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The Developmental Impact of Chinese Healthcare Applications on Medical Economics During COVID-19

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Abstract: The health industry is developing rapidly under the dual influence of the Internet and the epidemic era. Especially in China, Internet + healthcare has become a development trend, forming new concepts such as smart healthcare. This new trend includes the rise of medical and health apps and the establishment of health departments and businesses by commercial companies in various fields. The healthcare industry has affected China's economic development since before the outbreak. Until the outbreak, the proportion of health economic GDP in China's GDP has maintained an upward trend. This article analyzes the development process of China's healthcare industry in the era of the epidemic through some economic data, especially the impact on the economy. This paper also visualizes the impact of actual healthcare media apps on economics through two different apps. It analyzes the advantages and disadvantages of these effects to think about how to make healthcare apps develop in China's economy play a better role in promoting. Although the overall healthcare industry in China is still in the initial stage of development, the momentum of development is very rapid, making the healthcare industry one of the hot areas in the future.

Keywords: Chinese healthcare application, Developmental impact, Medical economics, COVID-19

1. Introduction

1.1. Research Background

Before COVID-19, the development of medical economics in China was mainly affected by the doctor-patient relationship and whether the allocation of medical resources was reasonable. Since the outbreak of COVID-19, medical social media has been more likely to influence the development direction of China's medical economy. The health market grew by 74.5% between 2016 and 2017. In 2019, China's Internet users reached 748.3 million [1]. This is an astonishing number, which means that a huge economic market has emerged as the times require. According to data released by the National Health Commission of China, the total health expenditure in China in 2020 accounted for 7.12% of the total GDP, a significant increase from 6.64% in 2019. The outbreak of the epidemic has led people to enjoy medical resources and services only online or remotely.

Online diagnosis and electronic medical records have transformed the development of the medical economy from offline to online. At the same time, China mainly promotes the Internet economy, so the Internet plus medical treatment has become a hot topic. However, this does not mean that the

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medical economy has always been favorable, and some unfavorable factors may also hinder the development of China's medical economy. Patients may have biases against online medical care, and even medical information leakage is a major problem that needs to be solved [2]. In other words, more efforts are needed to make China's medical economy smoothly catch up with the rapid development of the Internet.

The economic impact of the COVID-19 outbreak on China was the first to begin, as Wuhan was the first region in the world to "lockdown." Dong and others pointed out in the research report that since the spring of 2019, China's economic development has been affected by the epidemic and has shown a significant downturn. Especially after the Spring Festival in 2019, economic activity was obviously delayed by about two to three weeks compared with previous years [3]. In addition, some of China's key economic development regions, such as the Beijing-Tianjin-Hebei and Yangtze River Delta regions, experienced the most severe economic downturn [3]. Of course, since the start of COVID-19 in 2019, Internet + healthcare has become another way to help China's economic growth. Jiang et al. found that when medical care is transferred online, not only are there many more cross-regional medical service needs, but also it is more conducive to integrating medical resources and improving medical efficiency. Specifically, more non-clinical and moderate problems can be solved directly online, which greatly reduces hospital consultation pressure [4]. In China, the distribution of medical resources is uneven. Often the developed coastal cities have the best medical resources in China, while the backward western regions cannot enjoy advanced medical equipment and excellent attending doctors [5]. Of course, Internet + medical care does not mean completely transferring the medical system to an online model. China is working on creating an integrated online and offline medical service model. This sounds incredible, but there are certain drawbacks. For the elderly, blind people, and other special groups who do not use Internet products, online medical care is not possible, so the development of China's overall medical system is still in the process of exploration [6].

1.2. Research Framework

There have been many social and economic analyses since COVID-19, but few studies have linked new trends in healthcare to China's economic development. That is the impact of Internet medical care on China's economic development. The advantage of studying this topic is that it can make people more aware of the earth-shaking changes brought about by COVID-19 to China and analyze the advantages and disadvantages of Internet medical care. Based on the analysis, China's economy can take advantage of its strengths, avoid weaknesses, and succeed in the post-epidemic era.

This article first wants to understand the changes in the medical field in China before and after the outbreak of COVID-19 through the specific medical system and medical data in China. In addition, special attention needs to be paid to changes in the number of medical apps and users. These changes will bring certain economic activities and contributions, such as the proportion of the medical part of GDP. From another perspective, the success rate of online medical services can also more intuitively reflect the efficiency of medical care and the number of service transactions directly linked to the economy. Secondly, it is not enough to know the number. This paper also needs to analyze these economic activities to understand better the advantages of Internet medical care and the areas that need improvement. Finally, this paper will summarize and compare the impact of different results and put forward suggestions that are more conducive to the development of medical economics in the future to better promote the development of China's economy.

2. Methods

This article mainly uses two methods for research.

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Firstly, data retrieval. The research on the development of medical apps in China and the development of China's economy requires a large amount of data as the foundation. We found that the vast majority of medical data can be seen in the National Bureau of Statistics of China, the Chinese Health Commission, and financial statements issued by various commercial companies. Among them, commercial companies will also publish specific figures such as user usage of different apps, drug transaction volume, etc. These figures are conducive to a deeper analysis of China's Internet medical care changes after COVID-19 and can analyze the advantages and disadvantages of learning from each other's strengths.

Secondly, the case study is also an important method for this paper. We compare two specific apps to see where two popular apps are helpful. In the comparison process, we can also see specific target customers and markets, for example, which has more users in the maternal and infant market and aging and sickness, and which can bring higher economic development benefits. These findings and comparisons can better magnify the shortcomings of China's Internet medical care and help us improve medical efficiency and balance medical resources.

3. Results

3.1. Current Situation Analysis

China's economic development has ushered in a huge turning point in 2019. The first was the outbreak of COVID-19 from Wuhan, followed by its spread throughout China. The vast majority of cities in China began to "lockdown" one after another in the next period. This means that starting from the "Spring Festival", some major holidays and the express delivery industry, which is proud of China's economic development, have been forced to "suspend business". From the data on the official website of the National Bureau of Statistics of China, we can see that China's GDP in the first quarter of 2019 was 21,716.83 billion yuan. Although there was a slight increase compared to 2018, the increase in the first quarter of 2017 and 2018 shows that the increase in the first quarter of 2019 is lower than that of 2018 [7]. With time and the global expansion of COVID-19, China's GDP in the first quarter of 2020 dropped to 20,572.7 billion yuan compared to 2019. This data shows that China's economy has been severely hit during the epidemic, especially since the 21st century. China has maintained a posture of rapid development. (National Bureau of Statistics of China) However, in terms of medical care, China's total health care expenditure in 2019-2020 did not fall but rose. From 6.64% of total GDP in 2019 to 7.12% [7]. On the other hand, COVID-19 has instead boosted the development of China's medical economy, even though China's entire medical industry was under pressure during 2019.

While China was building makeshift hospitals in 2019, major hospitals and commercial companies have also turned in the direction of Internet medical care. According to the "2020 China Internet Medical Industry Report", China's Internet medical financing reached nearly 35 billion yuan in 2020. Even pharmacies have been transformed into online pharmacies. As of November 2020, there were 693 qualified online pharmacies [8]. In addition, more patients and users prefer to buy medicines or consult doctors online, reducing travel pressure but also more convenient and quicker for patients. The remarkable effect of Internet medical care is that nearly 10 million Chinese patients use medical-related Internet programs every month. Among them, the peak monthly activity reached 60 million.

3.2. Problem Identified

The data is good, but there are still many problems in China's medical economy development. First, the distribution of medical resources is unreasonable and uneven. Regarding the number of practicing physicians per 10,000 people, Beijing, Shanghai, and Zhejiang occupy the top three places in China. Among them, Beijing reached 49.1 people. In contrast, Guangxi, Anhui, and Jiangxi average only 17

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people. People in developed areas can enjoy more advanced medical services, while people in backward areas can only "seek medical care" [8]. Secondly, a significant problem in Internet medical care is misdiagnosis. There are two aspects here. First, some doctors with insufficient qualifications or people who don't understand medicine can pretend to be doctors and conduct online consultations. Second, some diseases may go unnoticed. For example, the symptoms of some diseases are similar, and patients can only describe them to doctors through verbal expressions and subjective feelings on the Internet. If the patient behaves exceptionally optimistic, the doctor tends not to think the disease is bad. As a result, sometimes the patient's condition cannot be treated in time, and instead, the wrong drug will cause other physiological reactions.

The good news is that China did not directly start the development of Internet medical care after the outbreak of COVID-19 in 2019 but implemented the policy of "first try first, step by step" as usual. According to the data, Shandong, Jiangsu, and Guangdong are the regions with the most "Internet hospitals". Internet hospitals have solved this problem of the disadvantages of uneven medical resource distribution. For example, Western patients can directly consult doctors in Beijing on the Internet [8].

At the same time as the development of medical apps, China's economy has also been significantly affected. According to the 2020 China Internet Medical Industry Report, the B2C pharmaceutical e-commerce transaction volume in 2014 was only 6.89 billion yuan, while in 2018 and 2019, it reached 67.79 billion yuan and 98.27 billion yuan, respectively. The time comes to 2020; that is, after China passed the worst period of the epidemic, the transaction volume of China's B2C pharmaceutical e-commerce directly rose to 178.24 billion yuan, an increase of 81.4% year-on-year [8]. This is very amazing data, and it also means that China has completely embarked on the road of Internet medical care.

However, as the analysis above, although a series of data is very good, there are still many problems in Internet medical care. For the Chinese economy to better receive the positive effects of Internet medical care, the Chinese government must strictly supervise registered doctors' qualifications for medical apps. At the same time, some commercial apps and official hospital apps are mutually exclusive; that is, commercial companies will continue to tap patient users for their interests. This has led to a serious decline in the number of hospital app users such as "Good Doctor", while medical apps led by JD.com and Alibaba have become more and more popular. As a suggestion, China needs to integrate these resources to see if it can find in-depth cooperation between commercial companies and hospitals and achieve a deeper level of mutual sharing of medical resources [9-10].

3.3. Analysis of Health Apps in China

Two very famous health apps in China play a very important role in the industry, one is Ali Health, and the other is JD Health.

Ali Health is a key development department of Alibaba Group. They are committed to developing the concept of introducing artificial intelligence into medical care and promoting smart medical care and health services. Its advantage is that Alibaba Group can add the medical industry to its closed-loop industry, and use its different service platforms to escort Alibaba Health. Specifically, through "Alibaba Cloud", Alibaba Health provides data cloud services, such as gene cloud, medical cloud, and consumer cloud. In addition, "Ant Financial Services" can help users and patients use mobile payments, linking digital currency and medical care. "DingTalk" can help AliHealth to carry out process approval, OA office, and other work services. This series of closed-loop industries allows Ali Health to quickly seize the economic market in China by relying on the group's advantages. The revenue of "Alibaba Cloud" in 2016 is estimated to be 5.57 billion yuan, of which the medical and health sector accounts for 8%, ranking third in the vertical medical industry. More importantly, in addition to the closed-loop industry, Ali Health is also seeking cooperation with well-known

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pharmaceutical companies so that not only can the industry integrate, but also strong alliances can complement each other's advantages.

JD Health is a medical department app under JD Group. They are similar to Alibaba and focus on implementing closed

loop industries. However, the difference between them and Ali Health is that Jingdong Group relies on Internet e-commerce, so the user population is very large. As of June 2022, the number of JD Health users has reached 150 million. In addition, JD Health has listed medical-related products on the shelves by JD.com's strong IoT industry chain advantages. In the "618" promotion in 2022, JD.com's medical products increased 300% yearly.

Through the comparison of the two apps, we can find that the development of the medical economy in the new era needs to rely on the platform's advantages. In other words, medical development is no longer simply going to the hospital to see a doctor but integrating other different industries into the medical industry simultaneously, such as logistics, e-commerce, data services, product operations, etc. As a result, the data on the development of the healthcare economy will also explode.

4. Discussion

Given the problems in China's Internet medical care, this paper believes that the following points must be improved.

Firstly, regulation. So far, China does not have a special department for the supervision of Internet medical care but is jointly supervised by the Chinese Ministry of Health, the Chinese National Health Commission, and the Internet Police. However, regulating medical apps by commercial companies involves a lot of trade secrets and similar other issues. This article argues that the Chinese government needs to set up a department to supervise Internet apps to regulate the behavior of major online platforms. This will be more conducive to the legalization process in China and also be responsible to patients and doctors. On the other hand, the data reported by the medical app of commercial companies are not supervised and inspected by a third party. The medical app will cause data gaps, which is not conducive to developing the national economy [11-13].

Secondly, having too many medical apps is unreasonable, and the government needs to integrate resources. From 2019 to 2022, the number of Internet apps in China will explode, but a large number does not mean high quality. It can be seen from the enterprise platform that many newly launched medical apps have been taken off the shelves in just a few months or directly turned into "zombie platforms" with 0 monthly activity. From a legal point of view, there are many tax evasion and tax evasion, deceiving consumers, and even more serious money laundering tools.

Thirdly, the target group and target market also need to be segmented. As mentioned above, the users of medical apps in the Internet age are mainly young or middle-aged people. Users born in the 1970s and 1980s accounted for 28.4% and 34.3% of the total, respectively [8]. However, the overall patient population in China is dominated by the elderly. From China's abolition of the one-child policy, it can be felt that China will face greater pressure from an aging population in the coming decades. This demographic pressure creates labor shortages and leads to a downturn in the economy, so China has extended the retirement age and continued encouraging fertility. From a medical point of view, medical apps may only affect middle-aged people but cannot fully cover people with a wider age range. This article believes that China needs to popularize Internet medical users and simplify the use of medical apps. It's best to avoid overly complicated app design and cumbersome doctor visits. More methods such as personalized medical services can be introduced for more groups, such as families in the reproductive stage [11-13].

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5. Conclusion

Although China's medical economy is developing vigorously, it is still in the early stages of development and, most of the time relies on large commercial companies. In the future, China's population growth will be mainly concentrated in the population over 55 years old, while the population aged 25-29 will drop sharply. Expenses for elderly care, medical care, nursing care, and services are projected to grow from 6.97% of GDP in 2015 to 21.77% in 2050. In addition, the per capita medical expenses of the elderly over 65 are about 3-5 times that of the young. This is a major opportunity but also a formidable challenge. How to seize this opportunity will be the next question for China. As analyzed in this article, if market integration can be carried out, the supervision of medical industry apps will be strengthened, and the investment process will be simplified, which will be more conducive to the development of the medical economy. Moreover, this paper found in the research that many medical-related data in China are not public, so it isn't easy to analyze the data further. We suggest that China can start from both internal data and external data. First, it can disclose some medical data, which is more conducive to industry experts and enterprises to give full play to their initiative and use data to help the development of China's medical economics. Secondly, scholars can research, especially the medical data from commercial companies. As a result, the Chinese government can play some macro-control functions to reduce the negative impact of data gaps, integrate superior resources, and play the role of the "invisible hand" role.

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