



# The Current Development of Internet Pharmacy Services in China

Zhao Xuanhe, Xiu Yu, Wang Shuling\*

(School of Business Administration, Shenyang Pharmaceutical University, Shenyang 110016, China)

---

## Abstract

**Objective** To study the current situation and corresponding characteristics of internet pharmacy services and summarize their core connotations, and to make some suggestions for their future development based on national policies. **Methods** The literature of the last 20 years that fully or partially matched the theme of internet pharmacy services in China was studied to summarize the status of research and development of remote pharmacy services by combining the web survey method. **Results and Conclusion** China's internet pharmacy services include online consultation, science education, information enquiry, follow-up and intervention, and other functions. The main service providers are medical institutions, Internet enterprises, and online drug sales platforms. Internet pharmacy services can improve patients' compliance with medication and the convenience of medical treatment, which better play the role of pharmacists. However, they also face problems such as the varying service qualities, the small number of users, the difficulty in popularizing services in remote areas, and the lack of supervision and protection of patients' rights.

**Keywords:** Internet pharmacy service; online consultation; pharmacy service; remote area

---

The number of China's online healthcare consumers reached 300 million in June 2022, accounting for 28.5% of internet users as a whole, which showed a significant increase from the first survey results in 2020<sup>[1, 2]</sup>. It indicates that the online healthcare market in China is expanding each year and the number of consumers purchasing telemedicine services is growing as well. Telemedicine refers to health services provided using electronic communication tools such as smartphones, telephones

and mobile wireless devices<sup>[3]</sup>. The implementation of telemedicine can meet the pharmaceutical needs of patients who are unable to visit offline medical institutions for various reasons. As a part of medical services, remote pharmacy services can help pharmacists to develop their professional skills, improve the accessibility of pharmacy services to patients, and accelerate the transformation of pharmacy services to "patient-centered" services in China<sup>[4]</sup>.

Against the background of the "internet +" era and China's support for telemedicine, medical institutions at all levels, Internet enterprises and online drug sales platforms around the world have launched internet pharmacy services one after another. In China,

---

\* Corresponding author: Wang Shuling, professor. Major research area: Medical and health policy, medical investment performance and management. Tel: 13998302138, E-mail: lingyi50@163.com.

Source of the project: (1) 2021 General Scientific Research Project of Liaoning Provincial Department of Education (No. LJKR0298); (2) Liaoning Provincial Social Science Planning.



there are not many studies on internet pharmacy services, with only one hundred related articles. At this stage, there are some problems in the field of internet pharmacy services in China, such as unclear concepts and few service items. Therefore, in this paper, through the study of relevant literature, we investigate the development status of remote pharmacy services in China, outline its connotation and sort out the service content and characteristics in conjunction with online survey research. Based on this, we put forward some suggestions for the improvement of internet pharmacy services.

## 1 Status of research on internet pharmacy services in China

CNKI, VIP and Wanfang databases were selected as literature sources, and the titles and topics were searched using terms such as “internet pharmacy services” “internet + pharmacy services” “tele pharmacy services”, and “WeChat pharmacy services”. Then, the literature was screened to eliminate duplicates or articles that deviated from the research topic. Trends in the publication of relevant research literature over the years are excluded, as shown in Fig. 1.

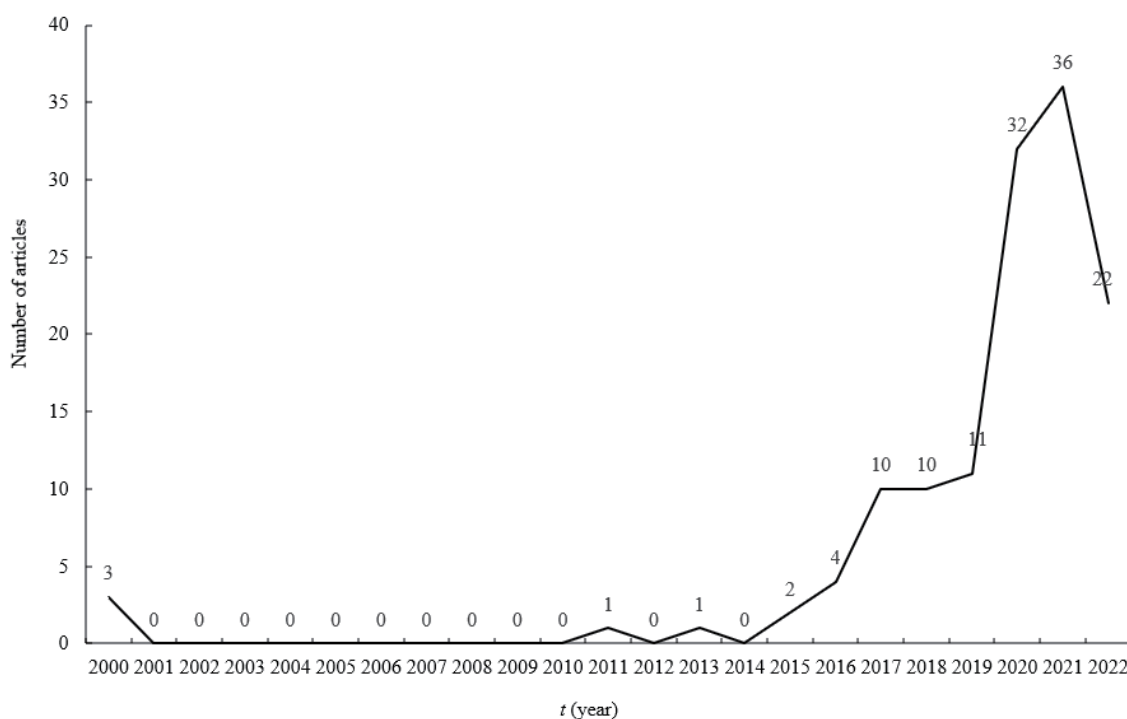


Fig. 1 Trends in the publication of internet pharmacy services in China over the years

The amount of literature finally obtained shows that internet pharmacy services are a new research area in China. In terms of the time of publication, the research made by China’s scholars on internet pharmacy services can be divided into three stages.

Phase I is from 2000 to 2014. At this stage, scholars did not explicitly propose the concept of “tele pharmacy services”, but they suggested the use of information technology to develop the pharmacy business in China, which can be understood as the starting period. Besides, some scholars have suggested

that services should be provided to the general public by building a dedicated website, which also provides a platform for academic exchange for practitioners in the pharmacy profession [5-7]. At the same time, institutions affiliated with the Wannan Medical College have conducted research on the construction of an information platform for pharmacy services using information technology and analyzed the results of the operation [8, 9].

Phase II is from 2015 to 2019, which is the developing period. The number of publications in this



phase is not big but some scholars launched research on internet pharmacy services in the real sense, with the research themes mainly being the use of WeChat platforms by healthcare institutions to implement internet pharmacy services for different diseases, such as patients with chronic diseases<sup>[10, 11]</sup>, children with idiopathic dwarfism<sup>[12]</sup> and chronic obstructive pulmonary disease<sup>[13]</sup>.

Phase III is from 2020 to now, which is the mature period. Since the outbreak of the COVID-19 pandemic in 2020 there has been a large increase in research by China's scholars on the practice and implementation effects of internet pharmacy services. Some scholars have proposed the establishment of a dedicated online pharmacist service system to extend the scope of pharmacy services<sup>[14]</sup>. At this stage, WeChat public numbers play an important role in the implementation of internet pharmacy services. Public numbers of WeChat for pharmacy services can promote the dissemination of pharmacy knowledge and help pharmacists to establish a professional image<sup>[15]</sup>. Meanwhile, some special populations such as children<sup>[16, 17]</sup>, pregnant women<sup>[18]</sup> and patients with mental illness<sup>[19]</sup> can access pharmacy services through internet technology. In addition, other scholars have launched an analysis from the perspective of pharmacists, arguing that pharmacist-led internet pharmacy services can improve patients' medication compliance and promote the public's awareness of rational medication use<sup>[20]</sup>. Besides, they suggest that the implementation of a performance management system can effectively increase pharmacists' motivation to participate and better guarantee the high-quality development of science-based services in medical institutions<sup>[21]</sup>.

## 2 Concept definition and service offerings

### 2.1 Concept definition

Internet pharmacy services are part of remote services, but with the rapid development and popularity of internet technology, internet can carry out more remote functions. Therefore, pharmacy services

carried out by internet can be derived from the concept of remote services.

The National Association of Boards of Pharmacy considers tele pharmacy services to be provided to patients at a distance through the use of telecommunications and information technology<sup>[22]</sup>. Internet pharmacy services, therefore, refer to the use of internet technology to provide services to patients at a distance.

The use of the internet for the dissemination of pharmacy services addresses geographical constraints and alleviates the problems of scarce pharmaceutical resources and inadequate pharmacists in remote areas. Moreover, the professional competence of pharmacists can be better utilized to provide services to patients, which will reduce the occurrence of irrational drug use among patients and improve the effectiveness of drugs<sup>[23, 24]</sup>.

### 2.2 Service offerings

The content of the internet pharmacy services in China is summarized by combing the literature with actual surveys of service providers such as internet hospitals, internet medical platforms, WeChat public numbers and online drug sales platforms.

#### 2.2.1 Online consulting services

A service platform or system where patients can communicate with pharmacists is an online consultation service. Patients can access a number of services including medication assessment, medication adjustment, medication planning, medication education and medication advice through online consultation<sup>[4]</sup>.

There are two types of online consultation services: Real-time and just-in-time. In real-time online consultations, patients can communicate with their pharmacists in real time by text, voice, video or mixed communication, which usually requires patients to pay a fee for the consultation. Timely online consultation means that patients ask questions by leaving messages and then wait for pharmacists to



reply, with a certain lag. But this type of consultation is usually carried out by pharmacists on a voluntary basis, and patients can obtain it free of charge. Both services can solve patients' medication problems to a certain extent and reduce the probability of irrational medication use <sup>[25, 26]</sup>.

### 2.2.2 Pharmacy information section

Professional pharmacists write some articles to educate the public, improve their knowledge of pharmacy, enhance their understanding of pharmacy services and pharmaceutical policies. This is a way to help people obtain professional pharmacy knowledge and policies in a simple and easy-to-understand manner. To a certain extent, it makes pharmacy services more accessible and proactive.

### 2.2.3 Drug information search

People with medication needs can access a wide range of services such as electronic instructions for drugs, checking the authenticity of drugs and drug consistency evaluation through the drug information enquiry service. Those in need can find drug information services such as usage, dosage and precautions for target drugs by using WeChat APPs such as Tencent Health Medicine Box, Drug Assistant and Drug Enquiry Assistant, or by downloading and installing stand-alone software such as Dingxiang Yuan's Drug Usage Assistant APP.

### 2.2.4 Medication follow-ups and reminders

The content of remote follow-up and intervention by pharmacists mainly includes regular reminders, remote monitoring of patients' indicators and vital signs, and the main intervention methods include telephone, video and e-mail <sup>[27]</sup>. With the development of internet pharmacy services, some medical institutions have experimentally established WeChat groups <sup>[28, 29]</sup> to provide extended services for patients with specific diseases after discharge from hospital, which greatly improves patients' medication

compliance and enhances drug efficacy.

## 3 Analysis of the main system of internet pharmacy services

At this stage, there are three main types of internet pharmacy services in China: Medical institutions, Internet enterprises and online pharmacies. They have differences in the content, forms and focus of the services.

### 3.1 Establishment of an online chain of services by medical institutions

Medical institutions combine medical resources with internet technology to build a remote service system for pharmacy services, and the combination of internet hospitals, WeChat public numbers and WeChat groups ensures that patients' needs are met in a comprehensive manner.

#### 3.1.1 The system of consultation, review and delivery in internet hospitals

Pharmacy services are one of the services that must be available in China's internet hospitals <sup>[30]</sup>. Patients can access three elements of the internet hospital, including real-time clinic consultation, prescription review and drug delivery, which are provided by professional pharmacists.

(1) Pharmacy outpatient clinic. The pharmacy clinic is a type of online consultation service with real-time communication. Patients register and pay the corresponding registration fee through an internet hospital program or software, after which the pharmacist provides the appropriate service according to the patient's request.

(2) Prescription audit. After the physician has issued an online prescription based on the patient's consultation information, the prescription is checked by a pharmacist and approved before the patient's payment is processed <sup>[31]</sup>. If the pharmacist finds an error during the review process, the system immediately feeds it back to the corresponding doctor for confirmation <sup>[32]</sup>.

(3) Drug delivery. The pharmacist prepares and packs the medication according to the prescription, checks the patient's information and then hands it over to a logistics company, which delivers the medication to the patient's designated location<sup>[33]</sup>. The medication delivery service plays an important role in the pandemic, as it ensures that patients' daily medication needs while reducing the risk of cross-infection, and further saves patients time and money in offline medication collection.

Pharmacy services in internet hospitals can satisfy the daily pharmacy service needs of patients, especially those with chronic diseases, which play an important role in reducing the risk of cross-infection during the pandemic<sup>[34]</sup>. It also provides remote pharmacy service support for patients in remote areas, lowering the threshold for patients to access pharmacy services and effectively reducing the time and cost of patients who are re-visiting the hospital<sup>[35]</sup>.

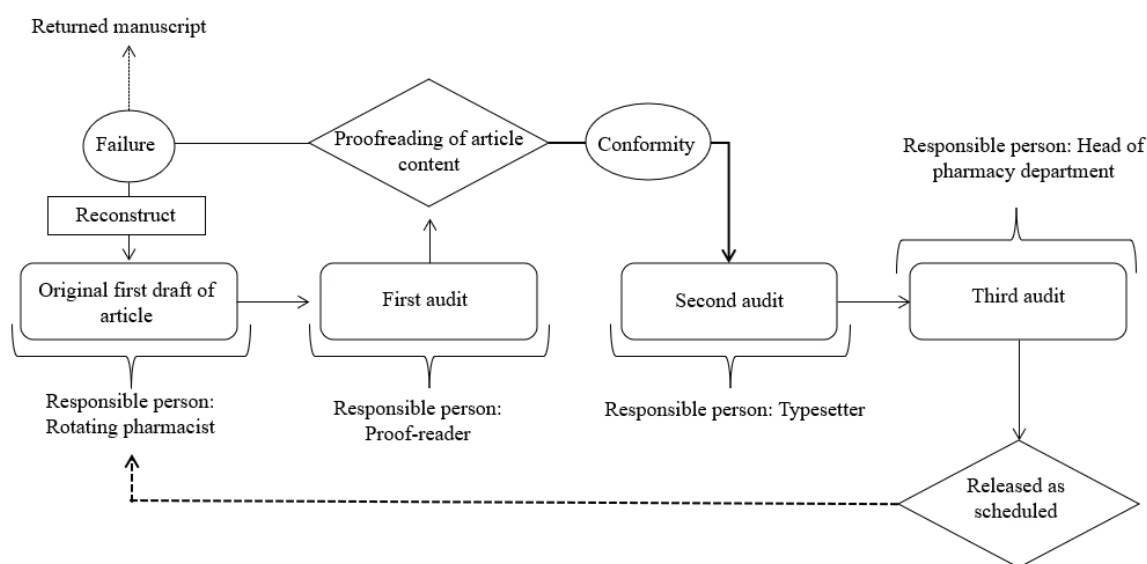
### 3.1.2 WeChat enriching pharmacy services

Pharmacy services of WeChat are usually provided by the pharmacy departments of medical

institutions and pharmacist groups. Besides, pharmacist-physician combinations form teams to provide pharmacy-related science and services to people in the form of WeChat public pharmacy service numbers<sup>[36,37]</sup>. The following four services are provided by the WeChat pharmacy service.

(1) Pharmacy information science education. Pharmacists select topics such as rational use of common drugs, health science, drug administration methods, adverse drug reactions, special publicity and chronic disease management, etc. Then, they write some articles on these topics. After reviewing and revising these articles at each level, they can become the final drafts for pushing online<sup>[38-40]</sup>.

From the preparation of an article to its delivery, it needs to go through three levels of review. Firstly, the staff in the public pharmacy service team will be divided into the original manuscript group and the graphic proofreading and layout group. After finishing the proofreading and layout of the manuscript, they can finally handed the article over to the team leader for final review. The article will be released after the review finally. See Fig. 2 below for specific typographic content.



**Fig. 2 Review process for publishing science articles**

(2) Drug information search. Medical institutions upload their offline drug catalogues and manuals to the

public platforms for online access to drug information by service users<sup>[41]</sup>. The program automatically pushes



the dosage and precautions of the relevant drugs after the user enters the trade name or generic name of the drug under the drug information query service in the public websites<sup>[42]</sup>.

(3) Online enquiry. Anyone with a request for advice can leave a message in a specific section of the public website or on the homepage. The content of the enquiry will usually be answered by a pharmacist responsible for the public website or automatically responded to by the system based on keywords. The online consultation function, which is the responsibility of the pharmacist, is usually set for a fixed period of time, for example, between 9:00–11:00 and 14:00–16:00 on work day<sup>[43]</sup>.

(4) Convenience services. Patients use the public number to understand the corresponding information of medical institutions. These medical institutions connect some functions such as online appointment registration and test enquiry in the pharmacy service number, which can achieve the interconnection between the internet hospital and the public number to provide convenience for patients who seek medical treatment in medical institutions.

### 3.1.3 WeChat groups extending the range of services

To better provide pharmacy services to patients, pharmacy departments in some medical institutions have set up WeChat groups dedicated to serving post-discharge patients. The WeChat group allows remote services to be provided to special patients such as neurosurgical epilepsy<sup>[25]</sup>, cancer pain patients<sup>[29]</sup>, children<sup>[44]</sup> and type 2 diabetic patients<sup>[45]</sup>.

Internet hospitals, WeChat pharmacy service public numbers and WeChat groups build an online chain service system together, enriching the real-time path of pharmacy services. The population of pharmacy service public numbers is not affected by whether or not they have seen a doctor in the medical institutions, expanding the scope of pharmacy service promotion and popularization free of charge. In addition, it helps people to establish the concept of scientific and rational use of medicines. Internet hospitals can meet users' medication needs in real

time through services such as communication, review and dispatch. WeChat groups, on the other hand, are targeted at post-discharge patients, extending the duration and scope of pharmacy services for patients, maximizing patients' compliance and improving outcomes.

## 3.2 Internet healthcare platform enabling integration of pharmacy advisory services

Internet medical platforms (hereinafter referred to as "platforms") are established mainly by internet companies through affiliation with some medical institutions to provide a place where patients, doctors, and pharmacists can communicate online and in real time. It is called internet hospital in China<sup>[30]</sup>. For example, Chunyu Doctor, Good Doctor Online, and JDH online healthcare are all internet hospitals. On the other hand, pharmacists from all over the country can be contracted to these platforms, thus providing consumers with a "package" of medical resources.

### 3.2.1 Integrating and segmenting pharmacist resources to guide consumers to have more choices

Firstly, the platform can integrate dispersed pharmacy resources by contracting pharmacists from different medical institutions. Secondly, the platform is segmented according to the personal titles and the disease areas the contracted pharmacists specialize in the medical institutions are. At the same time, the platform sets a recommendation index based on the number of consultations and consumer reviews of the pharmacist, helping consumers to choose the right pharmacist according to their needs.

### 3.2.2 Online enquiry

Consumers can select a pharmacist according to their needs and have a real-time consultation with the pharmacist by text, picture, voice call or video. For example, on the Good doctor online platform, patients can search for a pharmacy department through the "Finding a specialist" function area, click on the



pharmacy consultation screen and select a pharmacist for a consultation session.

### *3.2.3 Classical Q&A and science to provide complementary pharmacy services*

The platform is designed to provide a classic question and answer session for subsequent patients who need the same pharmacy services, with the patient's personal information hidden. At the same time, the platform invites some pharmacists to write articles to provide consumers with pharmacy knowledge.

### *3.3 Online pharmacy platforms offering medicines*

Drug sales platforms in this article refer to online pharmacies and takeaway platforms with built-in drug selling functions. Online pharmacy platforms (hereinafter referred to as "pharmacy platforms") are designed to meet the needs of consumers for both purchasing and delivery of medicines, which are divided into three stages: Selection and purchasing process, pre-payment and post-payment.

#### *3.3.1 Pharmacy services before selecting and purchasing medicines*

Before selecting or purchasing a medicine, consumers can choose to consult an online pharmacist if they have any questions. The pharmacist will make recommendations based on the consumer's description of the condition, cause of illness, past medical history and other basic information, such as age and gender.

#### *3.3.2 Pre-payment pharmacy services*

When a consumer purchases some medicines that involves a prescription, it needs to be reviewed by a licensed pharmacist online before he or she can pay for the medicines.

#### *3.3.3 Post-payment pharmacy services*

Post-payment pharmacy services mainly refer to

medication dispatch. There are two types of delivery services: takeaway delivery and postal delivery. When a consumer purchases some medicines on the Meituan takeaway or Hungry Mall takeaway platforms, the platform arranges for the delivery of the medicines by a takeaway delivery person. When consumers purchase medicines from platforms such as Ali Health, Jingdong Pharmacy and "1" Pharmacy.com or online pharmacies, the medicines then need to be delivered by logistics companies accordingly.

### *3.4 Specialized tools for medication assistants to assist patients with their medication*

Medication assistant refers to the complex software that is oriented to daily medication needs of consumers and provides drug manual query, drug authenticity verification and medication consultation through intelligent and professional medication knowledge. For example, the Medication Assistant App under DXY, Health Medication Assistant launched by People's Health Publishing House and Chunyu Medication Query are the specialized tools.

## **4 Suggestions**

### *4.1 Improving the quality of services with a "patient-centered" approach*

At this stage, although China's internet pharmacy services can largely meet the daily needs of patients, the existing service system or functions should be continuously improved. As the main service providers, medical institutions, Internet enterprises and online pharmacy platforms should first actively collect patients' opinions, identify their urgent needs and satisfy them. Secondly, pharmacists participating in online services should be strictly screened with high criteria, which can ensure service quality. In addition, it is also recommended that medical institutions with the capacity to start a chain pharmacy service system of internet hospitals, WeChat public numbers and WeChat groups. Internet healthcare platforms should increase their focus on the quality



of pharmacy services, simplify the steps to access services, and optimize the classification criteria of pharmacists, which will help consumers choose the best pharmacists.

#### ***4.2 Improving accessibility of pharmacy services for patients in remote areas***

Pharmacy services based on internet technology can effectively expand the scope of services<sup>[46]</sup>, especially in providing convenient and cost-effective healthcare services to patients in remote areas<sup>[47]</sup>. However, the internet pharmacy services available to patients in remote areas are often limited to medication consultation, medication education and science education<sup>[31]</sup>. In addition, the uneven distribution of medical resources in China and the scarcity and insufficient level of competence of pharmacists in remote areas<sup>[48]</sup> also fail to meet the needs of local patients. The above problems can be solved by encouraging the formation of medical consortia between tertiary hospitals in provincial capitals and municipal tertiary hospitals and township and community hospitals in remote areas to establish an interconnected pharmacy service system. Then, patients can enjoy good pharmacy services such as chronic disease management, remote consultation, follow-up consultation and science education at home. At the same time, pharmacists in less developed areas should be encouraged to actively learn from high-level pharmacists within the medical association, which will improve their professional competence through training.

#### ***4.3 Perfecting laws and regulations to protect patients' rights***

The integration of pharmacy services with internet technology means that patients experience convenience and inadvertent pitfalls. The submission of patients' private information to a particular system or platform means that they are at risk of exposing their privacy. When information containing personal ID numbers, home addresses, telephone numbers,

consultation information and other private information is leaked or even trafficked by unscrupulous individuals, it can have a serious impact on patients and, consequently, on their willingness to use internet pharmacy services<sup>[31]</sup>. At the present, although some relevant management measures have been introduced in China, such as internet diagnosis and treatment, service providers must protect patients' privacy on the internet. At the same time, China does not yet have management measures for the service quality of internet pharmacy services. Therefore, authorities should speed up the formulation and introduction of relevant management measures, sort out the implementation standards, strengthen the supervision of service providers to protect patients more comprehensively. As providers of internet pharmacy services are the first responsibility to protect patient privacy, they should strengthen their efforts to maintain the storage system for patients' electronic information. The regulatory and enforcement levels should be pursued simultaneously to satisfy the patient needs while providing high-quality services to patients, which can further promote the development of internet pharmacy services in China.

## **5 Conclusion**

Service providers such as medical institutions, Internet enterprises and online pharmacies can offer distinctive pharmacy services according to their respective strengths, realizing the diversity of China's internet pharmacy services. Services such as online consultation, science education, medication guidance, remote intervention, drug delivery and information query support can both meet the real needs of patients and promote pharmacy services to the public. Although China's advanced internet pharmacy services are relatively abundant, the quality of services varies. Therefore, service providers should take the initiative to improve the quality of internet pharmacy services, continuously enrich the content of services and build a complete online service system. At the same time, relevant departments should introduce corresponding rules and regulations as soon as possible to escort



China's internet pharmacy services towards a higher level of development in the future.

## References

- [1] China Internet Network Information Center. The 50th statistical report on the development status of the internet in China [EB/OL]. (2022-08-23)[2023-03-02]. <http://www3.cnnic.cn/n4/2022/0914/c88-10226.html>.
- [2] China Internet Network Information Center. The 47th statistical report on the development status of the internet in China [EB/OL]. (2021-02-03)[2023-03-02]. <https://www.cnnic.cn/n4/2022/0401/c88-1125.html>.
- [3] Dorsey ER, Topol EJ. State of telehealth [J]. *New England Journal of Medicine*, 2016, 375 (2): 154-161.
- [4] National Health Commission of the PRC, State Administration of Traditional Chinese Medicine. Opinions on accelerating the high-quality development of pharmacy services [EB/OL]. (2018-11-21)[2023-03-02]. <http://www.nhc.gov.cn/zyygj/s7659/201811/ac342952cc114bd094fec1be086d2245.shtml>.
- [5] Tang Ren, Yi Tao, Zhang Yi, et al. Internet pharmacy [J]. *Chinese Journal of Hospital Pharmacy*, 2000 (3): 53-54.
- [6] Yi Tao, Zhang Yi, Tang Ren. The establishment of pharmacy websites, online pharmacy services and academic exchanges [J]. *Chinese Pharmacist*, 2000 (2): 88-89.
- [7] Tang Ren, Yi Tao, Zhang Yi, et al. Preliminary analysis on internet pharmacy and its practical mode [J]. *Hospital Administration Journal of Chinese People's Liberation Army*, 2000 (4): 306-307.
- [8] Yang Xiaojun. Internet-based information platform of hospital pharmacy services, research and practice [J]. *Journal of Medical Information*, 2011, 24 (9): 5974-5977.
- [9] Wang Lin. Exploration of clinical pharmacists to carry out multi-platform full pharmacy services [J]. *Chinese Pharmaceutical Affairs*, 2013, 27 (10): 1112-1115.
- [10] An Yang, Liu Fang, Zhang Yanwen. Research progress of "internet + pharmacy service" in chronic disease management [J]. *Tianjin Pharmacy*, 2019, 31 (6): 57-60.
- [11] Zhang Xieqiu, Deng Huaidao, Shao Chunxiu. Study on the role of telepharmacy service intervention in the management of chronic disease in T2DM [J]. *Journal of North Pharmacy*, 2019, 16 (12): 172-173.
- [12] Wang Minhui. Wechat-based public platform pharmaceutical care for children with idiopathic growth hormone deficient [J]. *Chinese Preventive Medicine*, 2019, 20 (10): 950-954.
- [13] Gao Hongli, Li Suxian, Gao Weiqi, et al. The role of pharmaceutical service on platform "internet + APP" in the health management of COPD patients [J]. *Drug Evaluation*, 2019, 16 (6): 4.
- [14] Gu Lianrong, Zhu Bin, Wang Feng. Construction and discussion of a smart oncology pharmacy clinic [J]. *Chinese Journal of Clinical Pharmacy*, 2020, 29 (4): 302-305.
- [15] Chen Guanru, Mei Kangkang, Shen Chao, et al. Practice of the popularization of pediatric pharmaceutical knowledge based on WeChat public platform [J]. *Chinese Journal of Hospital Pharmacy*, 2020, 40 (10): 4.
- [16] Yu Chunfei, Li Tingsong, Fan Xin, et al. Application of internet-based pharmaceutical service model for the management of epilepsy in children [J]. *Journal of Pediatric Pharmacy*, 2022, 28 (5): 5.
- [17] Zhang Xiaoyue, Zhang Miao, Zhao Yun, et al. Analysis of the irrational prescriptions in pediatrics of 69 medical institutions [J]. *Chinese Journal of Rational Drug Use*, 2022, 19 (3): 25-28.
- [18] Liu Ruijuan, Hang Yongfu, Cheng Zongqi, et al. Practice and analysis of WeChat public platform in pharmaceutical consultation in obstetrics and gynecology [J]. *Evaluation and Analysis of Drug-Use in Hospitals of China*, 2022, 22 (1): 114-117.
- [19] Zhang Yuliang, Chen Guigen, Xu Xiaorong. Analysis of the effect of pharmacists' management of telepharmacy services for home patients with severe mental illness [J]. *Renowned Doctor*, 2022, 128 (5): 192-194.
- [20] Li Zhaohui. Analysis of the remote pharmacy services by licensed pharmacists [J]. *Chinese Pharmaceutical Affairs*, 2022, 36 (4): 5.
- [21] Lin Qi, Zhang Jin, Li Yingying, et al. The role of third-level pharmacists in the operation of pharmacy science weibo public number [J]. *Strait Pharmaceutical Journal*, 2022 (8): 34.
- [22] Muflih SM, Al-Azzam S, Abuhammad S, et al. Pharmacists' experience, competence and perception of tele pharmacy technology in response to COVID-19 [J]. *International Journal of Clinical Practice*, 2021, 75 (7):



- e14209.
- [23] Wang Chenyu, Chang KaiChieh, Chuang ChinJu, et al. A proactive remote pharmaceutical care for rural elderly population: The Houston-Apollo polypharmacy project [J]. *International Journal of Clinical Practice*, 2021, 75 (10): e14505.
- [24] Ameri A, Salmanizadeh F, Keshvaridoost S, et al. Investigating pharmacists' views on tele pharmacy: Prioritizing key relationships, barriers, and benefits [J]. *Journal of Pharmacy Technology*, 2020, 36 (5): 171-178.
- [25] Wang Qianqian, Zhu Xiaowei, Lin Weiwei, et al. The role and practice of WeChat pharmacy services in the drug treatment of neurosurgical epilepsy patients [J]. *Strait Pharmaceutical Journal*, 2022 (1): 34.
- [26] Sun Jie, Ruan Tingting, Lin Fei, et al. Impact of pharmacist-led pharmacy services on the outcomes of hypertensive patients in the community [J]. *Pharmacy Services and Research*, 2012, 12 (3): 180-184.
- [27] Niu Ziran, Zhang Bo, Hu Yang, et al. Current situation of remote pharmaceutical care at home and abroad [J]. *China Pharmacy*, 2022 (16): 33.
- [28] Xu Ling, Ji Bo, Fang Yuan, et al. Effect of internet plus pharmaceutical care model on folic acid supplementation in pregnant women during the coronavirus disease 2019 epidemic [J]. *China Pharmaceuticals*, 2020, 29 (9): 3.
- [29] Feng Hong, Xu Ya. Application of "internet" pharmaceutical care in cancer pain treatment of cancer patients [J]. *Chinese Community Doctors*, 2021, 37 (17): 3.
- [30] National Health Commission of the PRC, State Administration of Traditional Chinese Medicine. Internet Hospital Management Measures (for Trial Implementation). [EB/OL]. (2018-07-17)[2023-03-02]. [http://www.gov.cn/gongbao/content/2019/content\\_5358684.htm](http://www.gov.cn/gongbao/content/2019/content_5358684.htm).
- [31] Li Sicong, Nie Xiaoyan, Han Sheng, et al. Research on the development of O2O pharmaceutical care mode in China under the internet plus background [J]. *China Pharmacy*, 2021, 32 (4): 6.
- [32] Hu Chenji, Wang Shiyan, Jin Zhaohui, et al. Practical effect of the "internet plus" outpatient pharmaceutical care model in a hospital [J]. *China Pharmaceuticals*, 2021, 30 (9): 18-22.
- [33] Gao Yangyang, Xu Ting, Jin Zhaohui. Practice and discussion of outpatient pharmaceutical care based on medical network model during corona virus disease 2019 (COVID-19) [J]. *Chinese Journal of Hospital Pharmacy*, 2020, 40 (6): 6.
- [34] Luo Li, Chen Wen, Ma Lin, et al. Practice and discussion of outpatient pharmaceutical care based on O2O model during COVID-19 epidemic [J]. *Chinese Journal of Hospital Pharmacy*, 2020, 40 (14): 5.
- [35] Li Qinchuan, Liu Chun, Han Xiao, et al. Practice of internet pharmacy clinics for serious diseases based on integrated pharmacy services [J]. *Pharmaceutical Care and Research*, 2021, 21 (5): 398-400.
- [36] Wang Ru, Hu Ying. The practice of expanding the whole pharmacy service based on WeChat public platform [J]. *Journal of Traditional Chinese Medicine Management*, 2021, 29 (23): 306-307.
- [37] Gong Yinhua, Yu Xun, Bian Yucong, et al. Role of WeChat public account in the pharmacy service transformation in our hospital [J]. *Central South Pharmacy*, 2018, 16 (7): 1022-1026.
- [38] Gui Yan, Li Gang, Li Xianfei, et al. Practice and experience of the development of pharmaceutical care by clinical pharmacists in our hospital based on micro letter public platform [J]. *China Pharmacy*, 2015, 26 (35): 5015-5016.
- [39] Li Jia, Chen Yifang, Zhang Wei, et al. Practice of pharmacy services based on the new model of WeChat public number [J]. *Journal of Traditional Chinese Medicine Management*, 2020, 28 (21): 4.
- [40] Zhu Hui, Chen Sijia, Jin Jian. Experience of pharmaceutical care based on WeChat platform [J]. *Herald of Medicine*, 2019, 38 (5): 672-675.
- [41] Fu Yi, Cao Lingjie, Huang Jiwei. Relying on the WeChat public platform to expand the practice of full-scale pharmacy services [J]. *The Journal of Medical Theory and Practice*, 2020, 33 (13): 2234-2236+2225.
- [42] Zhang Xianwei, Chen Yiming, Shi Weifeng. Pharmaceutical care in Shanghai General Hospital by WeChat platform and online practice [J]. *Central South Pharmacy*, 2018, 16 (8): 6.
- [43] Li Lili, Jin Rui, Sun Lulu. Practice and experience of medication consultation wechat platform in our hospital [J]. *China Pharmacy*, 2016, 27 (7): 926-929.
- [44] Wang Minhui. WeChat-based public platform pharmaceutical care for children with idiopathic growth



- hormone deficient [J]. *Chinese Preventive Medicine*, 2019, 20 (10): 950-954.
- [45] Li Xiaoling, Guo Lanying. Study on the role of pharmacy service model based on WeChat platform in insulin medication adherence of type 2 diabetic patients [J]. *Journal of North Pharmacy*, 2021, 18 (2): 2.
- [46] Kane-Gill SL, Rincon F. Expansion of telemedicine services: Tele pharmacy, tele stroke, tele dialysis, tele-emergency medicine [J]. *Critical Care Clinics*, 2019, 35 (3): 519-533.
- [47] Elbeddini A, Yeats A. Pharmacist intervention amid the coronavirus disease 2019 (COVID-19) pandemic: From direct patient care to telemedicine [J]. *Journal of Pharmaceutical Policy and Practice*, 2020, 13 (1): 1-4.
- [48] Chen Yafang, Chen Hao, Liang Yan. Practice and exploration of pharmacy service linkage model in the construction of medical association [J]. *The Medical Forum*, 2019, 23 (22): 2.