Editorial

The internet hospital: how to combine with traditional healthcare model

Qunhua Zhang

Huashan Hospital, Shanghai, China

Correspondence to: Qunhua Zhang. Founding President of Wuzhen Internet Hospital, Huashan Hospital, No. 12, Urumqi Middle Road, Shanghai, China. Email: qunhuazhang@163.com.

Submitted Mar 15, 2022. Accepted for publication Mar 25, 2022.
doi: 10.21037/hbsn-2022-10
View this article at: https://dx.doi.org/10.21037/hbsn-2022-10

The development of online health services in the world

The history of the internet hospital could be traced back to 1991, when the Stanford Linear Accelerator Center (SLAC) began to host the first World Wide Web server (web1.0). In 1992, a large number of internet platforms were registered, which laid the groundwork for "online + offline" health services. Entering the 21st century, the modified web server (web2.0 and web3.0) provided the possibility for the rapid development of internet hospitals. In addition, the 3G/4G network and other new technologies promoted the expansion of internet hospitals. In the United States, the online health service of Kaiser Permanente (an American integrated managed care consortium) was quite mature, with 52% of the patient's first doctor visits being completed online. Family physicians often play a key role between online and offline medical services conversion, and about 78% of American family physicians believed that online health services can provide alternative access to healthcare and improve patients' healthcare quality. About 67% of the patient believed the online health services improved their level of satisfaction with doctor visits. In Japan, there was a boom in the number of internet hospitals recently. The percentile of Japanese hospitals that utilize digital healthcare system increased to 15% in 2021, because digitalization help reduces their medical costs. In the UK, the online medical services were divided into the national health system (NHS) for all citizens and the regional NHS for each geographic area, based on the needs of self-care and health management of its people. Overall, each system has its own advantages and disadvantages, and it is worth learning from one another.

The development of online health services in China

In recent years, internet hospitals have gradually become accessible in China. In December 2015, Wuzhen Internet Hospital was launched. Founded by WeDoctor (a Chinese online healthcare solutions platform), Wuzhen Internet Hospital was the first internet hospital in China, marking the beginning of Chinese online healthcare. In 2019, with the outbreak of the COVID-19 pandemic, Chinese internet hospitals have entered a period of rapid expansion. As of June 2021, there were 1,600 internet hospitals in China. Combining outpatient, inpatient and online healthcare three-in-one established an innovative healthcare model. It greatly assisted patients receiving medical treatment, improved doctors' efficiency, and relieved the burden of advanced healthcare resources in China.

Societal aging increased the number of patients with chronic diseases in China, so the medical costs and medical needs also largely built up. However, high-quality medical resources in China were insufficient and unevenly distributed, resulting in a deficit of people's increasing medical demands. The rapid development of mobile internet filled the deficit by generating a new digitalization healthcare service model. Around 2010, online network services such as DXY, Haodafu Online and Chunyu YiSheng subsequently appeared. These services have two categories: doctor-oriented (business-to-business) and patient-oriented (business-to-customer). Some public hospitals have launched "hand-held hospitals", which provide assistance in general health consultations, graphic or text consultations, outpatient appointments, telemedicine, doctor-patient communications, and so on. As the first Internet hospital

in China, Wuzhen Internet Hospital was founded during the Second World Internet Conference in December 2015. Wuzhen Internet Hospital has four innovations: (I) The internet hospital is an independent medical entity that acts as the main body for all online healthcare services. (II) The internet hospital only receives follow-up visits and remote consultations, reducing possible medical negligence and risks. (III) The internet hospital allows doctors to practice in multiple places, which also helps patients to find a satisfying doctor-patient relationship. (IV) Each doctor in the internet hospital is registered and filed, and each prescription is reviewed by a pharmacist. This combination breaks the constraints of time and space by issuing electronic prescriptions to patients, opening up a new route for digital healthcare.

In 2018, China began to actively develop "internet + medical health" system, providing online services such as doctor visit appointments, chronic disease follow-up, and telehealth. Organizations can rely on medical institution entities to establish internet hospitals and to supply the patient with safe and appropriate online medical services. In March 2021, the internet hospital health insurance payment policy was in line with the offline policy, entering a generation 2.0 of online health services. A new healthcare pattern, led by the government, public hospitals as the main body, with the cooperation of internet hospitals has been formed.

The COVID-19 pandemic prompted the internet hospital transformation

The global COVID-19 pandemic outbreak somehow forced the Chinese healthcare services to improve. Because the virus was highly contagious, numerous medical institutions have gradually launched online health services to minimize direct contact between doctors and patients, which prompt the transformation of the healthcare services from "face-to-face" to "online-offline mode". Healthcare locations were also further extended from hospitals only, to cover the prevention, treatment and rehabilitation of patients. All of these transformations helped to establish a hierarchical healthcare system for patients with chronic diseases and an integrated healthcare system for all patients. During the pandemic, the number of online outpatients' visits, and mobile platform consultations have grown exponentially. People were seen to have accepted online hospital visits overnight, which brought a huge bonus to the development of the internet hospital. According to the statistics from the Health Development Research Center of the Chinese Academy of Social Sciences, there were 64.49 billion times of patient browsing, 680 million times of doctor-patient communications, and 74.09 million times of online healthcare services for patients. The dermatology department of Huashan Hospital alone had accumulated 100 million times of online visits and served more than 230,000 patients online. In Shanghai Children's Medical Center, the total number of page views reached 341 million times, and more than 80% of the hospital attending doctors have opened their accounts on the online healthcare platform. The hospital's president, Professor Hao Zhang, is a pediatric surgeon who has served 6,100 patients on the online platform, with 3,6 million hits. He insists that doctors and hospitals should be pro-active on the internet. The spring of online healthcare will come after COVID-19. Online healthcare platforms like WeDoctor, Haodafu Online, DXY, Jingdong Health, and Ping An Good Doctor played an active role in patient follow-up with chronic diseases and tumors during the pandemic.

Unification of online and offline healthcare services

As of June 2021, there were more than 1,600 internet hospitals in China, and the unification of online and offline healthcare services is imminent. First, China required that all internet hospitals should have tracible electronic prescriptions and relevant medical records, with opening data access to provincial regulatory organizations. Secondly, internet hospitals must have a full-time department to supervise medical quality and safety, pharmaceutical services, information technology, etc. Third, avoiding drug sales companies from turning internet hospitals into marketing tools. During the pandemic, the online appointment visit accounted for 30% of the offline outpatient volume at Beijing Cancer Hospital. The Internet Hospital of Guangdong Traditional Chinese Medicine Hospital introduced an "online revisiting" service, allowing patients with chronic disease to follow-up and prescribe medicine at home with health insurance reimbursement. Beijing Tiantan Hospital of Capital Medical University created a healthcare platform that provides online services for outpatients, continuous healthcare for inpatients, resources centralization for non-local patients, gathering experts for remote consultation, an intelligent system for outpatient appointments, etc.

The internet hospital has entered generation 3.0. Online

healthcare services have become more accessible, more popular and smarter with the help of the 5G network and artificial intelligence technology. The Internet Hospital of China-Japan Friendship Hospital has connected 6,000 medical institutions across the country, including 580 nursing homes. They held 313,000 times of telehealth consultations, effectively reducing the difficulty for patients from distant areas to receive adequate healthcare services. Specialist management of chronic diseases has become a new goal in the internet hospital. Shanghai Ruijin Hospital took the lead and cooperated with multiple companies to establish the National Metabolic Management Center (MMC). Nearly 1,500 hospitals across the country have joined the MMC to managed 800,000 diabetes patients through technologies like artificial intelligence, the Internet of Things, big data, etc. Among the 800,000 patients, the glycation compliance rate (HbA1c <7%) increased significantly from 18.65% to 45.46%, and the metabolic indicators increased significantly from 6.20.% to 17.94% (14% in Europe and America). Diabetic complications of vasculature, eyes, kidneys, feet and other organs were greatly reduced. In Tai'an, Shandong, WeDoctor implemented the "internet + integrated healthcare system" for chronic disease management. Through digitalized and standardized whole-process management, it strengthened the supervision of medical insurance. The average visiting time for local chronic disease patients has dropped from two hours to 30 minutes and the prescription cost was also reduced by 12.7% per time, allowing patients to refill medicines without leaving their homes. Professor Dong Jiahong from Beijing Tsinghua Changgung Hospital used the 5G network + mixed reality (MR) technology to guide complicated liver tumor surgery in Shenzhen People's Hospital, which is located 2,200 kilometers apart, indicating that the 5G network will bring infinite possibilities to online healthcare services.

As of December 2021, the population of Chinese netizens has reached 1.032 billion and the internet prevalence rate has reached 73.0%, with 99.7% of them being mobile phone users. The number of online healthcare users has reached 298 million, increasing by 38.7% per year. The National Health Commission's "Guiding Principles for the Planning of Medical Institutions (2021-2025)" pointed out that China should vigorously develop online healthcare services, form an integrated online and offline service model, and improve the overall efficiency of the healthcare system. Afterall, the future of Chinese online healthcare system is promising.

Cite this article as: Zhang Q. The internet hospital: how to combine with traditional healthcare model. HepatoBiliary Surg Nutr 2022;11(2):273-275. doi: 10.21037/hbsn-2022-10

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Hepatobiliary Surgery and Nutrition*. The article did not undergo external peer review.

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at https://hbsn.amegroups.com/article/view/10.21037/hbsn-2022-10/coif). The author has no conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

