

# Looking up Prescriptions to Treat Infectious Disease: Anti-epidemic Books of Medical Formularies and Epidemic Prevention and Control in the Qing Dynasty

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## Abstract

Copying, compiling, publishing, disseminating, and referencing anti-epidemic books of medical formularies were common activities during the outbreak of epidemics in the Qing dynasty. Its emergence, motivated by epidemic disease again and again, was important component parts of epidemic prevention and control. They played a unique role as media on affairs such as treating patients suffering from infectious diseases, mobilizing peoples to make contributions to anti-epidemic activities, integrating and popularizing knowledge of epidemic prevention. Anti-epidemic books of medical formularies were important to link peoples, things, and substances related with epidemic prevention and control, and were a kind of motivation to actively deal with the infectious disease, control the epidemic, and maintain health. Compared to other common measures, anti-epidemic books of medical formularies participated in many prevention and control practices deeply, which actually built a low cost, spontaneous, dispersed and non-institutional system to respond to epidemic, and the system had characteristics of stronger conductivity, bigger coverage area, and better external benefits.

**Keywords:** Anti-epidemic books of medical formularies; Epidemic prevention and control; Knowledge diffusion; Medical practice; Qing dynasty

## 1 Introduction

The Qing dynasty was one of the dynasties with the most serious epidemic disasters in the Chinese history. It had witnessed various types of major epidemic diseases, which featured wide ranges of distribution and high outbreak frequency.<sup>1,2</sup> In the face of the epidemics, there existed a medical activity in addition to the general measures such as placing patients, administering medicines, isolation, and quarantine. It was taken part in by many participants with high frequency and unique characteristics, which was popular among professionals and non-professionals. The activity was collecting and arranging epidemic prevention medical formulas, and compiling, publishing, disseminating, and referencing

anti-epidemic books of medical formularies (防疫方书), and it contributed to construct and spread medical knowledge. Anti-epidemic books of medical formularies were books containing medical formulas for certain epidemic disease and related medical knowledge. As a collection of medical formulas, books of medical formularies (方书) provided people with diagnosis and treatment methods or successful experiences for various diseases. They were concise, popular, practical, and highly operable, and suited readers of different levels, especially for the middle and lower classes.

The books began to emerge continuously from the Song dynasty, and became an important medium to disseminate and popularize medical knowledge. From the beginning of the 18th century to the end of the 19th century, anti-epidemic books of medical formularies increased dramatically, reaching a peak in the late Qing dynasty. They were usually named after *Formulas*, *Wonderful Formulas*, *Fine Formulas*, *Statements on Formulas*, etc. They focused on conditions such as cold damage, warm diseases, prescriptions and formulas, clinical treatments (especially pox and throat disorder), and fell into different categories. Scholars have paid attention to the research field. Yu Xinzong (余新忠) pointed out that during the epidemic, officials and social groups would aim to aid more infected people by publishing medical books and delivering medical formulas when discussing the response to the Plague broken out in Jiangnan area in

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the Qing dynasty.<sup>3</sup> Li Yushang (李玉尚) noticed that collecting, arranging, and testing various formulas and prescriptions, or compiling and distributing relevant books of medical formularies were common measures for the medical community and local governments when he explored the epidemic response mechanism in modern China.<sup>4</sup> Zheng Hong (郑洪) mentioned that officials, gentry, Confucian doctors, and herbalists were engaged in creating, disseminating, and developing various medical formulas or books of medical formularies for preventing and treating the plague in his research of how traditional Chinese medicine knowledge fought against the epidemic was established during the outbreak of the Lingnan plague in the late Qing dynasty.<sup>5</sup>

Current research involved fragmented relevant historical facts, and most of them regarded compiling and publishing books of medical formularies as a temporary assistant measure, which was not systematic and did not look into the fact that a great number of books of medical formularies were published and distributed during the epidemics in the Qing dynasty. Furthermore, it did not fully reveal the interactional relationships between epidemic prevention texts, anti-epidemic knowledge as well as epidemic prevention and control practices. This study would take compiling, circulating, and applying anti-epidemic books of medical formularies as basic clues, to explore how such activities were carried out, as well as the interactional relationship between medical texts, epidemic prevention, and control practices.<sup>6-9</sup> The study aims further to enrich the understanding of the history of epidemic prevention in the Qing dynasty, and lay a foundation for studying the construction, dissemination, and evolution of anti-epidemic knowledge in the Qing dynasty from the perspective of social culture.

## 2 Turning knowledge into curative efficacy: anti-epidemic books of medical formularies and treatment of infected patients

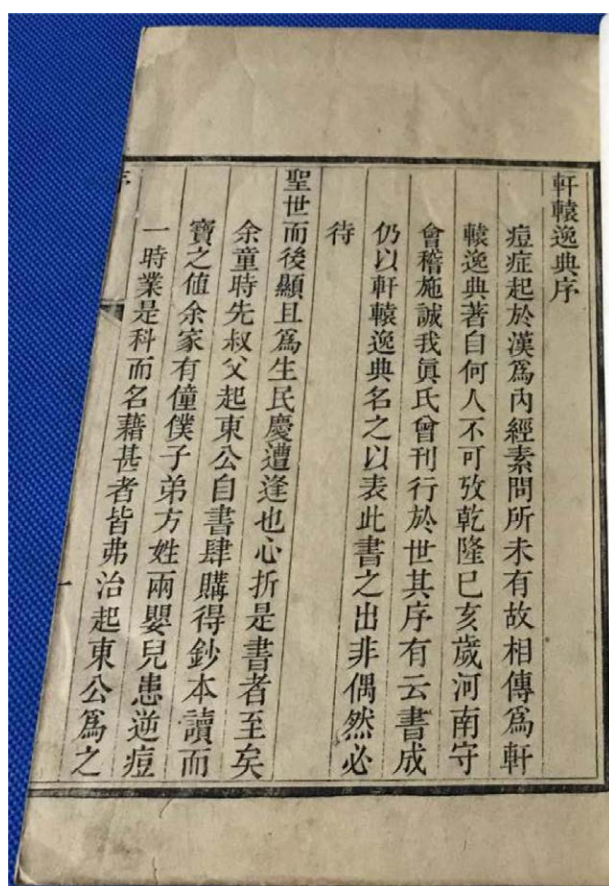
Once the epidemic broke out, treatment of infected patients became top priority of epidemic prevention and control. Anti-epidemic books of medical formularies were collections of anti-epidemic medical formulas. Each formula would conduct a brief analysis of pathology, symptoms and treatment of the disease, and list the name of the formula, drug composition, functions, indications, usage and dosage, addition and subtraction according to the symptoms, etc. Each formula could serve as a treatment plan. Therefore, the direct application of books of medical formularies in epidemic prevention and control was to serve the treatment of infected patients.

### 2.1 Checking the anti-epidemic books of medical formularies was the basic choice for patients when the doctor's treatment was invalid

After the outbreak of the epidemic, seeking help from professional doctors to treat the infected patients was the most common choice. However, the doctor's diagnosis and treatment might not always be effective. In this case, anti-epidemic books of medical formularies which integrated treatments of different epidemics and diseases had become the basic choice, or the last hope for people to treat patients.

In the 44th year of Qianlong (1779), Shi Cheng (施诚), the prefect of Henan, printed and published the book *Xuan Yuan Yi Dian* (《轩辕逸典》 *Scattered Classics of Xuan Yuan*), whose author remained unknown. The book mainly collected treatments of smallpox. Uncle of Liu Yaokui (刘耀奎), a native of Yangzhou, bought a copy of the book from the bookstore and adored it very much. Soon after that, two infants of a servant in Liu's family were infected with smallpox, and "for the time being, doctors and famous professionals could find no cure." At the time, Uncle of Liu Yaokui "sought a formula from the book to treat the epidemic," and finally the two babies were saved.<sup>10</sup> In the 9th year of Jiaqing (1804), Li Shoushan (李寿山), a friend of Pei Fengchen (裴奉辰) who was an official in Shanxi, fell ill. According to the related literature, "the doctors were helpless, and they thought that the disease could find no cure. They suggested that the patient be sent to cities with better hospitals, and the rest agreed with it." But one of the relatives of Li Shoushan, Xu Defu (徐德夫) strongly opposed the doctors' opinion. He reminded that "Yu Lin (余霖) had published a book titled *Yi Zhen Yi De* (《疫疹一得》 *Achievements in the Treatment of Epidemic Rashes*), and "checked the formulas in the book to get *Qing Wen Bai Du Yin* (清瘟败毒饮 Epidemic-Clearing Toxin-Resolving Beverage) which boiled a large dose of gypsum." The patient "took the beverage continuously for days and nights," and finally, "seventeen catties of gypsum were used, and Shoushan's disease was cured." In the second year, Pei Fengchen copied *Yi Zhen Yi De* and made it a collection. Around the 15th year of Jiaqing (1810), Pei took a post in Kaifeng. At that time, "seasonal epidemic prevailed," and Pei's family members were unfortunately infected. He made his family members to "follow the formula from the book," and "all were cured"<sup>11</sup> (Fig. 1).

Some doctors also referred to specific books of medical formularies to treat patients in critical moments. For example, during the Daoguang period, Zhu Chufen (朱楚芬), who gave up Confucianism to study medicine, often diagnosed and treated diseases by reviewing books of medical formularies in his family's collection, and gradually accumulated experiences in medical treatment. One day, his cousin Zhu Peizhi (朱佩之) suddenly came by and told him that three of his five grandchildren had been infected with smallpox. The epidemic "was so severe that



**Figure 1** Preface of *Xuan Yuan Yi Dian* (*Scattered Classics of Xuan Yuan*), published in 1826. (source from: <https://book.kongfz.com/17560/5027840573/>).

the doctors panicked,” so he came to ask for a diagnosis and treatment. Zhu Chufen “hid a book on treatments of smallpox which he copied in his childhood into his sleeves, and went to diagnose the patients,” and “after being treated for more than half a month, all the patients went well.” Zhu Peizhi was so happy that he asked his son to transcribe the book of medical formularies that Zhu Chufen carried with him, and put it on his desk.<sup>12</sup>

Similar cases were very common, indicating that officials, gentry, or professional physicians found the corresponding treatment by referring to anti-epidemic books of medical formularies to cure the patient when encountering ineffective treatment. Transcribing, collecting, and referencing books of medical formularies had become a part of the daily activities of the people in the Qing dynasty. Therefore, the existence and circulation of anti-epidemic books of medical formularies actually granted people an extra option when facing the epidemic, and an extra means to treat patients and save their lives.

## 2.2 Obtaining the corresponding treatment directly from the anti-epidemic books of medical formularies was a common medical practice during the epidemic

In addition, directly reviewing and copying anti-epidemic books of medical formularies to treat patients after an

epidemic outbreak was important to deal with the epidemic. This practice was mainly due to two reasons: First, the number of infected patients was large, while the number of doctors was too small to meet the needs of treatment. It was not easy to invite doctors in time, especially in the vast countryside. In contrast, books of medical formularies could be copied, distributed, and reviewed in a relatively short time. Second, some epidemics occurred frequently, and people already had relevant knowledge and experience in dealing with them. They could complete the treatment of infected patients according to the formulas in the books without the help of doctors. In many cases, the two conditions happened simultaneously, making books of medical formularies the first choice for people to treat infected patients.

For example, during the Qianlong period, people in central Chongqing fell ill due to “a strange disease, killing the patient as soon as the symptoms arose.” In the 2nd year of Daoguang (1822), a similar epidemic occurred in eastern Guangdong. A Taoist named Jueyin (觉因道人) “found a formula by chance, and it proved effective immediately.” In the first year of Xianfeng (1851), another similar epidemic broke out in central Zhejiang. Jueyin reprinted this book for reference at once and proved effective.<sup>13</sup> An official named Pan Wei (潘蔚) liked to collect fine formulas and applied treatments according to them. In the early years of Tongzhi, he served as the prefect of Tianjin. At that time, there was a big epidemic, so he “copied an effective formula and spread it by printing books,” and finally “all lives were saved.”<sup>14</sup> In the 4th year of Guangxu (1878), Zhou Zhaozhang (周兆璋), a native of Shunde and an official in Jiuquan, obtained a book *Shi Yi Bai Hou Zheng Lun* (《时疫白喉证论》 *Treaties on the Seasonal Disease Diphtheria*). In the 6th year of Guangxu (1780), he accompanied the army to Hami, Xinjiang, and there occurred a diphtheria epidemic in the army. Zhou “treated the patients according to the formulas in the book,” and “proved effective in every case.”<sup>15</sup>

Books of medical formularies were equivalents to a collection of existing experience, which could provide people with targeted treatments and formulas for common epidemics or local outbreaks. They could be replicated timely and massively in the entire epidemic area, and were important reliance for people to carry out prevention and control in an orderly manner.

The successful experience from individual regions could be quickly copied and promoted after it was compiled into books of medical formularies in the face of new epidemic diseases. Therefore, referencing books of medical formularies became the most convenient, direct, and effective method to treat patients. From the Daoguang period, an infectious disease commonly known as *Diao Jiao Sha* (吊脚痧 calf cramps) continued to appear. At first, a great number of people died because the doctors did not know how to treat it. In the 10th year of Xianfeng (1860), Xu Zimo (徐子默), a native of Jiaying, wrote and published the book *Diao Jiao Sha*



*Fang Lun* (《吊脚痧方论》 *Discussions on Calf Cramps*). He believed that *Diao Jiao Sha* was different from cholera, and should be treated differently. Xu's formulas proved effective by practice. During the Tongzhi period, *Diao Jiao Sha* occurred in different regions. The disease "could be treated by Xu's formula, and all patients were cured."<sup>16</sup> For another example, in the late Qing dynasty, diphtheria prevailed in different regions. Zhang Shaoxiu (张绍修), a doctor in Liuyang, Hunan, had a lot of experience in the treatment of diphtheria, and had compiled *Zhi Hou Zheng Shen Xiao Fang* (《治喉症神效方》 *Wonderful Formulas on Treating Diphtheria*). In the 10th year of Tongzhi (1871), Wang Songchen (王崧辰), a native of Min County, Fujian, came across this book on the desk of Gong Ziwen (龚子闻), an official of the ministry of justice. Gong said to Zhang that: "the book was published to deal with the disease of diphtheria which occurred in the capital city annually. Treat the patients with the formulas in this book, and most of them would be cured." Later on, Wang Songchen returned to Fuzhou with this book, and showed it to Ye Wenlan (叶文澜), the director of Fuzhou Shipping Bureau. Ye was a kind and generous person, and decided to "wide spread the book by republishing and reprinting it"<sup>17</sup> (Fig. 2).

In summary, books of medical formularies were collections of works describing death on the surface. However, the anti-epidemic knowledge in them was the essence of people's experience in dealing with epidemic diseases, which was relatively independent, identifiable, and replicable. Therefore, the books became equivalents to doctor's diagnosis and treatment to a certain extent, and could even replace the doctors when people were familiar with the disease or the situation was urgent, bringing practical curative effect. In this perspective, books of medical formularies were essentially living medical resources. People reviewed and treated patients according to the anti-epidemic books of medical formularies, which embodied the process of transforming anti-epidemic knowledge into curative effects and acting on practice.

### 3 Turning text into practice: anti-epidemic books of medical formularies and mobilization of epidemic prevention forces

Many epidemics were acute and strongly contagious, and they spread rapidly. Therefore, shortages of medical staff and medical resources often occurred. Under this circumstance, people who could read and write other than professional doctors could devote themselves to epidemic prevention and control under the guidance of anti-epidemic books of medical formularies. They could treat patients, carry out effective self-protection and treatment, or disseminate anti-epidemic knowledge, etc. In this process, potential epidemic prevention forces had

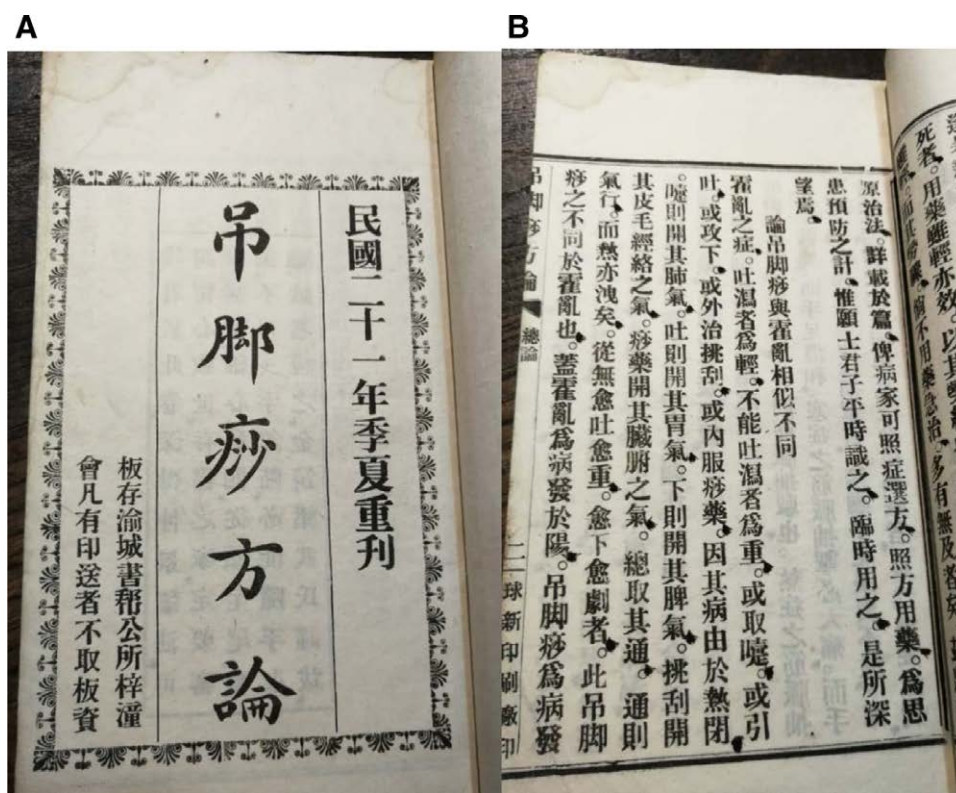
been stimulated and mobilized, which could undoubtedly enhance epidemic prevention forces, expand the scope of prevention and control, and ease the overall prevention and control pressure. In the practice of epidemic prevention and control in the Qing dynasty, anti-epidemic books of medical formularies had the function of social mobilization, and the mobilized epidemic prevention forces were mainly officials, gentry, students and other intellectual groups.

#### 3.1 Anti-epidemic books of medical formularies formed an important basis for people who knew medicine to carry out epidemic prevention

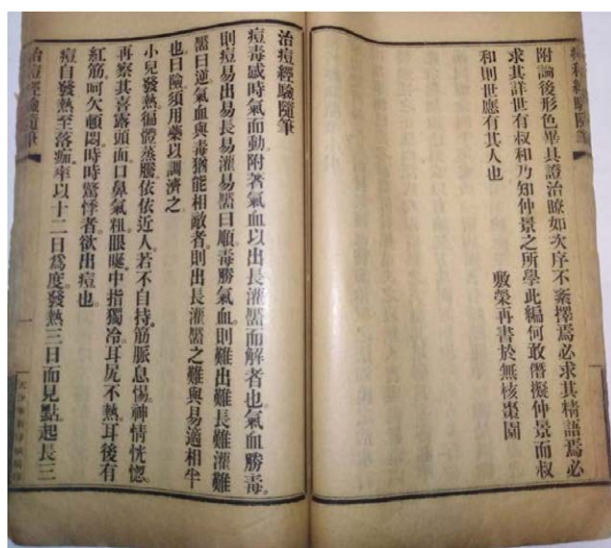
Officials, gentry, students, etc., in traditional Chinese society would learn medicine, read medical books, collect medical prescriptions, or even occasionally treat diseases and provide medical advice. In the face of emergencies, they could become medical and health service providers or assistants of professionals, and directly participated in epidemic prevention and control. The tasks could not be finished without the help of their accumulated medical knowledge or medical experience and the guidance of anti-epidemic books of medical formularies.

In the late Ming and early Qing dynasties, father of Fan Xiang (范祥), a Xuzhou native, browsed his medical books during his rests while studying for the imperial examinations. One day, he found a copy of *Dou Zhen Fa Wei* (《痘疹发微》 *Elaborations on the Subtleties of the Smallpox Disease*) in his bookcase. According to Fan, his father "tested the formulas from the first volume of the book on me and my second brother, and they proved effective." And after that, "a decade later, I tested the formulas on my two sons, and the younger boy was cured."<sup>18</sup> The Fan family cured smallpox of two generations according to the formulas in the book, which was an example to treat own family members according to anti-epidemic books of medical formularies. Formulas from books of medical formularies were used to treat other people's diseases. During the Kangxi and Yongzheng period, Yu Tianchi (俞天池), a knowledgeable and brave imperial student was not only charitable and generous, but also "loved to read books of medical formularies." He heard that the children of other families were infected with smallpox, so he used formulas from the books he read to treat the patients. As a result, "most patients treated by Yu were completely cured"<sup>19</sup> (Fig. 3).

Local gentry with awareness of disease prevention would record the relevant knowledge, experience, especially effective treatments for highly frequent infectious diseases such as smallpox, and formed brief text materials for emergency in their daily lives. When the smallpox epidemic occurred, people could quickly carry out epidemic prevention and control with the help of such texts. During the Jiaqing period,



**Figure 2** (A) Title page of *Diao Jiao Sha Fang Lun* (Discussions on Calf Cramps) published in 1932; (B) Similarities and Differences between *Diao Jiao Sha* and cholera. (source from: <https://book.kongfz.com/19622/905983870/>).



**Figure 3** *Dou Ke Jiu Jie Lun* (Discussion on Treating and Curing Pox) re-published in 1846. (source from: <https://book.kongfz.com/30657/1681864896/>).

Li Furong (李敷荣), a native of Jinan who served as a Confucian instructor in Haifeng County, had several children who died of smallpox infection. Every time a child passed away, Li reflected and studied the epidemic. As time flew, Li not only understood the prevention and treatment of smallpox, but also could provide effective diagnosis and treatment advice to his relatives and friends. “Whenever a family member

of Li was infected with smallpox, Li would treat the patient and cure him or her.” In his late years, Li compiled his insights, ideas, and experiences into a book called *Dou Ke Jiu Jie Lun* (《痘科救劫论》 *Discussion on Treating and Curing Pox*), which recorded more than 50 internal and external formulas for the treatment of smallpox. During the Daoguang period, Zhang Shigu (张式谷), son of a local official who got this book, “browsed the book from front to cover again and again to treat smallpox of his sons and daughters.” Zhang’s efforts proved useful, that “people from nearby villages and counties seek treatment for smallpox from Zhang, and the curative effects were good.” Over the years, Zhang treated a great number of patients, and “most patients were cured.”<sup>20</sup> Later on, copies of the book were widely spread because the formulas in it were very effective. However, the copies were broken or shattered as time flew, and it was inconvenient for everyone to copy it, so Zhang Shigu paid to reprint the book.

### 3.2 Anti-epidemic books of medical formularies provided a variety of possibilities for people who did not know medicine to participate in epidemic prevention and control

After the outbreak of the epidemic, the treatment of doctors might not be completely effective. In some cases, misdiagnosis and mistreatment occurred. In contrast,

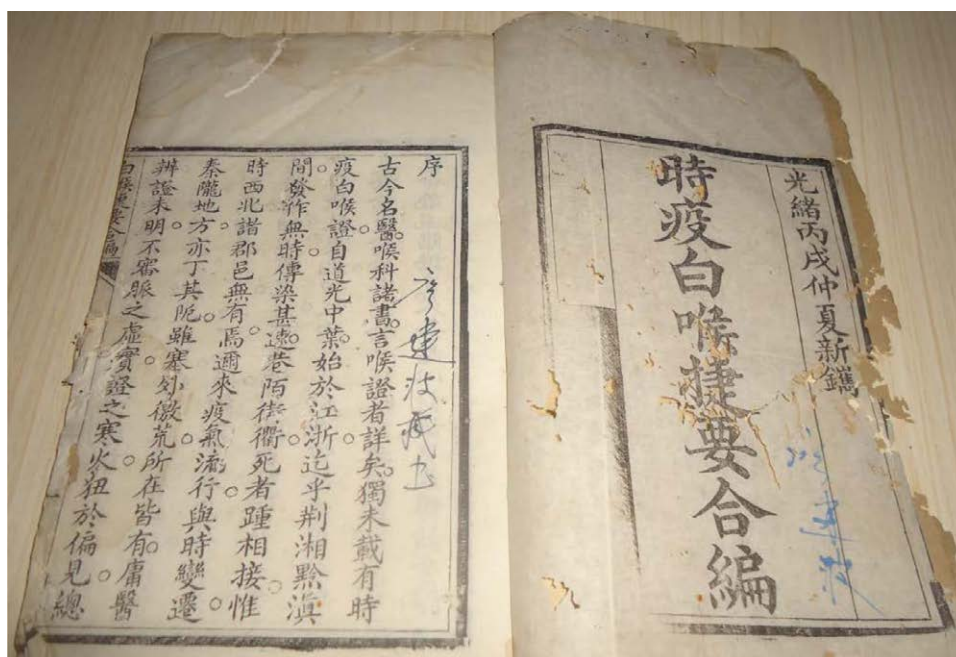


number of doctors was relatively limited, and doctors with high medical skills were even fewer. As a result, many patients could not get medical treatment in time. Anti-epidemic books of medical formularies collected formulas for different diseases, which enabled those who had no basic knowledge of medicine and no experience in diagnosing and treating diseases to contribute to the prevention and control of epidemic diseases. The books also provided another way to look for, test, and spread prevention and treatment methods.

During the Daoguang period, an official named Dan Minglun (但明伦) was ordered to serve as a military guard in Lixian County in Hunan. Due to the long-term drought, “an epidemic disease broke out after the spring, and many infected people were sick abed.” Dan searched his book case and found two books of medical formularies, *Xin Yan Fang* (《信验方》 *Trusted Proven Formulas*) and *Ji Yan Fang* (《集验方》 *A Collection of Proven Formulas*). Dan “checked the books and found *Shen Xian Huo Zhong Dan* (神仙活众丹 *Fairy Reviving People Elixir*). He made and distributed the medicine,” and the patients “were cured after taking the elixir.” After that, Dan was believed to know medicine, and was asked for medical treatment.<sup>21</sup> In the 2nd year of Guangxu (1876), Huang Bingqian (黄炳乾), a native of Liuyang, Hunan, who became a guest in Huang County in Gansu, encountered an epidemic, “diphtheria prevailed everywhere in Huang County.” Huang presented the secret formulas and acupuncture methods he obtained in his hometown, and dictated them to other people in oral. People in Huang County “treated the patients according to the formulas and proved effective. All patients were cured.”<sup>22</sup> Huang Bingqian collected the formulas and

acupuncture methods from the book *Shi Yi Bai Hou Jie Yao* (《时疫白喉捷要》 *Brief Essentials of the Seasonal Epidemic Diphtheria*) compiled by his fellow countryman Zhang Shaoxiu (张绍修). The book spread widely in Hunan and had a great influence since its publication in 1864.<sup>23</sup> At the beginning of Guangxu period, an epidemic broke out in northern Anhui. “The epidemic spread everywhere, and it came very quickly. Those who cannot be treated to the point or in time would be sick abed in day or two, or even died suddenly.” Liu Yueting (刘月汀), a doctor from Hunan “sent apprentices to treat patients. However, he was deeply worried that the numbers of his apprentices could not meet the needs of all patients, so he published a book of medical formularies to teach people how to treat the epidemic, so that they would not be misled by quack doctors.” Seven years later, a similar epidemic occurred again in Tongcheng, Anhui. A local gentry Fang Chuanli (方传理) taught Liu’s treatment method and saved many people. In order to further disseminate the treatment, Fang revised Liu’s original book into *Yang Mao Sha Yan Fang* (《羊毛痧验方》 *Proven Formulas of Wool-like Sha Disease*), hoping that “everyone in the remote areas who does not know a doctor, can follow the book, so that he will not be helpless and misunderstood.”<sup>24</sup> There existed many similar cases (Fig. 4).

Books of medical formularies contained treatment methods for different epidemics, so they were a kind of medical resources in a broad sense. The wide spread of the books distributed and redistributed medical resources. After effective methods for diagnosis and treatment of epidemic diseases had been developed, the books were transported to different regions, and could



**Figure 4** *Shi Zheng Bai Hou Jie Yao He Bian* (Combined Compilation of Brief Essentials of the Seasonal Epidemic Diphtheria) compiled by Huang Bingqian published in 1886. (source from: <https://book.kongfz.com/9464/1789815273/>).

make a difference to treat patients, control the spread of the epidemic, and reduce losses. However, the distribution of such books was uneven, and they were difficult for ordinary people to collect or read, because they needed to be spread, shared, and explained by their owners. It was in this context that people who owned the books but did not understand medicine could contribute effectively in prevention and control of epidemics in practice.

Compiling and spreading books of medical formularies required little professional knowledge. Therefore, in addition to mobilizing people to directly treat patients, books of medical formularies became knowledge carriers. They provided an extra way for people who did not know medicine to contribute their powers to disseminate relevant anti-epidemic knowledge or treatments by editing, publishing, and distributing books of medical formularies. For example, in the 1st year of Daoguang (1821), Sun Qi (孙圻), a student from Taicang, Jiangsu, witnessed “a great number of patients infected with acute filthy disease.” However, medical books dealing with the disease, such as *Sha Zhang Yu Heng* (《痧胀玉衡》 *Comprehensive Treatise on Acute Filthy Disease*) and *Sha Zheng Quan Shu* (《痧症全书》 *Encyclopedia on Acute Filthy Disease*) were not widely spread. In view of the situation, Sun quoted main contents from the books and compiled it into a concise book *Sha Zheng Hui Yao* (《痧症汇要》 *Summary of Essentials of Acute Filthy Disease*) to prepare for emergencies.<sup>25</sup> For another example, in the 5th year of Xianfeng (1855), “Throat Granular Disorder spread widely in Liangzhou, Gansu. Patients would infect ordinary people rapidly, and those who were seriously ill would die in days.” One son and two daughters of the local official Zhao Bida (赵必达) died one after another, and the youngest daughter’s condition was also critical. At this time, one of his fellow countrymen gave him a copy of *Hou Ke Zhi Zhang* (《喉科指掌》 *A Handbook on Laryngology*). Zhao “treated his little daughter according to the formulas in the book,” and saved her life. After that, Zhao republished the book, hoping that it could widely spread and help more people. Song Xinru (宋忻如), who worked in Kaifeng, Henan Province, often gave good books to help those in need. In the 10th year of Tongzhi (1871), he saw *Hou Ke Zhi Zhang* in a friend’s house. Song “did not know medicine. But he would record every formula he saw, and send it with the ingredients to those in need.” Song decided to publish and distribute this book, because he thought that “many people were infected with the epidemic, and patients would die without proper treatment in time. This book could prevent people from regretting that there were no fine formulas for the epidemic.”<sup>26</sup>

The mobilization of medical resources could only play an indirect role in treating patients and controlling the spread of the epidemic at the time. Nevertheless, it was an effective strategy in the face of severe epidemics,

shortage of medical resources and limited medical service capacity. Professional doctors would often use books of medical formularies to enlarge the scope of treatment, and reduce the impact and loss of the epidemic. For example, in the 25th year of Jiaqing (1820), an epidemic prevailed in the Liling area of Hunan. Dr. Li Binmen (李宾门) was frequently invited to treat infected patients. Unfortunately, Dr. Li “couldn’t save all lives, and he felt sad and upset.” Therefore, he “chose the essential formulas and methods for pulse diagnoses, deleted unnecessary contents from various books, and compiled them into three volumes to benefit the doctors.” The volumes were titled *Wen Yi Ji Lue* (《瘟疫辑略》 *Edited Essentials of Warm Pestilences*), and aimed to be referred to for treating diseases by ordinary people.<sup>27</sup> During the Guangxu period, Xu Ruji (许汝楫), a famous doctor in Putian, practiced medicine in Beijing. He worried that after the epidemic outbreak, “he could not fulfill all the needs of the patients due to shortage of time.” Therefore, Xu “chose formulas with its ingredients, dosage and explanations, and complied them without unnecessary rhetoric,” and published *Wen Zheng Bian Zhen Bian Zheng* (《温症麻疹辨证》 *Pattern Differentiations of Warm Diseases and Macula*), so that people can “choose the formulas according to the symptoms and take medicine referring to the formulas.”<sup>28</sup>

In summary, anti-epidemic books of medical formularies or medical formulas circulated and shared epidemic prevention resources, information, knowledge, etc. Through this process, ordinary people could also take actions to contribute to epidemic prevention. Therefore, the books played a role of social mobilization, which was of positive significance for enriching the epidemic prevention force and alleviating the pressure of epidemic prevention and control.

#### 4 Turning the special into the general: the integration and popularization of epidemic prevention prescriptions and anti-epidemic knowledge

Whether people could overcome the epidemic and whether it could be effectively controlled depended fundamentally on the accumulation, innovation, and application of anti-epidemic knowledge. During epidemic prevention and control, anti-epidemic books of medical formularies integrated old and new important anti-epidemic knowledge in addition to treating patients and mobilizing social forces. It helped various epidemic prevention medical formulas to specialize, systematize, and popularize, thus promoting application of anti-epidemic knowledge. It not only laid the foundation for the development of epidemic prevention practices, but also subtly improved the overall epidemic prevention awareness and ability of the entire society.

#### 4.1 Anti-epidemic books of medical formularies formed an important genre of anti-epidemic knowledge collection and integration

The continuous specialization and systematization of epidemic prevention medical formulas were important parts of anti-epidemic knowledge, which was an inherent requirement for epidemic prevention and control. Treating infected patients, preventing the epidemic from further outspread, etc., required anti-epidemic knowledge with strong timeliness, pertinence, and high circulation speed. Books of medical formularies were the most important medical literature with these three characteristics. In epidemic prevention and control in the Qing dynasty, publishing and disseminating new anti-epidemic books of medical formularies was one of the most important social and cultural practices, including collecting, sorting, reexamining, compiling, merging, selecting old, and new epidemic knowledge, etc.

Although there were mature methods to deal with common epidemics in the society, some people had no access to relevant books. Even if they did, the books might not be well preserved or circulated, and there might be multiple treatment methods for the same epidemic. Therefore, when the epidemic broke out, collecting and sorting out relevant knowledge, especially specific and effective treatment methods, so that they could be integrated and promoted in various ways became a strategy favored by many professionals and non-professionals.

For example, smallpox, a highly frequent infectious disease, had been recorded in Chinese history since the Han dynasty. Despite that there was a vaccination method in the middle and late Ming dynasty to prevent smallpox, treatment for this epidemic varied. This was due to the differences in the condition and physique of each patient, and different understandings on the identification of symptoms and usages of medicine. There existed countless formulas in the history of China. How to choose the effective treatment methods and formulas for smallpox was important. In the late Ming and early Qing dynasties, “a variety of treatment methods for smallpox proved ineffective, resulting in the death of the living and the old.” In the 15th year of Kangxi (1676), Wu Xuesun (吴学损), a native of Xiuning, Anhui, combined the book *Dou Zhen Jin Jing Lu* (《痘疹金镜录》 *Golden Mirror Records for Pox*) written by Weng Zhongren (翁仲仁) in the Ming Dynasty, as well as the books *Dou Zhen Bai Wen* (《痘疹百问》 *One Hundred Questions on Pox*), *Dou Zhen Xin Fa* (《痘疹心法》 *Teachings of Pox*) and related pictures which he collected into one book, titled *Dou Zhen Si He Quan Shu* (《痘疹四合全书》 *Complete Treatise on Pox*). Wu intended that people could adopt correct and appropriate treatment to reduce misdiagnosis and mistreatment of smallpox by referring to the book.<sup>29</sup> During the Daoguang period, Hou Gongzhen (侯功震), a local gentry from Jinan, Shandong, liked to browse different medical books, and gained much experiences in treating pox. He thought

that formulas and explanations by famous doctors on pox in the past dynasties had their advantages and disadvantages. Therefore, Hou “collected medical books, selected essential teachings, sorted fine formulas, and compiled them into one book,” which was *Dou Zhen Da Cheng* (《痘疹大成》 *The Great Compendium of Pox*), to achieve “no bias on one treatment method.”<sup>30</sup>

In order to treat patients and control the epidemic, sorting, trying and improving effective methods from existing experience and knowledge to apply them to infected patients, as well as spreading various new treatment for new diseases as soon as possible, so as to provide references for doctors and patients in the face of new epidemics were necessary measures. Compiling and disseminating relevant books of medical formularies was the easiest way to achieve these goals in the absence of advanced communication technology.

In the middle and late Qing dynasty, new epidemic diseases such as scarlet fever, diphtheria, cholera, and plague posed a huge threat to social and economic development and people's lives. Officials, gentry, doctors and ordinary people paid more attention to the diagnosis and treatment of these diseases. A large number of books of medical formularies specifying on these diseases became the basic way for people to understand, master, and apply relevant knowledge. For example, acute respiratory infectious diseases such as throat granular disorder and diphtheria were severe infectious diseases in the Qing dynasty. These diseases frequently triggered major epidemics in the middle and late Qing dynasty.<sup>31,32</sup> When the doctors, officials, and gentry encountered such epidemics, they chose to collect, sort, screen, and concluded knowledge and treatments in ancient and current medical classics, and compiled them into simple books of medical formularies. Since the Jiangqin and Daoguang periods, scarlet fever had prevailed in the Jiangnan area. Jin Dejian (金德鉴), a doctor in Suzhou, was infected. After he was cured, he laid emphasize on classics and books focusing on throat granular disorder. Later, Dr. Jin obtained a valuable book titled *Jing Yan Chan Jie* (《经验阐解》 *Experience in Explanation and Analyses*) whose origin was unknown. Dr. Jin mentioned that “the book had only a few pages, but its essentials and teachings were brief. The book paved a different way to treat scarlet fever, which made up for the unpreparedness of laryngology.” He “searched through ancient classics and modern literature, made deletions and additions to the original text, and paid attention to collect the essentials, teachings and formulas.” Jin compiled them into *Lan Hou Dan Sha Ji Yao* (《烂喉丹痧辑要》 *A Summary of Throat Disorder and Scarlet Fever*) to help people prevent and treat scarlet fever.<sup>33</sup> During the Tongzhi period, Zhou Xingnan (周兴南), a gentry from Ju County, Shandong, claimed to “never learn or know medicine.” However, in response to the helpless situation of local doctors during the prevalence of diphtheria, Zhou collected “descriptions of 36 symptoms of throat disorders,



as well as records of decoctions, elixirs, and methods of acupuncture and moxibustion on diphtheria,” and compiled key contents of popular books in the Qing dynasty into *Zhi Fei Zhai Yan Hou Ji Fang* (《知非齋咽喉集方》 *Collected Formulas of Throat Disorders by Zhi Fei Zhai*) for local people.<sup>34</sup> Similar works include *Hou Ke Zhi Nan* (《喉症指南》 *Guide to Throat Disease*), *Hou Ke Ji Ye* (《喉科集腋》 *Collected Teachings on Laryngology*), and so on.<sup>35</sup>

The integration of anti-epidemic knowledge and epidemic prevention formulas was an indispensable part of epidemic prevention and control in the face of common diseases and new epidemic diseases. It spread and popularized relevant knowledge to the public, so that people could apply treatments as soon as possible. In this context, books of medical formularies for the general public became a popular choice. The continuous editing and publication of anti-epidemic books of medical formularies integrated relevant anti-epidemic knowledge, making it more specialized and systematic, thus provided great convenience for people to deal with epidemic diseases in a more timely and targeted manner.

## 4.2 Anti-epidemic books of medical formularies were important mediums for the spread of anti-epidemic knowledge from point to surface and combination of individual and the mass

Anti-epidemic knowledge could be transformed into public medical resources, but it could not be recognized and applied without the help of mediums. In the Qing dynasty, a great deal of anti-epidemic knowledge was spread out in one place or among few people. Therefore, compiling and disseminating books of medical formularies was an important way to overcome these limitations, so that the knowledge could be shared.

First, editing and publishing simple anti-epidemic books of medical formularies were the basic ways to promote effective anti-epidemic knowledge with limited spread. In the early Qing dynasty, Ouyang Tiaolyu (欧阳调律), a native of Chongqing, sorted *Sha Zhang Yu Heng*, the first monograph on filthy diseases in the Qing dynasty, and compiled *Zhi Sha Yao Lue* (《治痧要略》 *Essentials to Treat Acute Filthy Diseases*). During the Daoguang period, Zhang Weiye (张惟仪), a native of Fengxiang, Shanxi, “tried and tested the formulas from the books on the patients, and proved very effective.” However, “few people knew the book, and the engraved block of the original copy was no longer in existence.” Zhang “remade the engraved block and republished the book. He did his best to send out as many as one thousand copies.”<sup>36</sup> In the 14th year of Guangxu (1888), an infectious disease broke out in Guangdong, Fujian, Jiangsu, Zhejiang, Hubei, and other provinces one after another. People “did not recognize the disease, and many infected patients died.” Some doctors believed that the epidemic was cholera,

so they treated patients accordingly, which “received no effect,” and resulting in the deaths of patients. Tian Zonghan (田宗汉), an imperial student from Hanchuan, Hubei, who once served in the Ministry of War and learned medicine in his elder years, tried to save people with his own treatment method, which “was a great success.” Many local gentry and businessmen donated money, hoping that he would compile the treatment into a book and spread it widely. Tian finally published the book *Yi Ji Fu Yin Lun* (《医寄伏阴论》 *Discussions on Fu Yin Warm Disease*).<sup>37</sup>

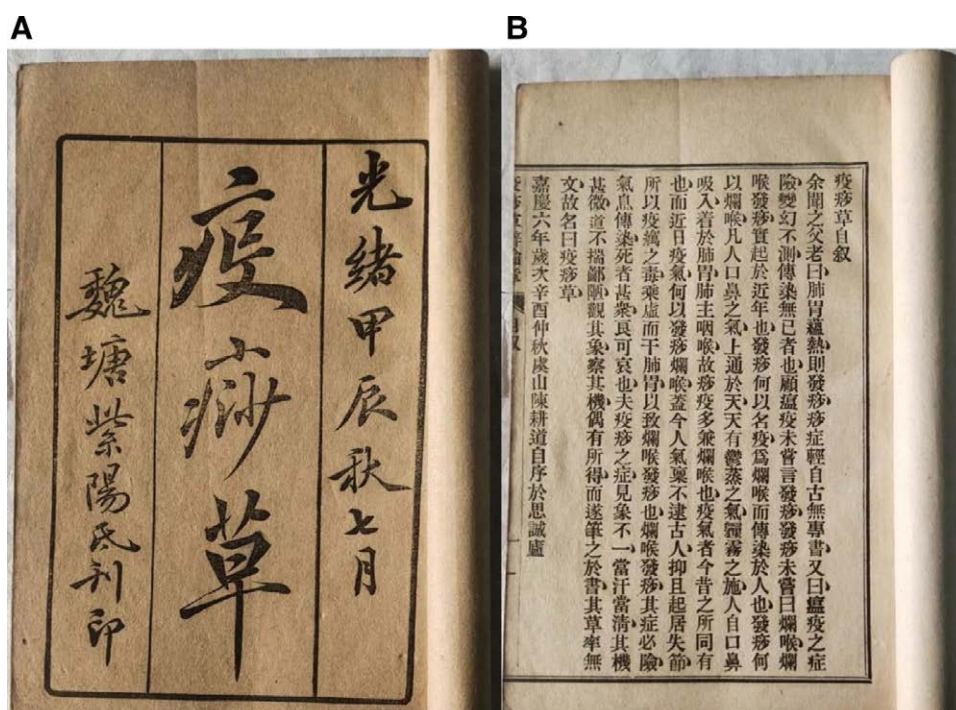
Second, reprinting existing books of medical formularies or compiling new ones effectively spread secretly circulated remedies in a family, school, or region. In the 6th year of Xianfeng (1856), Yu Zhangxin (俞彰信), a famous doctor in Cixi, Zhejiang, wrote a book titled *Shi Zheng Fang Lun* (《时症方论》 *Discussions on Seasonal Diseases*) for “the prevalence of cholera.” The book was only available in his family. Later on, younger brother of Yu’s wife funded to publish the book, and “send them elsewhere.” In the 12th year of Guangxu (1886), Feng Yunkui (冯允葵), a native of Cixi, who “witnessed countless people cured by referring to the formulas in the book,” republished it for fear that “this disease has already broken out in recent years, and it is difficult to cure one or two patients out of ten.” Feng hoped that people use Yu’s method to treat patients.<sup>38</sup> From 1901 to 1902, throat disorders were prevalent in the Changshu area. Yu Yanghao (俞养浩), who had been an assistant to the prefect, used the formulas from *Nang Mi Hou Shu* (《囊秘喉书》 *Secret Book on Laryngology*) to treat patients, and the formulas were effective. However, after its publication during the Daoguang period, it was circulated within the Chen family in Changshu, and few people knew about it. Therefore, Yu Yanghao republished the book and printed it as gifts to ordinary people.<sup>39</sup>

Finally, carrying and publishing books of medical formularies, collecting effective treatments for the same disease shared knowledge and treatment in different regions. In the 6th year of Jiaqing (1801), Chen Gengdao (陈耕道), a doctor from Changshu, compiled a book *Yi Sha Cao* (《疫痧草》 *Draft of Acute Filthy Disease*) to effectively cure scarlet fever and throat disorder. However, the engraving of the book was in Suzhou, thus the book was rarely seen in Anhui. In the 18th year of Daoguang (1838), Wan Yong (万镛), a doctor from Anhui, decided to “republish the book and distributed it to the public” to cope with scarlet fever.<sup>40</sup> During the Tongzhi period, epidemics occurred frequently in Henan. A magistrate surnamed Hong (洪) brought a copy of *Wen Yi Tiao Bian Zhai Yao* (《瘟疫条辨摘要》 *Supplemental Critical Annotations on Epidemic Diseases*) from Shanxi compiled by Lyu Tian (吕田), a doctor from Xin’an County, Henan. According to Hong, the book was popular in Anhui, but it was rarely seen after the war. Song Guangzuo (宋光祚), a local official referred to the book

and “cured every patient after using the formulas from the book.” Song republished the book in Henan, and people rushed to copy the book. Thus, “the book was widely spread in the province, and many patients were cured by referencing it.” Song thought that other provinces might not know about this book, so he decided to print it again, and planned to send it to various prefectures and counties by military officials. He asked that “please ask the military officials to send the books to capital counties of the provinces, reprint the book, and spread it widely.” In the 11th year of Guangxu (1885), a similar epidemic broke out in Wenzhou. Li Shibin (李士彬), the prefect of Wenzhou, immediately published this book locally<sup>41</sup> (Fig. 5).

Since the mid-to-late 19th century, the plague had appeared from time to time. It was prevalent in Guangdong and Guangxi at first, and spread throughout the whole country. During the epidemic, the knowledge for preventing and controlling plague was gradually applied in many regions along with the editing and publication of relevant books of medical formularies. In the 2nd year of Xuantong (1910), the plague broke out in Shanghai. “The governors of Shanghai implemented measures such as inspecting and checking the epidemic, so that the people in Shanghai were worried and restless, which could result in uprisings and protests by chance.” Shen Dunhe (沈敦和), a well-known social activist and philanthropist, convened both traditional Chinese medicine practitioners as well as Western doctors and physicians to conduct research, diagnosis, and treatment on the

plague. They spread and published prevention and treatment, and “inquired about anti-epidemic experience of famous doctors in Fujian and Hong Kong, collected books of medical formularies, and compiled them into a volume.” The team also invited doctors to choose essential teachings from two books, *Bian Zheng Qiu Zhen* (《辨症求真》 *Seeking Accuracy in Pattern Differentiations*) written by Liang Daqiao (梁达樵), a doctor in Guangdong, and *Shu Yi Yue Bian* (《鼠疫约编》 *Simple Compilation on the Plague*), a book mailed to Shen by friends from Fujian. The doctors “deleted complicated contents and simplified essential teachings into one volume,” and named it as *Shu Yi Liang Fang Hui Bian* (《鼠疫良方汇编》 *A Compilation of Fine Formulas for the Plague*) for Chinese people to refer to.<sup>42</sup> In the same year, the pneumonic plague broke out in the northeast regions of China. The epidemic spread rapidly. Liu Bingjun (刘秉钧), director of the Jilin Official Book Printing Bureau, sought the book *Shu Yi Yue Bian* from Hebei after many hands. Liu “printed and donated all 10,000 copies, re-titled it as *Jing Yan Shu Yi Yue Bian* (《经验鼠疫约编》 *Experiences on Simple Compilation on the Plague*), and attached a famous article *Zhong Xi Fang Yi Xin Lun Shuo* (《中西防疫新论说》 *New Sayings and Statements on Epidemic Prevention at Home and Abroad*) to the appendix of the book. At that time, Cao Tingjie (曹廷杰), a frontier defense official in Jilin Province, “knew that practicing acupuncture at acupoints such as *Qu Chi* (LI11), *Wei Zhong* (BL40), or *Shao Shang* (LU11) could treat the epidemic.”



**Figure 5** (A) Title page of *Yi Sha Cao* (Draft of Acute Filthy Disease) published in 1904; (B) Preface of *Yi Sha Cao*. (source from: <https://book.kongfz.com/230405/5420583790/>).



Therefore, he appended quick-acting methods, songs and verses to *Jing Yan Shu Yi Yue Bian*, and compiled them into another book *Fang Yi Chu Yan* (*《防疫刍言》 Exercising Caution when Preventing the Epidemic*). Cao “published 2000 copies and distributed them to all places affected by the epidemic”<sup>43</sup> (Fig. 6).

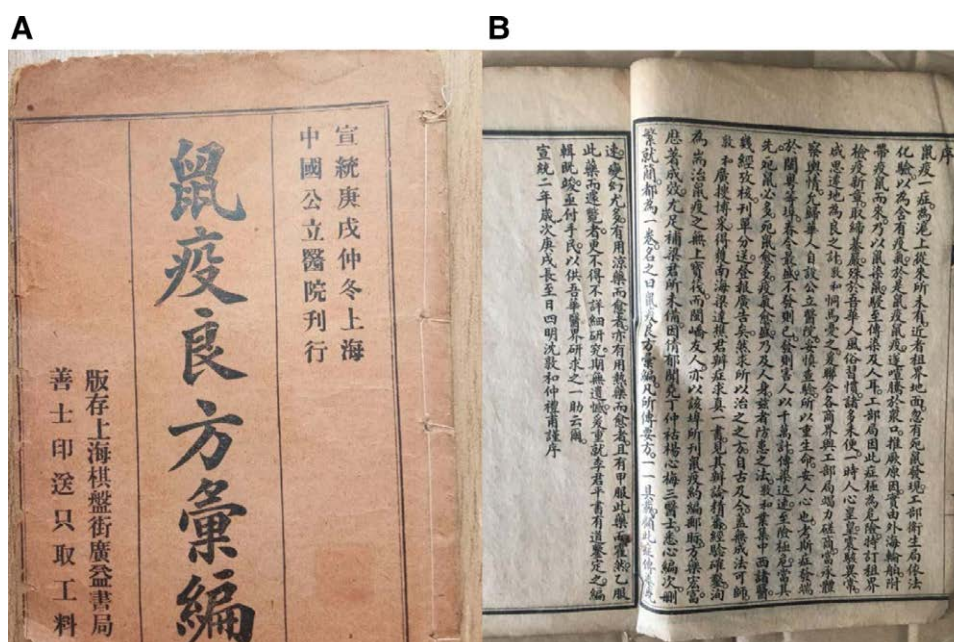
In summary, the contradiction between the uneven distribution of anti-epidemic knowledge and the indiscriminate transmission of epidemic diseases fundamentally promoted anti-epidemic knowledge from secret to public, and from local areas to all epidemic areas. Anti-epidemic books of medical formularies acted as bridges. People who could read and write without understanding medicine could dispense medicines, make medicines and carry out treatment according to the instructions of such books to treat patients and control the epidemic. Thus, the numbers of both practitioners and beneficiaries had increased accordingly, providing important support for the integration of epidemic prevention and control from point to surface and combination of individual and the mass.

### 4.3 Anti-epidemic books of medical formularies were important bases for anti-epidemic knowledge to become popularized

Anti-epidemic knowledge was transmitted from professional to popular, from elite to public, which was a social response to the many types of epidemic diseases and numbers of major epidemics in the Qing dynasty. The Qing dynasty did not achieve much in the fields of anti-epidemic systems and mechanism, therefore, pressure of epidemic prevention at the social and individual levels was great. People had to rely on means of

understanding, reserving, and paying more attention to epidemic diseases and relevant anti-epidemic and control knowledge in order to better maintain life and health. In this context, many highly professional medical books as well as medical formulas had become popularized by means of a popular medium, books of medical formularies. After the books entered people's daily life, they would consciously popularize contents and teachings in them, so as to effectively transmit professional knowledge of epidemics to the public. Three major ways were used in this process.

First, to present anti-epidemic knowledge in simple and clear poems or rhymes is important to popularize language and to facilitate people to learn and memorize. In the periods of Xianfeng and Tongzhi, after warfare stormed regions in Sichuan, epidemic diseases prevailed. Zhang Ruzhen (张汝珍), a doctor in Chengdu, feared that warm diseases would be treated as cold diseases in view of the variety of warm diseases and the confusion of diagnosis methods. So, he wrote the book *Chun Wen San Zi Jue* (*《春温三字诀》 Three Character Verses on Warm Diseases in Spring*), which discussed conditions and proper ingredients of formulas for warm diseases in 56 sentences of three characters. Since its publication in the 11th year of Xianfeng (1861), the book had become very popular. Jinzhang Bookstore in Shanghai, the Commercial Press, Yishengtang in Chengdu, etc., had successively published this book. It had been included into various versions of *Chen Xiu Yuan Yi Shu* (*《陈修园医书》 Medical Classics of Chen Xiuyuan*), which further promoted its influence.<sup>44</sup> Almost at the same time, Wang Guangdian (王光甸), a doctor from Shifang, Sichuan, who had cured many patients during the epidemic, reviewed and



**Figure 6** (A) Title page of *Shu Yi Liang Fang Hui Bian* (*A Compilation of Fine Formulas for the Plague*) published in 1910; (B) Preface of *Shu Yi Liang Fang Hui Bian*. (source from: <https://book.kongfz.com/46522/5127408218/>).



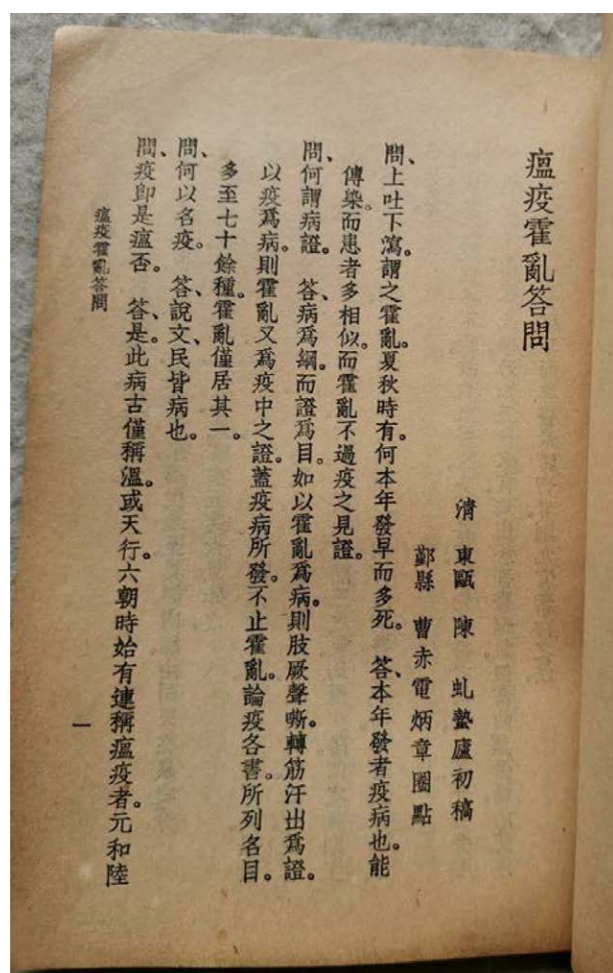
rewrote *Shang Han Cuo Yao* (《伤寒撮要》 *Essentials on Cold Damage*) in order to let more people understand the epidemic and learn how to deal with it. The original book was “very long and difficult to memorize.” Wang “included its essentials... made verses of songs... compiled them into rhymes, and combined into *Han Yi He Bian Ge Kuo* (《寒疫合编歌括》 *Summary Verses of a Compilation of Cold Epidemics*),” so as to make “readers easy to memorize, and make no confusions between rights and wrongs.” In the year following the completion of this book, Leshan Charity Hall in Xujiachang, Shifang published it. In the 22nd year of Guangxu (1896), Chongshantang in Chengdu reprinted the book.<sup>45</sup> Such verse books continued to emerge in the middle and late Qing dynasty, such as *Shang Han Zheng Fang Ge Kuo* (《伤寒证方歌括》 *Summary Verses of Proven Formulas for Cold Damage*), *Du Shang Han Lun Ge* (《读伤寒论歌》 *Verses of Review of Treatise on Cold Damage*), *Wen Bing Fang Ge* (《温病方歌》 *Formula Verses of Warm Diseases*), *Huo Luan Fang Ge* (《霍乱方歌》 *Formula Verses of Cholera*), *Wen Yi Ming Bian Ge Jue* (《瘟疫明辨歌诀》 *Verses of Differentiating Epidemic Diseases*), *Wen Bing Tiao Bian Zheng Fang Ge Kuo* (《温病条辨症方歌括》 *Summary Verses of Systematic Differentiation of Symptoms and Formulas of Warm Diseases*), *Wen Yi Chu Bu Ge Jue* (《瘟疫初步歌诀》 *Preliminary Verses of Epidemic Diseases*), etc.

Compiling verses and songs also played an important role in people's response to new epidemics. For example, at the end of the 19th century, when cholera was prevalent in the Jiangnan area, Lian Wenchong (连文冲), a doctor from Qiantang, set up a public office together with his colleagues to invite doctors to treat the epidemic. However, the public office “could only treat a limited number of patients, and could not care for the rest of the country.” In view of the situation, Lian compiled a book named *Huo Luan Shen Zheng Ju Yao* (《霍乱审证举要》 *Essentials on Diagnose and Treatment on Cholera*), “whose language was plain and simple while the contents were brief and clear, like an old woman teaching poetry, and everyone could understand.”<sup>46</sup> The book aimed to popularize relevant knowledge of cholera, so that people could learn to diagnose the epidemic, take medicine, and protect themselves against it independently.

Second, to organize and arrange anti-epidemic knowledge in the form of questions and answers is common to realize the popularization of the compilation method of books of medical formularies, and to facilitate people's understanding and application. For example, in the 28th year of Guangxu (1902), cholera was prevalent in Wenzhou, Zhejiang, and deaths followed one after another. Chen Qiu (陈虬), a local physician treated it with *Bai Tou Weng Tang* (白头翁汤 *Pulsatilla Decoction*), and received good effects. For fear that many doctors could not distinguish between cold and heat, thus delayed the treatment of the disease, Chen compiled the book *Wen*

*Yi Huo Luan Da Wen* (《瘟疫霍乱答问》 *Answers and Questions on the Epidemic Disease Cholera*) in the form of dialogs. With 54 questions and answers, Chen comprehensively elaborated on the etiology, treatment, and prevention of cholera, and attached 18 formula verses to the book. Liu Xiangsheng (刘祥胜), a leading figure in the Hunan Army, commented that “the book was clear and easy to understand. Although I am as ignorant as a servant, I also understand it in a twinkling.”<sup>47</sup> At the end of the Qing dynasty and the beginning of the Republic of China, Gao Yuming (高愈明), a doctor from Gaiping in Liaoning, compiled a variety of anti-epidemic books of medical formularies in terms of questions and answers. These books included *Wen Zhen Su Yuan Da Wen* (《温疹溯源答问》 *Answers and Questions on Tracing back to Warm Rashes*), *Shu Yi Da Wen* (《鼠疫答问》 *Answers and Questions on Plague*), *Qiu Yi Da Wen* (《秋疫答问》 *Answers and Questions on Autumn Epidemics*), *Du Yi Wen Da* (《毒疫问答》 *Questions and Answers on Toxic Epidemics*), etc. They were very concise in both form and content.<sup>48</sup> During the plague in Northeast China in the late Qing dynasty, Gao Yuming and his second son were infected successively, and they were cured by relying on Gao's own experimental and improved methods. In order to gain everyone's trust and spread the treatment widely, Gao “compiled *Du Yi Wen Da* in vernacular,” and commented confidently that “If the doctors got this book, they could realize and discard their mistakes to cure people. If the people were infected with the plague, they could take the medicine according to the formulas in the book without the doctor's diagnose. If they neglected the formulas in the book and delayed patients' condition, it will be useless and harmful to them”<sup>49</sup> (Fig. 7).

Finally, doctors and literati would purposefully collect and compile the formulas, homemade remedies, and folk remedies into books of medical formularies. These formulas spread widely and were simple, convenient, cheap, verifying. Therefore, contents of such books were clear and easy to read, so as to popularize anti-epidemic knowledge and help ordinary people to prevent and control the disease. For example, the book *Za Yi Zheng Zhi* (《杂疫证治》 *Patterns and Treatment of Miscellaneous Epidemics*), which appeared in the Jiaqing period, outlined the symptoms and treatment methods of 72 miscellaneous diseases such as *Pu Tao Wen* (葡萄瘟 *grape-like pestilence*) and *Xia Mo Wen* (虾蟆瘟 *epidemic parotiditis*). Many of the formulas included in this book were “dictated by physicians or heard from old people in the villages.” The book aimed to overcome the embarrassing situation of “doctors caught off guard by various strange epidemic diseases.” It also wished to facilitate people to “read it in advance, so that they could respond to the diseases.” At the end of the eighth year of Xianfeng (1858), an epidemic broke out in the Guanzhong plain in Shanxi. A local recluse named Qianzhai (潜斋居士) had many extraordinary experiences in “treating the



**Figure 7** *Wen Yi Huo Luan Da Wen* (Answers and Questions on the Epidemic Disease Cholera) published in 1936. (source from: <https://book.kongfz.com/9322/1601814367/>).

epidemic according to his homemade formulas.” In the 2nd year of Guangxu (1876), there was a long drought in Taiyuan, and similar epidemics appeared from time to time. Qianzhai Jushi took out this book from his suitcase to “re-calibrate and publish it with several proven formulas on throat disorder and additional formulas by his friends attached to the book.” The book was republished after revision.<sup>50</sup>

Mobilizing the enthusiasm and initiative of the general public and improving their awareness and ability of epidemic prevention were necessary measures to overcome the shortage of medical resources, ease the pressure of prevention and control, and improve prevention and control capabilities in the face of epidemic diseases. Books of medical formularies achieved these goals. The popularization of such books in terms of language, style, content, etc., had promoted anti-epidemic knowledge from elite to the public, from a few professionals to most non-professionals, and to a certain extent, it had transformed epidemic prevention and control from passive to proactive prevention.

In summary, the epidemic outbreak provided an opportunity for the integration and popularization of

anti-epidemic knowledge, and books of medical formularies were one of the bases to unfold the process. With the publication and dissemination of such books, anti-epidemic knowledge came into people’s daily lives. Before they appeared, anti-epidemic knowledge was limited by time, space, population, technology, professional, etc., and failed to maximize its function. Books of medical formularies allowed the knowledge to spread in a general sense, that is, they enabled relevant knowledge to be acquired, utilized, and inherited between all levels and between generations in a certain period of time with relatively low price.

## 5 Conclusion

Books are a social and cultural product, a medium, and an important force to promote social and cultural developments. As a special genre, books of medical formularies connected medicine and social culture. They were created and changed within each interaction between medicine, politics, economics, society and culture. At the same time, the books kept enhancing the ties maintained between these aspects, making them as portrayals of the complementary and mutual transformation of text and practice in historical contexts. Every epidemic disease outbreak as well as its prevention and control was accompanied by the generation and dissemination of a great deal of anti-epidemic knowledge. Similar to the generation and circulation of various “prevention and control plans,” “anti-epidemic manuals,” and “anti-epidemic knowledge” in the process of preventing and controlling COVID-19 today, there were also numerous anti-epidemic texts, that is, anti-epidemic books of medical formularies, created and spread during the epidemic prevention and control in the Qing dynasty. Publishing, dissemination, reading, application, and other practices related to such books were resulted from epidemic diseases. Furthermore, such activities became witnesses of the interaction between people and epidemic diseases, and an important part of epidemic prevention and control practices. In the historical situation of the Qing dynasty where the priority was laid on “epidemic treatment,”<sup>51</sup> a large number of anti-epidemic books of medical formularies played a unique and important role in “epidemic treatment.” New forms of anti-epidemic practices had been created, including treating the infected patients, mobilizing forces to fight epidemics, integrating, and popularizing anti-epidemic knowledge, etc. For example, ordinary people could directly refer to books of medical formularies for treatment after infection; professional doctors and people from all walks of lives could make full use of the simple, popular, and practical advantages of such books to integrate and spread anti-epidemic knowledge; people from non-medical industries could edit and publish simple books of medical formularies to

treat patients and spread anti-epidemic knowledge under the guidance of the books, etc. These activities not only directly contributed to epidemic prevention and control, but also played an important role in accumulating epidemic response experience and improving the overall epidemic response capability of society. Therefore, disseminating the books was a crucial way to realize the links and interactions between relevant people, matters, and substance. They also acted as an “original force” for people to positively respond to the epidemics, control the epidemic, and maintain health.

Epidemic prevention and control is not a simple medical affair, but a holistic and comprehensive social activity. From the perspective of social culture, scholars have pointed out that the establishment of institutions to accommodate patients, the establishment of pharmacies to invite doctors to treat the patients, the distribution of medicines, and the publication of scattered medical formulas were the most important measures to deal with epidemic diseases in traditional Chinese society. However, these measures were basically due to temporary emergencies.<sup>52,53</sup> In fact, the roles and effects of these measures cannot be concluded easily. Among them, the compilation, publication, and dissemination of anti-epidemic books of medical formularies (including various types of anti-epidemic medical formulas) had three prominent roles and characteristics in epidemic prevention and control: First, the cost was low. Measures such as setting up institutions to accommodate patients, setting up pharmacies to invite doctors to treat the patients, and distributing medicines required considerable human, material, and financial support to better achieve the goals of prevention and control. It could be concluded that compilation, publication, and dissemination of books of medical formularies or medical formulas had fewer restrictions, and were flexible and changeable. Even in places where there existed no publishing or printing technology as well as a low education level, anti-epidemic knowledge could be transmitted from the books orally and personally to ordinary people. Second, it had strong conductivity and wide coverage. The establishment of institutions to accommodate patients, the establishment of pharmacies to invite doctors to treat the patients, and the distribution of medicines, etc., were often carried out under the conditions of relatively developed social economy, strong private forces, relatively concentrated population, and relatively sufficient medical resources. While the threshold of compilation, publication, and dissemination of anti-epidemic books of medical formularies was relatively low, so that the remote areas and the vast rural areas with underdeveloped social economy could also afford to fight the epidemic, enabling potential anti-epidemic forces be sent into prevent and control the epidemic. Third, the spillover effect was large. The establishment of institutions to accommodate patients, the establishment of pharmacies to invite doctors to treat the patients, the distribution of medicines, etc., basically began with the emergence of the epidemic and ended with

the end of the epidemic. Controversially, anti-epidemic books of medical formularies integrated knowledge, and could be stored, learned, applied universally, and used to inspire people. In addition to their role during the epidemic, their compilation, publication, and dissemination were actually the basic components of the evolution of anti-epidemic knowledge production, which continued to affect people's understanding and their response to epidemic diseases, including the way, mentality, customs, etc. They could also be used to affect the innovation of epidemic knowledge.<sup>5,54</sup>

Isolation, quarantine, disinfection, sanitation, and other measures commonly used in modern Western health and epidemic prevention system basically relied on public powers to construct and operate, and had significant characteristics of concentration, coercion, and systemization. Therefore, modern Western health system resulted in a “visible network” consisting of public powers in the face of epidemics. In contrast, compilation, publication, and dissemination of anti-epidemic books of medical formularies were generally spontaneous, decentralized, and non-institutional measures among the people. In the publication activities of such books, the central government of the Qing dynasty rarely participated, while the local governments and officials participated in related activities positively in personal. Most of the officials only resorted to individuals and their medical contributions during the epidemic in order to promote “benevolent governance,” so as to maintain order in their jurisdiction. They had not consciously or effectively improved the extent of organization, centralization, standardization, and institutionalization of such publication activities. Therefore, the health system of the Qing dynasty resulted in “an invisible network” including government official personals and scattered individuals. The implementation and effectiveness of the former network should basically depend on the power, authority, organization, and execution of the government, while the latter network would require the participation of the majority of social forces and even every citizen and individual in order to generate maximum benefits. On the whole, the former network had significant advantages in discovering the source of infection and cutting off the chain of transmission, but it often only paid attention to the whole and ignored the individual, making it difficult to effectively protect individual rights and interests<sup>55</sup>; whereas the latter network played an important role in the treatment of epidemic diseases, and ultimately influenced individuals in society. It was also a symbol of self-determination, vitality, and creativity of the Chinese society. However, due to the lack of planning, organization, and unity, it might lead to problems such as duplication, disordered production, and low utilization of books of medical formularies. In the face of future epidemics, it is suggested that organically combining “a visible network” and “an invisible network,” that is, integrating the powers of both the



government and individuals can minimize losses caused by epidemics, and well protect the overall order as well as individual rights and interests.

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## Ethical approval

This study does not contain any studies with human or animal subjects performed by the author.

## Author contributions

LIU Xiyang did the research and wrote the paper.

## Conflicts of interest

The author declares no financial or other conflicts of interest.

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