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Analysis on the Differences in Medical Service Levels of Primary Care Doctors in Different Regions of China and the Paths for Improvement

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Abstract: *Under the Healthy China strategy, enhancing primary medical services is critical for national health. This study evaluates regional disparities in the service levels of primary care doctors and proposes improvement strategies. A multi-dimensional evaluation system was constructed, integrating quantitative assessments (e.g., diagnosis capability, patient satisfaction) and qualitative analysis (e.g., service behaviors, challenges). Statistical methods, including χ^2 tests, revealed significant regional differences: Central regions outperformed eastern and western regions in diagnosing common diseases (χ^2=128.722, *P*<0.001), while eastern regions had higher physician quality in hospitals and primary institutions. Job satisfaction varied by institution type, with first-class second-grade hospitals and community health centers scoring higher. Resource allocation was skewed toward eastern regions, exacerbating urban-rural gaps. Key strategies include optimizing resource distribution, advancing medical informatization, and strengthening talent training. Post-intervention comparisons demonstrated notable improvements in service levels. The findings underscore the need for region-specific policies to balance resource allocation, enhance infrastructure, and prioritize workforce development, ensuring equitable, high-quality primary care nationwide.*

Keywords: *primary care doctors in different regions, medical service level; sinking of medical resources; medical service quality; medical informatization construction; training of primary medical talents*

1. Preface

In recent years, with the advancement of the Healthy China strategy, the country emphasizes safeguarding people's health in an all-round and full-cycle way. Primary medical services are the foundation for achieving this goal, and higher requirements are put forward for the medical service capabilities and quality of primary care doctors. At the same time, due to the integrated development of urban and rural areas and the continuous deepening of medical reform, aiming to narrow the urban-rural medical gap and promote the balanced allocation of medical resources, this requires strengthening primary medical services in rural and remote areas. The implementation of the hierarchical diagnosis and treatment system also prompts primary medical institutions to undertake more tasks of first diagnosis, rehabilitation and chronic disease management. The role and responsibilities of primary care doctors are becoming increasingly important. However, due to the differences in economic development levels, policy support intensity, population density and medical needs in different regions, there are obvious differences in the level of primary medical services in different regions. At present, the quality problems of primary medical services are mainly manifested in aspects such as low primary medical service capabilities, unreasonable allocation of physician quality, and poor satisfaction of primary medical staff. Although the implementation of the new rural cooperative medical system and the provision of rural medical and health services, there is a tendency for the government to "take care of everything". The formulation of policies does not take into account the interest demands of different groups, which affects the realization of the original goal of medical

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services and leads to the weakness of quality management and supervision of primary medical services [1]. Through literature search, statistical methods (SPSS, SAS) were used to integrate and analyze the data from different regions. According to the actual situation, this study trains doctors, rationally allocates resources, optimizes the service management system, and explores new ways to improve the level of primary medical and health services.

2. Research Methods

This study uses a multi-faceted and multi-level indicator evaluation method to evaluate the differences in the medical service levels of primary care doctors in China. First of all, multiple aspects such as primary medical service capabilities, differences in the allocation of physician quality, and satisfaction of primary medical staff are selected as evaluation dimensions, and authoritative data from the National Bureau of Statistics and the National Health Commission are used for data collection. Then, the analytic hierarchy process (AHP) is used to allocate weights to various indicators, and finally a comprehensive evaluation result of the differences in the level of primary medical services in China is obtained.

3. Research Results

3.1 Primary medical service capabilities

The diagnosis and treatment capabilities of primary care doctors for common and frequently occurring diseases are a basic reflection indicator of primary medical service capabilities[2]. In terms of regional distribution, there is a statistically significant difference in the possession rate of primary care doctors in eastern, central and western regions ($\chi2 = 128.722$, $P < 0.001$) [3]; among them, the possession rate of primary care doctors in central regions is higher than that in eastern and western regions, and the possession rate in eastern regions is higher than that in western regions, and the difference is statistically significant ($P < 0.017$) [3]. In terms of institutional levels, there is no statistically significant difference in the possession rate of diagnosis and treatment capabilities for common and frequently occurring diseases among primary care doctors in rural and urban areas ($\chi2 = 0.006$, $P = 0.94$) [3]; there is a statistically significant difference in the possession rate of capabilities of primary care doctors in community health service centers, community health service stations, township health centers, village clinics and other institutions ($\chi2 = 17.167$, $P < 0.05$) [3]; among them, the possession rate of primary care doctors in community health service stations is higher than that in village clinics, township health centers and community health service centers, and the difference is statistically significant ($P < 0.005$) [3], as shown in Table 1.

Table 1. Rate of possession of diagnosis and treatment capabilities for common and frequently occurring diseases among urban and rural primary care physicians in eastern, central, and western regions [number (%)]

Institutional level	Eastern region		Central region		Western region		Total	
	Number of people surveyed	Possession rate	Number of people surveyed	Possession rate	Number of people surveyed	Possession rate	Number of people surveyed	Possession rate
City	1 369	1126(82.2)	748	618(82.6)	356	286(80.3)	2473	2030(82.1)
Community health service center	1021	814(79.7)	649	533(82.1)	332	266(80.1)	2 002	1 613(80.6)^{c}
Community health service station	348	312(89.7)	99	85(85.9)	24	20(83.3)	471	417(88.5)
Countryside	1 543	1 305(84.6)	2 413	2 111(87.5)	1 945	1 432(73.6)	5 901	4 848(82.2)
Township health centers	684	560(81.9)	450	389(86.4)	851	673(79.1)	1 985	1 622(81.7)^{c}
Village health room	859	745(86.7)	1 963	1 722(87.7)	1 094	759(69.4)	3 916	3 226(82.4)^{c}
Other institutions	41	34(82.9)	39	31(79.5)	15	11(73.3)	95	76(80.0)
Total	2953	2465(83.5)	3200	2760(86.3)^{a}	2316	1729(74.7)^{ab}	8469	6954(82.1)

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3.2 Configuration of physician quality

The improvement of the quality and allocation fairness of medical personnel is of great significance for improving the medical and health service system and raising the health level of the whole people. The analysis shows that the quality of physician manpower in hospitals and primary medical institutions in eastern regions is higher than that in central and western regions. In primary medical institutions, the proportion of practicing physicians in eastern regions (71%) is significantly higher than that in central and western regions (63%, 67%), indicating that the quality of physician resources in primary medical institutions in eastern regions is relatively high, and the quality of physician manpower in primary medical institutions in central regions is the lowest [4]; and the gap between the proportion of practicing physicians in hospitals (92%) and the proportion in primary medical institutions (63%) is the largest, and the quality of physicians in primary medical institutions in central regions is the worst [4], as shown in Table 2.

Table 2. Comparison of the composition and geographical allocation fairness of physicians per thousand population in different types of medical institutions in various regions in 2018

	Licensed physicians (%)	Assistant physicians practicing in hospitals (%)	Total	Licensed physicians (%)	Assistant physicians practicing in primary medical institutions (%)	Total
Eastern region	1.52 (94)	0.09 (6)	1.62	0.74 (71)	0.31 (29)	1.05
Central region	1.26 (92)	0.11 (8)	1.37	0.55 (63)	0.32 (37)	0.86
Western region	1.25 (92)	0.11 (8)	1.36	0.56 (67)	0.28 (33)	0.85
Gini coefficient	0.12	0.24	0.11	0.14	0.15	0.11

3.3 Satisfaction of primary medical staff

The satisfaction of medical staff is an important guarantee for primary medical and health institutions to provide high-quality basic medical and basic public health services. The survey results show that the job satisfaction of primary medical staff will be affected by different working institutions [5]. The job satisfaction scores of primary medical staff working in first-class second-grade hospitals and community health service centers are higher than those of primary medical staff in first-class first-grade and first-class third-grade hospitals, and the difference is statistically significant ($P < 0.005$) [5], as shown in Table 3.

Table 3. Comparison of job satisfaction scores of grass-roots medical staff with different demographic data (s, points)

Item	Category	n	Job Satisfaction	$\chi 2$	P
Work Institution	First-Class Grade A Hospital	87	19.80±5.11	92.99	0.04
	First-Class Grade B Hospital	12	23.08±5.38		
	First-Class Grade C Hospital	14	19.14± 6.27		
	Community Health Service Center	56	20.71± 4.89		
Gender	Male	75	21.73± 4.97	28.95	0.22
	Female	94	19.15± 5.11		
Age	< 25 years old	24	20.13± 5.10	81.38	0.86
	25 - 34 years old	48	20.08+ 5.38		
	35 - 44 years old	51	20.80± 5.77		
	45 - 54 years old	35	19.63± 4.48		
	55 - 60 years old	11	21.27± 4.61		
Highest Educational Qualification	Secondary School or Below	53	19.25± 4.73	44.82	0.61
	Junior College	85	20.77± 4.91		
	Undergraduate	31	20.74± 6.48		
	Master or Above	0	0		
Major Studied	Clinical Medicine	79	21.58±4.85	93.31	0.56
	Nursing	46	18.22±5.28		
	Pharmacy	16	21.31± 4.70		
	Other Medical-Related Technical Majors	23	20.38± 5.23		
	Non-Medical-Related Majors	5	15.40± 3.36		
Years of Work	< 5 years	29	20.24± 4.78	102.31	0.31
	5 - 10 years	33	19.36±5.62		
	11 - 15 years	41	21.83± 5.39		

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	16 - 20 years	17	20.47± 5.70		
	> 20 years	49	19.61± 4.69		
Professional Title	Not Evaluated or Unknown	51	19.76±5.11	83.22	0.17
	Primary	80	20.34± 4.68		
	Intermediate	29	20.75±6.51		
	Sub-Senior	9	21.33±6.06		
	Senior	0	0		
Work Position	Practicing Physician Position	21	24.45±4.55	166.09	0.11
	Practicing Assistant Physician Position	37	20.97± 4.81		
	Registered Nurse Position	39	18.23± 5.01		
	Pharmacist Position	12	21.08±5.14		
	Technician Position	3	25.00± 7.00		
	Other Health Technical Positions	46	19.85± 4.67		

4. Discussion

4.1 Exploration of the Differences and Enhancement Paths of Primary Medical Service Levels in Different Regions of China

This study employs a multi-faceted and multi-level indicator evaluation method to assess the differences in the medical service levels of primary doctors in the eastern, central, and western regions of China. The aim is to showcase the real situation of China's primary medical level and services through horizontal and vertical comparisons, and to analyze and discuss the enhancement paths. Under the policy drive of "Healthy China", promoting the sinking of high-quality medical resources and advancing the equalization of basic medical and health services is an important way to achieve the goal of ensuring everyone has access to basic medical services [6].

For the horizontal comparison within China's primary medical care. There is a significant gap in the development level and medical service capability of primary medical care among different regions in China, resulting in an imbalanced distribution of medical resources. Relatively economically developed eastern regions have abundant medical resources, a high level of primary medical service, and highly capable doctors. However, in the relatively economically backward western regions, such as Guangxi, Guangdong, the medical resources are relatively scarce, and the level of primary medical service is also relatively backward. Therefore, the rate of having the collaborative capability of primary doctors in the central region is higher than that in the eastern and western regions.

The service capability of China's primary medical care is continuously improving. With the reform of the economic system, township health centers and village clinics have basically become independent market entities [7]. Therefore, it is particularly important to explore and propose feasible enhancement paths for China's primary medical care. The rate of having community health service centers, which are institutions of primary medical care in China, ranks first, indicating that the service capability of primary doctors is related to medical resources.

4.2 Analysis of the Reasons for the Differences in Medical Levels in Different Regions of China

The construction of the general practice discipline is the focus of talent cultivation, and the improvement of humanities education is needed [8]. The cultivation of grassroots general practitioners is still insufficient. In regions with relatively backward economic development, the source of general medical students mainly comes from targeted training, and the treatment issues after graduation need to be strengthened, making it difficult to attract more outstanding talents to engage in systematic learning of general medicine. General practitioners are the most grassroots medical security personnel in our country. The insufficient cultivation of general practitioners and the inadequate treatment of them are important factors contributing to the gap in the service level of primary care in different regions. Compared to regions like Shanghai and Beijing, general practitioners have a clear employment direction, with well-equipped community hospitals, relatively high working treatment, and a relatively complete training process for general practitioners.

The primary medical service mechanism is still imperfect. There is a clear distinction in the medical diagnostic capabilities of doctors in different regions. For patients who visit primary hospitals, the medical treatment costs in tertiary hospitals may be difficult to bear, leading many patients to give up further treatment. However, the medical knowledge of primary doctors in backward areas of our country is relatively weak, and their medical diagnostic capabilities need to be improved. This also

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leads to difficulties for patients in receiving the best quality diagnosis and treatment services.

The distribution of medical resources is uneven. Medical and health resources are important resources for residents' health, and the rational allocation and effective utilization of medical resources are related to the health level and resource utilization efficiency of residents in a country or region [9]. In grassroots hospitals in developed areas, they have complete medical supporting facilities, and the support of national policies is also relatively strong, so the service awareness and service level of doctors are relatively high. In comparison, in some relatively backward areas in the west, the grassroots community hospitals are lacking in equipment, and the masses also lack the concept of grassroots general medical care. Grassroots doctors lack medical resources, making it difficult to improve their technology and academic level, which leads to the backwardness of the medical service level of grassroots doctors. According to the survey data, the proportion of doctors with higher professional titles in the eastern region of our country is higher, which can also indirectly reflect that the east possesses more medical resources.

In terms of the satisfaction survey of grassroots medical workers. Through the survey, we can find that in grassroots hospitals, patients have the highest satisfaction with the medical and nursing work of Class A hospitals, and through other data, it can be concluded that the satisfaction of patients is closely related to the ability of medical workers. Also, through other data in Table 3, we can obtain the specific requirements of the masses for grassroots doctors. Addressing the targeted deficiencies is also the fundamental way to improve patient satisfaction.

4.3 Exploration of Enhancement Paths for Primary Medical Services and Technology in Different Regions of China

4.3.1 In-depth Understanding of the Current Situation of Primary Medical Services in Different Regions

Research and analysis: Through field visits, questionnaires, and other methods, we gain an in-depth understanding of the current situation of facilities, personnel, and other aspects of primary medical services in different regions. According to the research, there are differences in the facilities of primary medical institutions in China. The central region finds it difficult to meet the needs of modern medical services. Medical equipment configuration: There are also regional differences in equipment configuration, and the rate of grassroots doctors in community health service stations is higher than that in other primary medical institutions. In terms of the number of personnel: There are differences in the number of personnel in primary medical institutions in different regions. The quality of physicians in hospitals and primary medical institutions in the eastern region is higher than that in the central and western regions, and the proportion of licensed physicians in the eastern region (71%) is significantly higher than that in the central and western regions (63%, 67%). Due to the geographical and economic limitations in the central and western regions, the number of medical personnel is insufficient, making it difficult to meet the basic medical needs of the local people. The quality of service is reflected in the satisfaction of medical personnel, and the quality of primary medical services is directly related to the medical experience and health level of the masses. The survey results show that some primary medical institutions in some regions have problems with low service quality, such as the occurrence of medical errors and accidents from time to time, which affects the medical experience of the masses.

4.3.2 Formulating Targeted Enhancement Strategies

1) Strengthening the Construction of Primary Medical Institutions:

This study promotes the construction of closely integrated county-level medical consortia nationwide, supports the construction of national, provincial, city and county clinical key specialties, and improves the professional and technical level of primary medical institutions.

2) Promoting the Downward Flow of Medical Resources:

This paper deepens the support work of urban hospitals to county-level hospitals, adopts the form of "one-to-one" or "one-to-many" support and assistance, and gives play to the radiation driving role of national and provincial regional medical centers. This paper actively carries out support work to promote the sinking of high-quality medical resources to the grassroots.

4.3.3 Exploring Suitable Enhancement Paths for Different Regions

According to the actual situation of different regions, this paper formulates the promotion path suitable for local primary medical services. We will explore new models of community-level medical

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services such as the family doctor system and the management of chronic diseases, vigorously promote contracted family doctor services, and focus on building a hierarchical diagnosis and treatment system, which will help achieve the goal of universal access to basic medical and health services [10]. This will also meet the medical needs of different populations.

5. Conclusion and Outlook

This article conducts a comprehensive assessment of the medical service level of primary doctors in China and explores the enhancement paths, aiming to improve the quality of primary medical services and comprehensively enhance the ability of primary medical services in different regions of China, providing the people with more high-quality, efficient, and convenient medical and health services.

5.1 Conclusion

The enhancement paths for primary medical services in different regions of China show diversity. In economically developed regions, primary medical services mainly focus on improving service quality and efficiency, such as by introducing advanced technologies and optimizing service processes; while in economically underdeveloped regions, more emphasis is placed on infrastructure construction and the cultivation of medical talents, such as increasing the number of primary medical institutions and improving the treatment of medical personnel. The government provides strong support for the development of primary medical services by formulating relevant policies, promoting the balanced development of primary medical services.

5.2 Outlook

1) Continue to Strengthen Policy Guidance: The government should continue to strengthen policy guidance to promote the balanced development of primary medical services. This article formulated more scientific and reasonable policies, optimized the allocation of medical resources, and improved the quality and efficiency of primary medical services.

2) Strengthen the Cultivation of Primary Medical Talents: Efforts should be made to increase the cultivation of primary medical talents and improve the professional quality and skill level of primary medical personnel. At the same time, exchanges and cooperation among primary medical personnel should also be strengthened to promote the sharing of experience and technological innovation.

In conclusion, the enhancement paths for primary medical services in different regions of China are diverse, requiring the joint efforts of the government, medical institutions, and all sectors of society. By strengthening policy guidance, promoting the construction of medical informatization, strengthening the cultivation of primary medical talents, and promoting the innovation of primary medical service models, the ability of primary medical services can be continuously improved to provide the people with more high-quality, convenient, and efficient medical services.

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