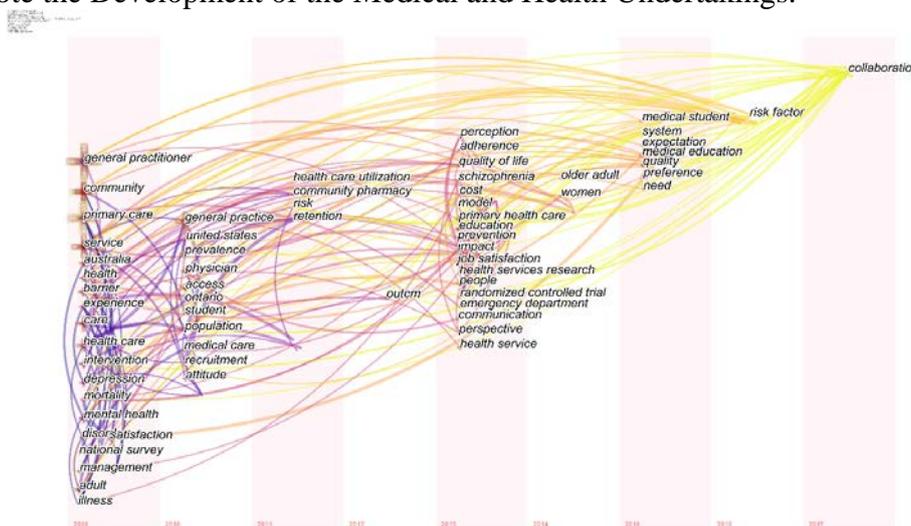


Fig.1 Line Analysis Graphics on the General Practice Research Areas

We will further integrated the documents we found, and focused on the references published on the Web of Science paper collection in the 9 years. In 2009, the key words were scattered, including general practitioner, community, basic medical care, service, Australia, health, barrier, experience, health care, intervention, depression, morality, mental health, confusion, satisfaction and domestic investigation. However, we still wanted to know which intermediate key words played a role in the evolvement in the general practitioners (family physicians) research. Then we co-cited the key words and got the Figure 2. In this figure, we can see how the study on general practitioners (family physicians) developed and evolved step by step on the time axis.

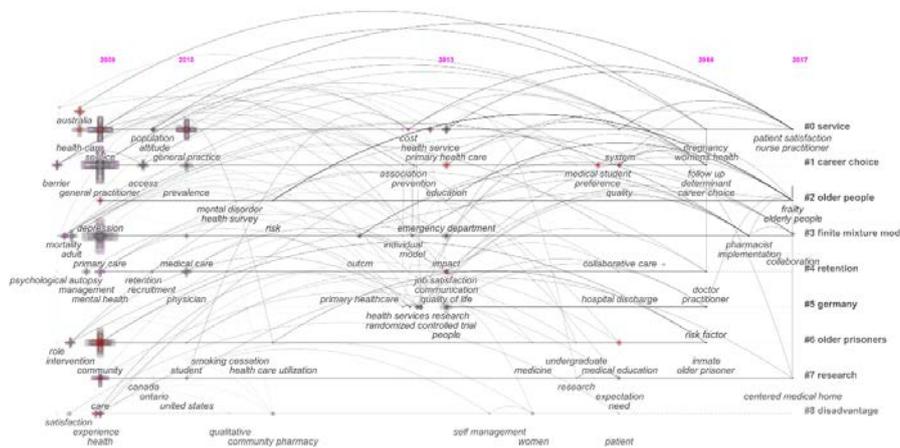


Fig.2 Development of Keyword Resonance on the Time Axis

## 5. Discussion

The research on general practice is mainly concentrated in developed countries, because these countries have established medical system and general practice system. The public health service in these countries leads the world; they also have enough funds to provide adequate medical and health services for local community residents. This has a lot to do with the perfect medical and health security system established in developed countries. For example, in Britain, the *National Insurance Law* was promulgated as early as 1911, which stipulated that all working adult men must have their own general practitioner and sign an agreement with them. The doctor needs to provide basic medical services and get remuneration by capitation. In 1946, the *National Health Service Law* of the UK formally established the national health care system. General practitioners can set up their own medical institutions to provide basic medical services for registered residents. In addition, patients need the general practitioners' transfer treatment reports if they want to go to the hospital for specialized treatment. As the most cutting-edge health service providers in Australia, general practitioners can solve more than 80% of the medical problems in the community. When patients choose to see a doctor, they should first go to the general practitioner for treatment, and only after the first consultation and referral of the general practitioner can they receive the corresponding specialized medical services. Basic health services are still carried out in the community health service institutions. Other specialists are only responsible for some problems of patients. General practitioners know which kind of services the patients need and what other specialists can provide. In Australia, without a referral letter from a general practitioner, the medical insurance system cannot pay for the medical services provided by specialist physicians. In order to attract patients, general practitioners should not only guard the door of health care services and provide high-quality services for patients, but also coordinate the relations with specialists on transfer treatment. Therefore, in developed countries, general practitioners play an important role in the whole medical system, which is related to the implementation of public health contracts, and more directly related to the implementation of the hierarchical diagnosis and treatment system.

In developed countries, the basic medical services provided by general practitioners in the community can basically meet the health needs of most community members and family members. From the perspective of the development trend of key words on general practitioner research, the key words of "basic medical care, community service, general practitioner training and health care" are in line with the definition and development orientation of general practitioners. Many scholars believe that general practice is a kind of individualized medical service. It is affordable for the public medical system to develop general practice because general practitioners are rooted in the family and community. The vigorous development of this system can help the general practitioners to make timely medical decisions. The general practitioners can collect comprehensive information about the individual history and the family history of patients (primary health care genetics) and apply the knowledge to the management procedure; the process is an essential link for developed countries to establish the perfect medical system and the hierarchical diagnosis and treatment mechanism, and to promote the development of high-quality and low-cost general practice.

The development of general practice is also changing from single level research to multi-level cooperation. From Figure 1, we can see that in 2009, the research on general practice focused on general practitioners, community services, basic health care, health care, Australia, intervention, pressure, mortality, mental health, satisfaction, national survey, management, result and illness. In that year, research on general practice mainly focused on patients' satisfaction degree on general practitioners' service, doctors' professional ethics as well as their professional skills, such as the prevention of adult diseases. In 2010, the focus of general practice research changed from Australia to the United States, because the number of general practitioners in the United States decreased significantly during this period. The rapid development of basic medicine and clinical medicine brought the climax of medical specialization in the United States, which brought the medicine field a bright future; formal professional training promoted the improvement of medical services. But at the same time, the number of general practitioners decreased rapidly, resulting in the situation of insufficient basic medical services. In that year, key words of global research on general practice

included general practice, prevalence, physician, Ontario, student, population, medical care and attitude, suggesting people's reflection on how to cultivate more qualified general practitioners. In 2011, the research focuses included health care utilization, community pharmacy, risk and retention; researchers began to carry out systematic research on community medical and health services. In 2012, there was only one keyword, outcm. In 2013, large-scale research began to appear, mainly included perception, adherence, quality of life, schizophrenia, cost, model, primary health care, education, prevention, impact, job satisfaction, health service research, people, randomized controlled trial, emergency department, communication, perspective and health service; these keywords showed the attention of general practitioners to people's psychological diseases. General practitioners should not only have systematic knowledge and skills, but also have solid general diagnosis and treatment abilities which can solve most of the physical and mental health problems of community residents. They also need the competence to work in the community. In 2014, the keywords included older adult, and women, reflecting the concern of general practitioners on geriatrics, adults' diseases and gynecology, as well as the trend of aging population in the society. General practitioners are the first contact doctors of residents. The patients are of different genders and ages, and come from various cultural and belief backgrounds. General practitioners also need to deal with a variety of chronic diseases, medication and lifestyle problems, physical and psychological comorbidity, as well as undifferentiated disease performance. Therefore, the professional training of general practitioners, as well as their ability to finding and solving specific community health problems, have attracted people's concern for the continuous professional development of general practitioners. In 2015, the keywords were medical student, system, expectation, medical education, quality preference and need; this year's research focused on the cultivation of general practitioners, especially on how to cultivate high quality general practitioners. This year's research focus followed the study trend of the previous year. In 2016, the keyword was risk factor. The concern for general practice was mainly about general practitioners' identify with their own profession, which was especially important for the medical and health service personnel who engaged in the general practice for a long time. At the same time, the medical and health system should provide development space and training for general practitioners to improve their professional skills. With the coming of aging population, chronic non-infectious diseases will become the burden of many families. Therefore, the research on the basic medical services for infectious diseases and single diseases has been relegated to the second place, and been replaced by the first level prevention measures which mainly include changing behaviour modes and screening key chronic disease risk factors. The community preventive measures mainly included continuous health management and the co-management of multiple chronic disease. The combination of general practice and preventive medicine has shifted the focus from curbing the epidemic of infectious diseases in the past to delaying the course of disease, improving the quality of life and promoting health. In 2017, the research hot word was collaboration. There are obvious inequalities between general practitioners and specialists throughout Europe and even around the world. Education and career have important impacts on the career of general practitioners. It also suggests that general practitioners must cooperate with health experts and specialists so as to continuously provide medical and health services for grass-roots residents. The general practitioner not only plays the role of the first contact doctor, but also shoulders the important responsibility of coordinating the medical service system. For general practitioners, the horizontal coordination includes the communication and mutual referral within the community health service centre and the community (such as government organizations, civil society organizations and community services); vertical coordination includes the two-way transfer treatment with hospitals and experts. Therefore, the general practitioner has become the intermediary of medical service, which requires them to have the ability of communication and coordination.

From the development trend chart of keyword resonance on the time axis in Figure 2, three main development trends are found. The first was in 2009 and 2010; key words included Australia, health care, general practitioner, depression, psychological autopsy, role intervention, community, population attitude, general practice and medical care. The second stage was concentrated in 2013;

research hotspots mainly included health service, association prevention, education, job satisfaction, communication, quality of life, health services research and randomized controlled trial people. The third stage is concentrated from 2015 to 2017. The keywords were scattered, focusing on patient satisfaction, pregnancy women's health, career choice, system, medical student preference quality, collaborative care and risk factor.

The above paper analyzed the development trend of general practice in related fields, and clearly showed us the trend of general practice development. From the development trend, it is found that the general practice develops based on its positioning. One potential development trend is that general practitioners gradually change from the providers of basic medicine service to the guardians of medical health and the preventers of public diseases, and finally become the collaborators and coordinators in the medical association.

## 6. Conclusion

In this paper, the CiteSpace 5.2 software is used in the visual analysis of general practice research. Through the key word analysis, the researchers grasp the development and evolution trends of related fields, and provide a feasible method for general practice research. The development trend of general practice can be seen intuitively through the CiteSpace. When general practitioners are combined with family physicians and community health services, the career orientation and responsibility of general practitioners are reflected; the position of general practitioners in the medical association is shown. As the health gatekeeper of community health, general practitioners play an important role in the hierarchical diagnosis and treatment system. Therefore, it is an important development trend for general practitioners to perform their duties and work together, which provides a reasonable and scientific basis for the cultivation of general practice students and the general practice training in basic medical and health service systems. However, there are some limitations in this paper. It mainly selects the query results on the Web of Science. Although the data can represent the main development direction of general practice research, general journals have their own uniqueness, which is not taken into account in this paper. Meanwhile, we only consider the retrieval results on the international journals while ignoring papers published on domestic journals, which has a certain impact on our understanding of the development of general practice. These perspectives need to be further studied.

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