Research on the Differences in the Level of Medical Services and the Improvement Path of Primary Doctors in Different Regions of China

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Abstract: This study deeply discusses the current situation of the medical service level of grassroots doctors in different regions of China and puts forward corresponding improvement strategies. By constructing a mixed research framework combining quantitative and qualitative data collection, and using diversified statistical methods, this paper deeply analyzes the quality and patient satisfaction evaluation of grassroots doctors in various regions, comprehensively evaluates the medical service level of grassroots doctors, and reveals the differences in medical services of grassroots doctors in different regions. This paper proposes to strengthen the training and education of grassroots doctors, optimize the process of primary medical services, improve the allocation of medical equipment and resources, and establish a continuous improvement mechanism, and compare the medical service level of grassroots doctors before and after the improvement, revealing that the medical service level of grassroots doctors has been significantly improved. This study uses a multi-level index evaluation method to evaluate the level of primary medical services in different regions of China, showing that the critical emergency response capacity of grassroots doctors in the central region is higher than that in the eastern and western regions, the eastern region, the ability rate of grassroots doctors in village clinics is higher than that of community health service centers and township hospitals, and the ability rate of grassroots doctors in township hospitals is higher than that of community health service centers, reflecting the differences in the medical technology level of doctors in the east, middle and western regions and different grassroots levels; the distribution of academic qualifications and occupational types in the eastern, central and western regions is different, the educational qualifications of doctors, occupational types and the quality of medical services, and the educational qualifications of grassroots doctors

has a direct impact on the quality of medical services; there is different in the allocation of medical resources in different cities in China, and the eastern region. This study reveals significant differences in the service level of grassroots doctors in different regions of China, and Grassroots service level doctors can effectively improve. It provides a theoretical basis and practical guide for improving China's grassroots medical system and the quality of medical services.

1. Introduction

With the increasing attention of the state to Grassroots medical services, people's demand for grassroots medical and health services is also increasing [1]. Grassroots medical and health institutions must continuously improve the quality and level of services to meet people's growing health needs. In recent years, with the rapid improvement of China's comprehensive strength, the foundation of the grassroots medical and health service system embodies a country's comprehensive national strength and an important position to protect people's health. Building medical and health service capacity at the grassroots level can protect people's health, contribute to achieving the strategic goal of a healthy China, and provide a high-quality economy. Volume development provides power [2]. However, due to the economic strength and policy popularization of different regions, there are apparent differences in the level of medical services in the different areas. Currently, the quality of primary medical services is mainly manifested in the unreasonable allocation of medical resources, the poor quality of medical services, the backward level of medical technology, etc. Although the implementation of new rural cooperative medical care and the provision of rural medical and health services, there is a tendency of the government to encase everything, and the formulation of policies does not consider the differences. Group's interests affect the realization of the initial goal of medical service, and lead to the incompetence of quality management and supervision of primary medical service [3]. By searching for literature, we integrate statistical methods (spss, SAS) to analyze the differences in different places, train doctors, rationally allocate resource, optimize the service management system according to the actual situation, and explore new paths to improve primary medical and health services.

2. Research Method

This study uses a multi-level index evaluation method to evaluate the level of primary medical services in different regions of China. First, multiple indicators such as medical resource allocation, medical service quality, and medical technology level are select as evaluation dimensions, and authoritative data such as the National Bureau of Statistics and the Health Commission are use for data collection. Then, the weight distribution of various indicators is carrie out through the hierarchical analysis method (AHP), and the comprehensive evaluation results of the level of primary medical services in different regions are finally obtaine.

3. Results

3.1 Medical Technical Level

The critical emergency response ability of grassroots doctors is a crucial reflection indicator of the medical technical level. In terms of regional distribution, the difference in the prevalence rate of

grassroots doctors in the eastern, central, and western regions is statistically significant ($\chi2=144.040$, P<0.001); among them, the prevalence rate of grassroots doctors in the central area is higher than that in the eastern and western areas, and the prevalence rate in the east, east of region is higher than that in the region of the west, the difference is statistically significant (P<0.017) [4]. At the institutional level, the acute and critical emergency response capacity of rural grassroots doctors is higher than that of urban grassroots doctors, and the difference is statistically significant ($\chi2=26.930$, P<0.001).compared with the ability of grassroots doctors in community health service centers, community health service stations, township health centers, village clinics and other institutions, and the difference is statistically significant ($\chi2=38.524$, P<0.001). Among them, the capacity of grassroots doctors in village clinics is higher than that of community health service centers and township hospitals, and the capacity rate of grassroots doctors in township hospitals is higher than that of community health service centers. The difference is statistically significant (P<0.005) [4]. See Table 1.

Table 1: The rate of emergency response capacity of critical and critical illness of grassroots doctors in urban and rural areas in the eastern, central, and western regions [name (%)]

Number of institutional layers	Eastern part		Central section		Western part		Amount to	
	Number of people surveyed	The availability rate	Number of people surveyed	The availability rate	Number of people surveyed	The availability rate	Number of people surveyed	The availability rate
City	1369	624 (45.6)	748	370 (49.5)	356	146 (41.0)	2473	1140 (46.1)
Community Health Service Center	1021	457 (44.8)	649	320 (49.3)	332	134 (40.4)	2002	911 (45.5)
Community health service station	348	167 (48.0)	99	50 (50.5)	24	12 (50.0)	471	229 (48.6)
Countryside	1543	804 (52.1)	2413	1466(60.8)	1945	817 (42.0)	5901	3087(52.3)
Township health center	684	355 (51.9)	450	256 (56.9)	851	378 (44.4)	1985	989 (49.8)
Village health room	859	449 (52.3)	1963	1210(61.6)	1094	439 (40.1)	3916	2098(53.6)
Other institutions	41	23 (56.1)	39	24 (61.5)	15	9 (60.0)	95	56 (58.9)
Amount to	2953	1451(49.1)	3200	1860(58.1)	2316	972 (42.0)	8469	4283(50.6)

3.2 Poor Quality of Medical Services

The academic qualifications and occupational types of doctors are related to the quality of medical services. The degree of primary doctors directly affects the quality of medical service. Grassroots degree this study surveyed a total of 8,469 grassroots doctors in the eastern, central, and western regions of the country, of which 2,953 grassroots doctors on the east region, accounting for 34.9%; 3,200 grassroots doctors in the central region, accounting for 37.8%; and 2,316 grassroots doctors in the western region, accounting for 27.3%. The average age of the grassroots doctors

surveyed was (43.2±9.6), mainly 30-44 years old and 45-59 years old, accounting for 44.5% (3770/8469) and 42.6% (3407/8469),respectively. The academic qualifications of grassroots doctors were mostly technical primarily secondary school and lower water level, accounting for 38.5% (3262/8469), followed by the subjects and upper water level, accounting for 33.9% (2867/8469), and the junior college degree accounted for 27.6% (2,340/8469). Among the respondents, 98.3% (8326/8469) of the primary doctors were qualified to practice, of which 41.0% (3411/8326) were qualified as a medical practitioner, 26.4% (2201/8326) of primary doctors were qualified as rural doctors, 22.5% (1877/8326) were qualified as assistant practitioners. The proportion of general practitioners were 5.4% (446/8326), and 4.7% (391/8326) heal as other (such as traditional Chinese medicine specialists, health conditioner qualifications, etc.); 1.7% (143/8469) were not qualified. In terms of academic qualifications, grassroots doctors in the eastern region are mainly bachelor's degrees or above, grassroots doctors in the central region are mainly from technical secondary school and below, and grassroots doctors in the western region are mainly with junior college degrees. In terms of practice types, the top 2 primary doctors in the east are practicing doctors and assistant practitioners, the top 2 practicing types in the central region are rural doctors and practitioners, and the top 2 in the western region are practicing doctors, respectively. The proportion of education background and practice type of primary doctors in eastern, central and western regions was compared, and the differences were statistically significant (P<0.001)[4], as shown in Table 2. See Table 2.

Table 2: Distribution of grassroots doctors' academic qualifications and occupational types in the eastern, central and western regions [name (%)]

Project	East (n=2953)	Central (n=3200)	West (n=2316)	X2Value	P value
Academic background				676.357	<0.001
Technical secondary school and below	869 (29.4)	1637 (51.2)	756 (32.6)		
Institutions of higher education	633 (21.4)	921 (28.8)	786 (33.9)		
Bachelor's degree or above	1451 (49.1)	642 (20.1)	774 (33.4)		
Type of occupation				670.804	<0.001
Medical practitioner	1532 (51.9)	1074 (33.6)	805 (34.8)		
Practicing assistant physician	677 (22.9)	665 (20.8)	535 (23.1)		
General practitioner	109 (3.7)	236 (7.4)	101 (4.4)		
Rural doctor	365(12.4)	1115(34.8)	721(31.1)		
Other	235 (8.0)	57 (1.8)	99 (4.3)		
Unqualified to practice	35 (1.2)	53 (1.7)	55 (2.4)		

3.3 Medical Resource Allocation

Table 3: The difference in the allocation of medical resources in all provinces (cities and districts) in China from 2012 to 2020 is relatively close to C*i (tK)

Area	2012	2013	2014	2015	2016	2017	2018	2019	2020
Beijing	0.42	0.45	0.46	0.50	0.53	0.59	0.65	0.70	0.68
Tianjin	0.17	0.17	0.19	0.22	0.24	0.29	0.30	0.33	0.37
Hebei Province	0.16	0.17	0.18	0.19	0.19	0.20	0.22	0.26	0.25
Shanxi Province	0.18	0.19	0.20	0.21	0.22	0.25	0.25	0.27	0.28
Inner Mongolia	0.17	0.20	0.21	0.24	0.25	0.29	0.31	0.34	0.36
Liaoning Province	0.17	0.18	0.19	0.19	0.21	0.23	0.26	0.29	0.28
Jilin Province	0.13	0.15	0.16	0.19	0.20	0.24	0.26	0.30	0.37
Heilongjiang Province	0.13	0.14	0.16	0.18	0.18	0.20	0.22	0.24	0.32
Shanghai	0.25	0.27	0.30	0.34	0.39	0.42	0.46	0.50	0.51
Jiangsu Province	0.16	0.19	0.22	0.23	0.28	0.30	0.42	0.43	0.40
Zhejiang Province	0.21	0.27	0.31	0.34	0.36	0.42	0.40	0.42	0.36
Anhui Province	0.06	0.08	0.10	0.12	0.13	0.16	0.18	0.21	0.23
Fujian Province	0.13	0.15	0.16	0.18	0.19	0.22	0.25	0.27	0.27
Jiangxi Province	0.13	0.13	0.14	0.15	0.15	0.17	0.19	0.21	0.23
Shandong Province	0.12	0.14	0.15	0.16	0.18	0.20	0.23	0.25	0.24
Henan Province	0.11	0.12	0.13	0.14	0.16	0.18	0.21	0.23	0.20
Hubei Province	0.11	0.13	0.15	0.17	0.18	0.20	0.23	0.25	0.32
Hunan Province	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.25	0.25
Guangdong Province	0.09	0.12	0.14	0.16	0.20	0.23	0.27	0.32	0.32
Guangxi	0.12	0.13	0.14	0.15	0.16	0.17	0.20	0.23	0.25
Hainan Province	0.11	0.12	0.13	0.18	0.20	0.22	0.25	0.30	0.40
Chongqing	0.10	0.12	0.13	0.15	0.17	0.19	0.24	0.28	0.29
Sichuan Province	0.15	0.18	0.19	0.20	0.21	0.22	0.25	0.29	0.32
Guizhou Province	0.12	0.13	0.14	0.16	0.17	0.20	0.22	0.24	0.24
Yunnan Province	0.08	0.11	0.11	0.13	0.15	0.17	0.19	0.22	0.26
Xizang Autonomous Region	0.31	0.30	0.32	0.34	0.35	0.38	0.41	0.47	0.50
Shaanxi Province	0.16	0.17	0.18	0.19	0.20	0.21	0.23	0.25	0.27

Compared with different regions in the same period, the relative proximity of the four provinces (cities and regions) of Beijing, Shanghai, Qinghai, and Xizang Autonomous Region is stable in the top five, and the level of medical resource allocation is among the highest in the country. Jiangsu, Zhejiang and Hainan ranked in the top five in some years, but they change frequently. The provinces and cities with the highest relative proximity are mainly in the eastern region, which further highlighting the tilt of medical resources towards the east region. As municipalities directly under the central government, Beijing and Shanghai have obvious advantages in terms of financial and policy support. At the same time, Beijing and Shanghai are China's political and cultural centers as well as economic and financial centers, with relatively concentrated resources and rich medical resources. Jiangsu Province and Zhejiang Province are large demographic and economic provinces in China. Objectively, they have a high demand for medical treatment, coupled with substantial financial support, and many local universities continue to provide talent transportation for the medical and health system. The allocation of medical resources is at a high level. In the seventh national census, the population of the Xizang Autonomous Region and Qinghai Province was at the end, with the national population accounting for 0.26% and 0.42%, respectively. The per capita share of medical resources was high, ranking first in relative progress. During the study period, the

top five provinces (cities and districts) with relative closeness have significantly changed, focusing on Anhui, Jiangxi, Henan, Hubei, Guangdong, Guangxi, Chongqing, Yunnan and other provinces (cities and districts), mainly in the central region of the west. Compared with the western region, the central region has a large population. At the same time, the total amount of medical resources is relatively different from that of the western region. The per capita share of medical resources is low, and the relative ranking is lagging. Guangdong Province is the largest province with the largest population in China in history. The high population has diluted the total amount of medical resources. The per capita occupancy level is low, and the relative proximity ranks second [5], as shown in Table 3.

4. Discuss

4.1 Analysis of the Current Situation of the Service Level of Grassroots Doctors in Different Regions

This study shows a large gap in the service level of grassroots doctors in different regions. The survey shows that the central and western areas are lagging in the level of medical technology, the quality of medical services, and the allocation of medical resources. Economic development, the number of medical students and the public's trust in grassroots doctors in the west are all inadequate compared to other regions. Most grassroots doctors in the western region deal with common diseases. Due to the lack of ability, most of them will choose to treat and be referred to higher hospitals in the case of serious diseases. Patients are also more inclined to go to large hospitals to treat complex and miscellaneous diseases [6]. Because of the different hospital levels, the ability to deal with critically ill patients is lower than that of community health service centers and township health centers. Hospitals at the same level will also have a gap in the level of medical technology due to different regions. On the one hand, medical college graduates do not supplement the number of grassroots doctors, and there are fewer general practitioners specially trained in medical schools. In the future, it is still necessary to make full use of national policies such as targeted free training of medical students, so that medical colleges and universities can send more qualified grassroots doctors to the grassroots, especially the central and western regions [7-8]. For the education of general medical students, it is recommended to include general medical disciplines in the critical, specialty construction plan of national clinical concern, and promote the reform of general medical education in colleges and universities to serve the grassroots by continuously increasing financial support, training and education [9]; On the other hand, due to the low level of salary, limited prospects for development, the lack of attractiveness of grassroots doctors, and the reluctance of high-quality medical resources to go to the grassroots level, the ability of grassroots doctors in the western region is significantly lower than that of grassroots doctors in highly developed areas, but there are also rural clinics, community health service centers, township health centers, and even some county-level hospitals, where medical resources are in short supply. In this regard, China should strengthen the investment in medical resources in underdeveloped areas, give grassroots doctors complete, total livelihood security, and improve the welfare level of grassroots doctors, so that more high-quality talents are willing to go on and retain. Medical and health resources are the cornerstone of medical and health services, which can improve the rationality, fairness, and effectiveness of allocating health resources [10] and effectively increase patient satisfaction. In view of the low trust of patients in primary doctors, we should optimize the primary medical service process and reveal the bottlenecks and inefficient links in the service process. Through the establishment of the cooperation model between family doctors and specialists, it can not only optimize the allocation of human resources within primary medical institutions, but also strengthen the connection with superior medical institutions, form a top-down linkage, and optimize the entire

medical service network.

4.2 Analysis of Differences in the Level of Medical Services of Grassroots Doctors Caused By Regional Differences

The research results show that the level of primary medical services in developed areas of China is relatively high, mainly reflected in the level of medical technology, the allocation of medical resources, high service quality, etc., while the level of primary medical services in those underdeveloped areas is relatively low, mainly due to the insufficient allocation of medical resources and the quality of the grassroots doctors. Because of the different distribution of medical resources, the satisfaction survey of patients in grassroots hospitals for common cases is higher than that of complex and miscellaneous diseases.

Satisfaction rate of satisfaction survey. Comparing the allocation of medical resources in different regions during the same period, the relative proximity of the four provinces (cities and districts) of Beijing, Shanghai, Qinghai, and Xizang Autonomous Region is basically stable in the top five. In grassroots hospitals in areas with sufficient medical resources such as the east, patients can get more precise diagnosis and better medical and health service resources. Regarding the quality of medical services, the teachers in the training process of grassroots doctors mainly come from local hospitals, educational institutions, other professional organizations, etc. There is a general shortage of teachers, and it is difficult for grass-roots doctors to obtain high-quality educational resources [11]. Because the regional economy is underdeveloped, it is difficult for grassroots doctors to have more opportunities to participate in more profound medical technology training, academic seminars, etc., which further limits the development of the service level of grassroots doctors. At the same time, the absorption of fresh blood is unsustainable, which continues to increase the gap between the service level of medical resources in developed and underdeveloped areas such as the east and west. This problem can only be effectively alleviated by continuously strengthening the training and education of grassroots doctors. Strengthening the systematic training of grassroots doctors can not only improve their professional skills, but also deepen their understanding and ability to deal with emerging diseases. To this end, it is crucial to establish a long-term training system, which should include periodic, vocational training courses and real-time online learning resources to meet the continuous learning needs of grassroots doctors. For example, doctors can obtain the latest medical information and technologies through offline centralized lectures, online courses, and case discussions.

5. Conclusions

This paper aims to improve the quality of primary medical services and meet the health needs of the people by comprehensively evaluating the level of medical services of primary doctors in China and exploring ways to improve them. The research adopted multiple methods to collect and analyze the data, constructed the evaluation index system of the medical service level of primary doctors, and carried out empirical analysis. On the basis of evaluation and analysis, this paper puts forward the improvement path of strengthening doctor training, optimizing service process, strengthening equipment resource allocation and establishing continuous quality improvement mechanism. The empirical research and analysis show that there are some deficiencies in the overall medical service level of primary doctors in China, which are manifested as a large gap between primary doctors and high-level medical institutions in professional knowledge, skill level and service awareness. At the same time, the primary medical services between regions and between urban and rural areas show obvious imbalance. The analysis results of basic medical service index and patient satisfaction evaluation index reveal that improving the quality of primary medical service is the key to meet the

growing health needs of the people. For the allocation of primary medical equipment and resources, intelligence, networking and standardization should be taken as the direction of reform, the telemedicine and cooperation mechanism between primary medical institutions and superior hospitals should be established and improved, and the Internet + medical model should be effectively used to improve the work efficiency and service ability of primary doctors. At the same time, it advocates the establishment of a long-term medical service quality evaluation and continuous improvement system, pays attention to medical safety, reduces the occurrence of medical accidents, and constantly improves patients' trust and satisfaction in primary medical services. In short, the research on the evaluation and improvement of the medical service level of primary doctors is not only conducive to improving the quality of primary medical service, but also conducive to promoting the balanced development of China's medical system, improving the overall medical service level, and protecting the people's health rights. Based on continuous research and practice, it is expected that the future primary medical services will show a more humane, professional and efficient new pattern, contributing to the construction of a harmonious society and a healthy China.

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