

Internet Hospital: Challenges and Opportunities in China

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Abstract. Internet hospital via telecommunication technologies redefines the healthcare delivery concept and starts to revolutionize the traditional health sector. This new method has a significant advantage to deliver proper medical resources to the rural and remote area with less cost timely and improves rural healthcare capacity. However, quality and safety concerns have not been addressed by any reliable evidence. The internet hospital can go beyond diagnosis and treatment and find opportunities in training and education and diseases management in China.

1 Introduction

Internet hospital is a new term in China, which has attracted the attention of patients, medical practitioners and investors. At present, there is not a universal definition of internet hospital, whereas its main purpose is to reduce the rural population's difficulty in accessing to modern healthcare [1]. In China, a large proportion of the rural population is struggling to accessing to the adequate healthcare, and there is always an uneven number of people with chronic illness, especially elderly people [2, 3]. The internet hospital aims to reduce the logistic needs by enabling the rural patients to receive better healthcare in urban areas [4]. Besides, another purpose of internet hospital is to solve the overcrowded issues of outpatient hospital service caused by the lack of trust in general practitioners [5].

The internet hospital is a healthcare delivery method that enables patients to be remotely examined by physicians with information communication technologies, which is also called telemedicine in most developed and developing countries [6]. The services provided through internet hospitals include radiology, cardiology, pathology as well as remote consultation.

Internet hospital has not been commonly known until 2014, and it is a term that describes the combination of the internet industry and health industry. The internet industry in China is trying to replace the physical hospital with the internet one just like what it has done in replacing physical shops with online shops in the last 1–2 decades [7]. Investors believe that remote consultation, which means that the patients talk with doctors in clinics while sitting in their own bedrooms, is the future of healthcare [1].

2 Need for Internet Hospital in China

As a new healthcare delivery concept in China, internet hospital will improve the healthcare capability in rural areas. China is a country with a large population, most of whom live in rural areas [8]. Unlike the urban areas that have available high-quality hospital outpatient service, rural and remote areas often have community healthcare facilities with very low medical capacity: less qualified physicians, inexperienced primary providers as well as out-of-date diagnostic equipments [2]. All of these lead to the consequences of inability to respond to emergency, late discovery of ailment, delayed treatment and rural patients' faith loss in community healthcare facilities [2]. Nevertheless, the implementation of internet hospital can create an extensive medical support network to back up the primary providers in rural areas with experts in urban regions, and then patients will have more opportunities to consult the specialists without travelling to urban hospitals [9]. In this way, the internet hospital will solve the gap between urban and rural healthcare services, promotes the accessibility to rural healthcare, improves the health outcome and reduces the transportation time and cost for rural population; thus, it is a good complement of traditional physical healthcare.

3 Internet Hospital Types

Internet hospital application is not limited to one form, and investors in various fields have built different forms of internet hospitals in China. More than hundreds of internet hospitals have been launched since the first internet hospital went online in 2014. They can be grouped into three main types: those launched by a physical hospital, launched by an internet company and the internet hospital platform.

3.1 Launched by a Physical Hospital

This type of internet hospital is launched by an existing top-level hospital, using its current physicians to provide services through telecommunication technologies. The most typical case is the Guangdong Internet Hospital, which is the first internet hospital in China and launched by Guangdong Second Hospital in 2014 [5]. It gathers the in-house spare physicians together and transfers them into a new department that dedicatedly provides remote consultation over the internet [10]. On the average, this internet hospital receives 2,500 online patients per day, and the average cost of the prescription is CNY60, a quarter of the average medicine cost of a top-level hospital outpatient service visit [11]. However, the internet hospital has not to charge the online patients consultation fees, and it plans to charge CNY10 per consultation for most general issues and chronic diseases pending government approval [5], which is considered to be reasonable in the area.

3.2 Launched by an Internet Company

This form of internet hospital is invested by the private company and is not supported by an existing hospital. It contracts directly with doctors across the country, who use

their spare and leisure time to provide online consultation [12]. Wuzhen Internet Hospital is the first and biggest internet hospital practice in this business structure and model. Doctors here have the right to determine the consultation fee. However, the fee charged by its contracted doctors ranges from CNY50 to CNY1000 per 15 min [13], which is far higher than the highest consultation fee of a top hospital [11]. In consequence, the consultation has become a commercialized commodity that allows patients to compete for.

3.3 Internet Hospital of Platform Type

The internet hospital can be a platform type; it welcomes physicians or hospitals from anywhere in the country to start the practice online. The platform develops software to support physicians and patients for easy communication and streamline the registration and payment process. Ali Health, a part of Alibaba, the biggest internet company in China, has launched the first internet hospital platform on Jan 18, 2016 [7]. This practice is welcomed by the villagers in remote areas, and now they, without paying extra transportation fee, can access to better healthcare services with the same cost as the urban patients.

All these types of internet hospitals are good attempts to improve the healthcare capacity and reduce the difficulty of rural and remote population in receiving good health care service. Moreover, the development in business structure and model provides patients with various options and better medical services.

4 Economic Impact

There is no doubt that the internet reduces the traveling need of rural patients, which then lowers the transportation costs and minimize the productivity loss due to absence from work [4, 9, 14]. For the community, it increases the workload of local pharmacy and laboratory and creates more job opportunities in local area [9]; furthermore, the improvement of health outcome because of the increasing healthcare accessibility reduces local expenditure on health, and the money saved from healthcare can be allocated to other use for a higher productivity. However, according to Whitten et al.'s researches on developed and developing countries, the cost-effectiveness of tele-healthcare seems to reduce the cost of patients and providers, but it actually has not been improved because often that the costs of telecommunication infrastructure, additional personnel and management supported by government have not been taken into account [14].

5 Potential Challenges

China is experiencing a health care reform called the 3-tier healthcare system reform, which aims to increase the use of primary providers in communities and reduce the workload of outpatient hospital services and free specialists in treating mild symptoms [3]. However, most internet hospitals use specialists to serve online patients, and most of them only have

common general issues such as flu, cough as well as running nose, which can be cured by family doctors in local communities. Consequently, internet hospitals compete with primary providers in specialists who are over demanded in traditional care approaches. Therefore, it goes against the central government's healthcare reform that requires common general issues to be treated by primary providers rather than specialists [3].

Other than the Wuzhen Internet Hospital, most internet hospitals are not allowed to charge a fee for the consultation or charge a higher fee than the current practice in hospitals according to the regulations. Moreover, physicians have to spend relatively more time online compared with the traditional approach [5], because they cannot rely on the health information system to learn the background and medical record of the patients, whom they should fully understand. As a result, the reduced fee [12] and increased time cost lower the willingness of the physicians to offer online consultation.

As the internet hospital is still a very new concept to patients and physicians, there is no sufficient research on the quality and safety of internet hospital and telemedicine care in China. According to a systematic review conducted by McLean et al., there is no difference between the telemedicine for most chronic illnesses and the traditional approaches [6]. However, the safety concern has not been addressed in recent research; and it is uncertain whether the adverse results have not occurred or have not been presented.

6 Opportunities of Internet Hospital in China

The internet hospital and telecommunication technology applications in medical sector have redefined the concept of healthcare delivery. Thanks to the internet hospital, the rural and remote patients' accessibility to as well as the quality of healthcare is significantly improved [9, 15], and the overall healthcare capacity of the rural physicians with the assistance from distant experts is also increased, which helps to provide a more accurate decision in diagnosis, better treatment and follow-up care for rural patients [16]. The close relationship and communication between primary providers and tertiary care providers enable the inexperienced physicians to discover the urgent and severe conditions earlier, consult the opinions of experts in time [17] and ensure that the privilege is given to the referral and inter-hospital transfer for earlier treatment [16]. Meanwhile, the travelling time of specialists is also reduced [18], which, thus, saves both the cost and the lives because of a timely treatment.

Internet hospital overcomes the geographical barriers, makes the easy and low-cost communication between physicians in and outside the country possible, creates opportunities for the collaboration among physicians and supports physicians for distant learning and training [19]. Furthermore, internet hospital connects the healthcare facilities in the area and enables the data to be collected and analyzed, which supports the disaster management, disease management, infectious disease management as well as earlier prevention of epidemic diseases and improves effectively the local communities' capability of health planning and management [6].

With the advancement of telecommunication technologies, the cost of equipment, software and hardware decreases, while the computing speed and internet bandwidths

increase, which ensures a better application and experience of internet hospital services. Therefore, patients can be looked after in a better way and managed by remote physicians with improved health outcome.

7 Conclusion

Internet hospital as a new concept to publics, it redefines the healthcare delivery method and prepares to revolutionaries the traditional healthcare industry. With telecommunication technologies, the internet hospital extends affordable and specialist cares to rural and remote locations and improves the health outcome or distant community. Although that the challenges such as quality of care, cost-effectiveness and safety of remote medical treatment are still waiting to be addressed; it is no doubt that internet hospital has a great potential in inter-physician collaboration, distant training and diseases management.

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