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Analysis on the Imbalanced Distribution of Medical Resources in China

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Abstract: Health is the premise of people's happy life and the cornerstone of national economic development. In order to improve people's physical fitness comprehensively, the allocation of medical resources is very important. This paper aims to analyze the current situation of the allocation of medical resources in China, and to provide suggestions for solving the problem of unbalanced allocation of medical resources in China. The analysis shows that the distribution of key medical resources is imbalanced in China. Medical resources such as "number of beds per person" and "instruments with total value above 10,000 yuan" are vital indicators. The distirbution of medical resouses shows a pattern of more in Eastern China and less in Western China, and the distinction between the North and the South is greater than the that between the East and the West. In order to optimize the current situation of resource allocation in China, the way of combining Internet and medical treatment is proposed, so that medical resources are not limited by space. Online consultation services are beneficial for the diagnosis and treatment of common illnesses in areas with limited healthcare resources. It reduces the difficulty for patients to seek medical care and improve healthcare efficiency. For complex and difficult cases, early detection through online consultation can facilitate timely intervention.

Keywords: medical resources distribution, telehealth, COVID-19

1. Introduction

Health is the essential requirement to promote individual all-round development also a foundation stone of economic development. In 2016, the concept "Healthy China 2030" was proposed. It is a long-term-goal aimed to upgrade people's physical quality.

As well as being a critical concern directly related to the population's health, improving medical services is also essential for fully implementing the "Healthy China 2030" action plan. It also perfectly captures the core of the medical and healthcare system's ongoing improvements. The COVID-19 pandemic outbreak in early 2020 posed a severe threat to the Chinese people's lives and exposed long-standing concerns of uneven healthcare resource distribution in China. Related research shows that prolonged gaps in healthcare resources at the low-income groups in China, including a lack of medical professionals and basic medical equipment, which has made it difficult to respond to the pandemic efficiently. Patients flocked to metropolitan tertiary institutions that could treat them, creating chaos in the early period of epidemic containment, particularly in Wuhan. At the same time,

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patients and suspected cases from all over the country were forced to transfer to large urban hospitals for medical treatment. This unexpected public health catastrophe brought the problem of China's unequal healthcare resource distribution to the forefront of public attention once more. As noticeable "weak links" in the healthcare system, inadequacies in healthcare resource allocation at the low-income groups and a large gap in medical service capacities occurred [1].

The relevant research takes the development of primary healthcare human resources in China as the entry point. By analyzing the impact of population, culture, health, and the quality of healthcare services on the development of human resources in primary healthcare, it reveals that there is a significant talent gap, imperfect mobility mechanisms, and insufficient resource allocation in the development of primary healthcare in China [2]. A study examined the existing distribution of domestic medical institutions, health professionals, and bed resources, as well as demographic equity, using descriptive analysis, the Lorenz curve, and the Gini coefficient. There are still disparities in the allocation of medical resources between cities in the eastern and western regions. However, major health resource metrics such as medical institutions, health technical people, and bed distribution demonstrate rather good demographic equity. Improving the internal structure of medical institutions and the quality of medical services are critical for optimizing health resource allocation [3].

Considering medical resources distribution in COVID-19, research explores the reason for the imbalance distribution and supply shortage of medical resources during the during the pandemic period. It shows governments and policymakers must do everything possible to prevent medical resource shortage. It has given six recommendations obtain maximizing the use of limited medical resources, treating everyone equally, promoting and rewarding instrumental value, and raising the priority to the worst off [4].

This article aims to investigate the uneven allocation of medical resources in China and its recent developments by collecting relevant data and conducting analysis. This article summarizes the geographical characteristics and influencing factors of the allocation of medical resources and combine insights from domestic and international research to propose recommendations for optimizing this issue, taking into consideration the unique circumstances of China. Based on existing data, this article objectively analyzes the healthcare situation and spatial variations in China.

2. Imbalance of Distribution in Medical Resources

2.1. Reasons of Imbalance Distribution

With the reform and opening up, the field about medical and health have rapidly developed. In a bid to increase the development of basic infrastructure and whole fields, the government attached to the efficiency and neglected fair. In the period of reform and opening up, the socialist market economic transition is trying to let the "invisible hand" of market economic plays a fundamental role in the allocation of resources, but due to the particularity of medical and health field, the policy is not achievable. Medical and health institutions, especially urban and rural grassroots health institutions, have been influence greatly from the decentralization of central and local finance and the enterprise-oriented management of medical and health institutions. The rapid expansion of large medical enterprise, grabbing more patient which originally belongs to low-level medical institution [5].

According to the research, more than 60% of patients at tertiary hospitals might be transferred to lower-level facilities. This means that tertiary hospitals, which primarily deal with severe and complex cases, will devote their limited resources to treating common and widespread disorders. In sharp contrast, some lower-level hospitals are underutilized and wasteful [6].

This is closely related to the long-standing disparity in staff and facilities between tertiary hospitals and grassroots medical institutes. A number of studies have found that tertiary hospitals have a major "siphoning effect" in the healthcare service market due to their resource advantages, drawing high-

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quality medical experts who may have worked in grassroots medical institutions to large hospitals. This adds to the shortage of resources in grassroots healthcare [6]. Hence the more medical talent will stay in large medical institutions, because they could get higher salary and brighter future. Meanwhile, the large medical institutions will have strange ability to purchase expansive instruments to maintain their large scale and attract more patient. As a result, comprehensive hospitals are growing in size, which exacerbates the structural imbalance when allocating medical resources.

Medical institutions, beds, and physicians had no discernible impact on the death rate in China's middle and eastern regions. More hospitals, physicians, and beds in China have significantly reduced death rates. Access to medical resources was uneven in China's eastern cities, western cites and center area. With additional medical institutions, beds, and physicians, the local mortality rate can be decreased more effectively in less developed western regions. In the center and eastern areas, those influencing factors had no discernible impact on the local death rate [7].

To optimize medical resources distribution, excepting to the policy aspect and historical problem, the regional economic and talent advantage are also important.

2.2. Medical Resource Distribution Overseas

In Canada, the problem of medical resource distribution is the rural area haven't specific medical services. Indeed, this was one of the five "first-tier" problem areas to emerge from those interviews, specific concerns being the lack of availability of specialty services in rural areas and the possible over supply of general or family practitioners in many cities. There are provinces with apparent critical shortages – even of general and family practitioners – in some regions; however, differences in the population-physician ratio across the country will always exist, simply due to population distribution and the number of patients required to sustain physicians of different specialties. There will surely be instances where the more restricted access in rural areas has a negative impact on health. On the other side, excessive access, such as that seen in cities, may be harmful to patients' health [8].

The medical workforce in Australia is increasingly made up of people from other countries. This raises questions about the future of medical education in Australia, as well as Australia's recruitment practices from countries with severe health professional shortages. Countries like Australia continue to experience persistent shortages of health workers despite migration of these workers to high-income nations. This problem is made worse by trends toward shorter workweeks for health workers, rising demand because of an aging population, and an ageing health workforce. A government agency called Health Workforce Australia is in charge of managing the nation's health workforce, predicts a deficit of 109,000 nurses and 2,700 doctors by 2025 [9].

2.3. Solution from Online Medical Services

Medical resources distribution imbalance is a problem that still exists in China. The imbalance of resource allocation both in quantity and quality has increased in recent year. In the field of primary medical and health resources is in particular. Primary medical and institution in the weak stage in the aspect of medical apparatus and instruments such as "instruments with total value above 10,000 yuan", which represents the core competitiveness. The financial subsidies in primary medical institution still have gap with the large-scale medical institution [1]. The rapid expansion of large medical enterprise, grabbing more patient which originally belongs to low-level medical institution.

With the development of Internet and artificial intelligence, the online medical service such as face-to-face consultation, even telesurgery, comes true. Thanks to the development of information technology, such as telephones, cellphones, and video link, making telehealth possible. Telehealth is quickly expanding in grassroots areas and changing the way medical consultants work. Telehealth

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has the potential to improve the lives of millions of people who are facing a shortage of medical resources.

Telehealth is now being defined by three inter-related developments, first, a change in how telehealth is used, moving away from expanding access to healthcare toward ease and eventually cost savings; second, the expansion of telemedicine to treat episodic and chronic disorders as well as acute diseases; and third, the migration of telemedicine from medical institutions and outlying clinics to private residences and portable technology [10].

In the policy-driven process of improving medical resource allocation, factors like doctors' "freelance practice", online healthcare quality assessment, and cross-regional healthcare payment play a critical role. The foundation of the problems of "difficult access to medical treatment" and "expensive medical care" may be eliminated by internet healthcare [10]. It plays a vital role in improve the medical resource distribution between rural area and developed area.

Telehealth is also well-known for its ability to widen medical practice. Historically, an individual's entitlement to medical treatment has been decided by who he or she is (such as age, gender and social status) regardless of where he or she lives, leading in significant socioeconomic and geographic inequities. With the digital gap decreasing and cellphones becoming more prevalent, telehealth may enable more people to get treatment [11].

Physician recruitment and retention in rural and distant areas may be impacted by online medical services. In terms of medical technology and solving the uneven distribution of medical institutions, online medical services have great advantages. It allows medical technology to span space and improve the status quo in resource-constrained areas. At the individual level, it also has unique advantages in improving patients' health literacy. However, compared with offline medical and health services, it cannot achieve on-call duty structure and multi-clinic actual consultation to make patients' situations better. Further, it may replace doctors in remote areas with poor medical skills [12].

Meanwhile, there will be also have trouble in connecting with old people, they will not skillfully use smart internet or smart mobile phone. It may be a hinder to increasing the interrogation efficiency and the passion of doctors. In this context, to effectively address the issue of imbalanced allocation of healthcare resources in China through the use of the internet and healthcare.

2.4. Challenges Facing Major Health Events

The world had faced the huge challenge in the period of COVID-19. Economic consequences are a typical way to describe the COVID-19's supply and demand effects. Due to the uneven distribution of healthcare resources, it led to various problems. Related research asserts that the pandemic has an impact on all fields, especially the economy. Due to the lockdown during the epidemic, work and travel were blocked, and many enterprises laid off staff to survive, so that many people lost their jobs. Therefore, people's income decreased, which led to a decrease in total social demand and further affected the economic development of this period.

Firstly, in terms of economic development, the sharp decrease in overall societal production directly impacted the unemployment rate. Secondly, for international trade, the trade between countries decreased due to the reduction in global overall demand. Thirdly, the lockdown caused by the pandemic dealt a severe blow to the tourism and service industries.

In regions with a scarcity of medical resources, the shortage of protective equipment made people more susceptible to virus infections, resulting in even stricter lockdown measures in those areas. Due to the limited medical resources, patients couldn't receive timely treatment or be transferred to regions with more abundant medical resources, leading to a more severe loss of life in those areas. During the COVID-19 pandemic in China, due to the government's unified control and timely mobilization of resources, the problems caused by the uneven distribution of healthcare resources were greatly alleviated. For instance, during the challenging period in the Wuhan area, the dispatch of medical

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teams from various regions and the supply of healthcare resources helped overcome the difficulties. In order to cope with unpredictable medical emergencies, the allocation of medical resources in all regions should be more balanced [13].

3. Conclusion

This article aims to analysis the medical resources distribution in China. Universal health is the cornerstone of a nation and the foundation for economic development. This article aims to explore the allocation and spatial disparities of healthcare resources in China, drawing insights from resource allocation and optimization strategies in other countries while considering China's unique circumstances to provide recommendations for addressing resource imbalances. It also combines the status of China's medical insurance system and the development of internet-based healthcare to provide recommendations for the future healthcare system.

The article uncovers a pattern of uneven healthcare resource distribution in China, with abundance in the east and scarcity in the west, as well as a greater degree of spatial disparity in the north-south direction compared to the east-west route. More hospitals, physicians, and beds in China have significantly reduced death rates. Inequality existed between eastern, center, and western China's access to medical resources. In less developed western areas, the local mortality rate can be decreased more effectively with more hospitals, beds, and doctors. Hospitals, beds, and doctors in the central and eastern areas did not significantly affect the local death rate.

In this paper, there are still some deficiencies in the study of medical resource allocation in China, especially in the understanding of the causes of the status quo of medical allocation in China. The understanding of the current situation and problems of foreign medical resources is not deep enough, and the samples are few. In the future research, the author will deeply study the development of Internet medical care in China, and explore the allocation and evolution of medical resources in China from multiple levels, so as to provide suggestions for optimizing the imbalance of medical resources in China.

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