

# Comprehensive Comparison and Analysis of the Prevention and Treatment of Coronavirus Disease 2019 and Severe Acute Respiratory Syndrome with Traditional Chinese Medicine

Ying Chen<sup>a,b</sup>, Jing-Jing Zhang<sup>a,b</sup>, Yan Liu<sup>a</sup>, Hong-Cai Shang<sup>a</sup>

<sup>a</sup>Key Laboratory of Chinese Internal Medicine of Ministry of Education, Dongzhimen Hospital, Beijing University of Chinese Medicine, <sup>b</sup>First Clinical Medical College, Beijing University of Chinese Medicine, Beijing, China

## Abstract

Since December 2019 the Coronavirus Disease 2019 (COVID-19) has erupted in many places around the world, which is strong infectious and highly epidemic. After the outbreak of COVID-19 in China, traditional Chinese medicine (TCM) has been in the front line of the fight against the epidemic. It has shown characteristics and advantages in the prevention and treatment of COVID-19. TCM also played an important role in the winter of 2002 and in the spring of 2003 during the outbreak of severe acute respiratory syndrome (SARS). This article compares the strategies, programs, measures, resource investments, and effects of TCM for the prevention and treatment of COVID-19 with those for SARS. At present, the involvement of TCM has been earlier, faster, and more comprehensive in the fight against the epidemic and has shown good clinical efficacy and treatment prospects.

**Keywords:** Coronavirus disease 2019, prevention and treatment of traditional Chinese medicine, severe acute respiratory syndrome

## INTRODUCTION

Since December 2019 the Coronavirus Disease 2019 (COVID-19) has erupted in many places around the world. It is strongly infectious and highly epidemic. The National Health Commission of the People's Republic of China has classified it as a Class B legal infectious disease. COVID-19 cases are being treated as per the prevention and control measures of Class A infectious diseases.<sup>[1]</sup> The National Health Commission of the People's Republic of China reported that as of 00:00 on February 24, 2020, there were 47,672 confirmed cases (including 9126 severe cases), 27,323 cured and discharged patients, a total of 2663 deaths, 77,658 confirmed cases, and 2824 suspected cases.<sup>[2]</sup> Coronavirus is highly pathogenic, and has gradually become an important factor threatening global public health.<sup>[3]</sup> The virus that caused the outbreak of severe acute respiratory syndrome (SARS) in China from the winter of 2002 to the spring of 2003 belonged to the coronavirus family. SARS was classified as a Class B legal infectious disease by the *Law of the People's Republic of China on Prevention and Control of Infectious Diseases*. It was treated as per the prevention and

control measures of Class A infectious diseases. According to WHO statistics, more than 8400 SARS cases were reported in 32 countries and regions around the world, including more than 7700 cases in China (including Taiwan). The mortality rate was 11% globally, 17% in Hong Kong, 27% in Taiwan, and 7% in the mainland of China.<sup>[4]</sup>

Both COVID-19 and SARS belong to the category of "epidemic disease" in the traditional Chinese medicine (TCM). The *Inner Canon of Huangdi* states the following: "When plagues occur, people easily infect each other, regardless of the elderly and children, their symptoms are similar." It emphasized that plagues were contagious and highly similar

**Address for correspondence:** Prof. Hong-Cai Shang,  
Dongzhimen Hospital, Beijing University of Chinese Medicine,  
Beijing 100700, China.  
E-mail: shanghongcai@126.com

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in their clinical manifestations.<sup>[5]</sup> TCM is widely used to treat fever and infectious diseases. It shows great advantages in halting the disease progression, shortening the disease course, improving the curative effect, and promoting the rehabilitation of patients.<sup>[3]</sup> TCM has played an important role in the fights against both COVID-19 and SARS epidemics. This article presents a comprehensive comparison and analysis of the strategies, programs, measures, resource investments, and effects of TCM in the prevention and treatment of COVID-19 and SARS.

## COMPARISON OF PREVENTIVE AND TREATMENT STRATEGIES

Since the occurrence of COVID-19, TCM has quickly participated in the fight against the epidemic. It has played an important role in its prevention and treatment, similar to that during the epidemic of SARS. Herein, we compare the preventive and treatment strategies of TCM in COVID-19 and SARS [Table 1]. Compared with that during SARS outbreak, the preventive and treatment strategies of TCM responded more promptly. These strategies were promoted rapidly in this epidemic.

**Table 1: Comparison of the preventive and treatment strategies of traditional Chinese medicine in coronavirus disease 2019 and severe acute respiratory syndrome**

COVID-19		SARS	
Date	Item	Date	Item
January 22, 2020	The National Administration of Traditional Chinese Medicine set up a leading group for the prevention and control of COVID-19 <sup>[6]</sup>	February 11, 2003	<i>Yangcheng Evening News</i> published a news article of the interview with a representative of the First Affiliated Hospital of Guangzhou University of Chinese Medicine titled, <i>The Comprehensive Treatment of Traditional Chinese Medicine Has A Preliminary Effect in SARS</i> . This was the first news to report the use of TCM for the treatment of SARS in the country <sup>[4]</sup>
January 26, 2020	The State Council Information Office of the People's Republic of China held a press conference to emphasize the work of solving key scientific and technological problems in the field such as prevention and treatment of COVID-19 with TCM <sup>[7]</sup>	April 9, 2003	The National Administration of Traditional Chinese Medicine set up a working group for the prevention and treatment of SARS with TCM <sup>[14]</sup>
January 27, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine jointly issued a notice to further improve the treatment of COVID-19 with integrated traditional Chinese and Western medicine <sup>[8]</sup>	April 13, 2003	Premier Jiabao Wen, at the national meeting on the prevention and treatment of SARS, stated that effective measures such as the integration of traditional Chinese and Western medicine should be adopted. An improvement in the therapeutic effect and active exploration was deemed necessary. He also put forth the proposal of an integrated approach using both traditional Chinese and Western medicine in the treatment of SARS <sup>[15]</sup>
January 28, 2020	The National Administration of Traditional Chinese Medicine issued a notice to further improve the prevention and control of COVID-19 with TCM. The notice proposed to actively apply the techniques and methods of TCM in the treatment of COVID-19 <sup>[9]</sup>	May 8, 2003	Premier Jiabao Wen again stated that the full implementation of TCM and the combination of traditional Chinese and Western medicine should be used in the prevention and treatment of SARS <sup>[16]</sup>
February 4, 2020	Yahui Jiao is the deputy director of the Medical Administration of National Health Commission. At a press conference, she stressed on the use of integrated traditional Chinese and Western medicine to fully utilize the potential of TCM <sup>[10]</sup>	May 8, 2003	Deputy Premier Yi Wu presided over a meeting in Zhongnanhai on the treatment of SARS with TCM. He emphasized that the relevant departments of the State Council and local governments should fully utilize the characteristics and advantages of TCM <sup>[16]</sup>
February 7, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine issued a notice recommending the use of <i>Qingfei Paidu Decoction</i> in the treatment of COVID-19 in combination with other traditional Chinese and Western medicines <sup>[11]</sup>	May 12, 2003	The National Administration of Traditional Chinese Medicine issued a notice to strengthen the use of TCM in the prevention and treatment of SARS in rural areas. <sup>[14]</sup>
February 12, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine issued a notice to establish and perfect the strategy for cooperation between both traditional Chinese and Western medicine in the prevention and treatment of COVID-19 and other infectious diseases <sup>[12]</sup>	May 20, 2003	The National Administration of Traditional Chinese Medicine issued a notice to further strengthen the use of TCM in the prevention and treatment of SARS. The notice reiterated the importance of TCM in the prevention and treatment of SARS <sup>[17]</sup>
February 13, 2020	The National Leading Group for Dealing with COVID-19 epidemic held a meeting. The meeting called for the strengthening of the integration of traditional Chinese and Western medicine, promoting the deep intervention of TCM for the diagnosis and treatment of COVID-19 and promoting the timely use of effective decoction, Chinese herbal medicine, and Chinese patent drug for the prevention and treatment of COVID-19 <sup>[13]</sup>		

TCM: Traditional Chinese medicine, SARS: Severe acute respiratory syndrome, COVID-19: Coronavirus disease 2019

## COMPARISON OF THE PREVENTIVE AND THERAPEUTIC PROGRAMS

After the outbreak of the epidemic, the diagnosis and treatment programs for COVID-19 with TCM were quickly released. Compared with those during SARS, these programs were released much earlier, faster, and more extensively. These programs have been updated several times since their release. Moreover, each province (autonomous region and municipality), as well as the Xinjiang Production and Construction Corps, formulated a provincial-level

TCM-based treatment program, in addition to those for the four provinces (regions) of Shanxi, Anhui, Fujian, and Qinghai. This ensured the full involvement of TCM in the fight against the COVID-19 epidemic<sup>[18,19]</sup> [Table 2].

## COMPARISON OF THE PREVENTIVE AND TREATMENT MEASURES

TCM was used in the period of prevention, isolation, and observation; clinical treatment; and rehabilitation of COVID-19 and SARS. More TCM programs were released

**Table 2: Comparison of the traditional Chinese medicine-based preventive and treatment programs for coronavirus disease 2019 and severe acute respiratory syndrome**

COVID-19		SARS	
Date	Program	Date	Program
January 22, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine released the <i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 3)</i> . The use of TCM for the treatment of COVID-19 was proposed for the first time in the program <sup>[20]</sup>	April 11, 2003	The Ministry of Health and National Administration of Traditional Chinese Medicine released the <i>Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)</i> <sup>[27]</sup>
January 28, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine released the <i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 4)</i> . The program revised the use of TCM for the treatment of COVID-19. It also put forth the application of Chinese patent drugs during the clinical observation period <sup>[21]</sup>	April 23, 2003	The Ministry of Health and National Administration of Traditional Chinese Medicine released the revisionary <i>Programme-Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)-Prevention Part</i> <sup>[28]</sup>
February 6, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine released the <i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5)</i> . The program emphasized the need for the full utilization of TCM and to strengthen the integration of traditional Chinese and Western medicine <sup>[22]</sup>	May 11, 2003	The Ministry of Health and National Administration of Traditional Chinese Medicine released the revisionary <i>Programme-Recommended Programme for Treatment of SARS with TCM</i> <sup>[29]</sup>
February 9, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine released the <i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5 of Revision)</i> . The TCM-related contents in the program remained unchanged <sup>[23]</sup>	May 22, 2003	The national scientific and technological research team for the prevention and treatment of SARS announced eight Chinese patent drugs that were effective for SARS. They were Qingkailing Injection, Yuxingcao Injection, Banlangen Granule, Xinxue Granule, Jinlian Qingre Granule, Dengzhan Xixin Injection, Compound Kushen Injection, and Xiangdan Injection <sup>[29]</sup>
February 11, 2020	Qi Wang, Academician from the Beijing University of Chinese Medicine, edited the <i>Handbook of Diagnosis and Treatment of the Pneumonia Caused by the Novel Coronavirus in TCM</i> . This book has practical guidelines signifying the use of TCM for the prevention and control of the epidemic <sup>[24]</sup>	June 4, 2003	The National Administration of Traditional Chinese Medicine released the <i>Recommended Programme for Treatment of SARS with TCM in Convalescent Stage</i> <sup>[30]</sup>
February 19, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine released the <i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 6)</i> . The program further adjusted and supplemented the use of TCM for the treatment of COVID-19 <sup>[25]</sup>	October 15, 2003	The China Association of Chinese Medicine published the <i>Guidelines for Diagnosis and Treatment of SARS in TCM in China Journal of Traditional Chinese Medicine and Pharmacy</i> <sup>[30]</sup>
February 23, 2020	The National Health Commission and National Administration of Traditional Chinese Medicine released the <i>Suggestions on rehabilitation in the convalescent stage of COVID-19 in TCM (Tentative Version)</i> <sup>[26]</sup>		
Since January 24, 2020	Each province (autonomous region and municipality), as well as the Xinjiang Production and Construction Corps, formulated provincial-level TCM-based treatment programs, in addition to those for the four provinces (regions) of Shanxi, Anhui, Fujian, and Qinghai. These programs combined the characteristics of the local climate and clinical practice. The other four provinces (regions) temporarily followed the programs issued by the nation <sup>[18,19]</sup>		

TCM: Traditional Chinese medicine, SARS: Severe acute respiratory syndrome, COVID-19: Coronavirus disease 2019

at every stage of the prevention and treatment during the COVID-19 epidemic than those during the SARS epidemic. Moreover, there were provincial (municipal) TCM programs at each stage of the prevention and treatment process. The involvement of TCM has become more extensive presently than that during the SARS epidemic [Table 3].

## COMPARISON OF THE RESOURCE INVESTMENTS FOR PREVENTION AND TREATMENT

Table 4 shows the comparison of the clinical resource investments in TCM between the COVID-19 and SARS epidemics. Table 5 shows the comparison of the resource

**Table 3: Comparison of the preventive and treatment measures for coronavirus disease 2019 and severe acute respiratory syndrome with traditional Chinese medicine**

Stage of prevention and treatment	COVID-19	SARS
Prevention	<p><i>Handbook of Diagnosis and Treatment of the Pneumonia Caused by the Novel Coronavirus in TCM</i><sup>[31]</sup></p> <p>Guidelines for TCM-based prevention of COVID-19 were included in some provincial-level treatment programs released for Beijing, Tianjin, Hebei, Shandong, Henan, Jiangxi, Shaanxi, Hubei, Hunan, Gansu, Guizhou, and Yunnan<sup>[19,32]</sup></p>	<p><i>Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)</i><sup>[33]</sup></p> <p>The revisionary programme of <i>Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)-Prevention Part</i><sup>[28]</sup></p> <p><i>Guidelines for Diagnosis and Treatment of SARS in TCM</i><sup>[30]</sup></p>
Isolation and observation	<p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 4)</i><sup>[21]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5)</i><sup>[22]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5 of Revision)</i><sup>[23]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 6)</i><sup>[25]</sup></p> <p><i>Handbook of Diagnosis and Treatment of the Pneumonia Caused by the Novel Coronavirus in TCM</i><sup>[31]</sup></p> <p>TCM-based isolation and observation programs were included in some provincial-level treatment programs, including those for Beijing, Tianjin, Shandong, Henan, Hunan, Guizhou, and Gansu.<sup>[19]</sup></p>	<p><i>Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)</i><sup>[33]</sup></p> <p><i>Recommended Programme for Treatment of SARS with TCM</i></p> <p><i>Guidelines for Diagnosis and Treatment of SARS in TCM</i><sup>[30]</sup></p>
Clinical Treatment	<p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 3)</i><sup>[20]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 4)</i><sup>[21]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5)</i><sup>[22]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5 of Revision)</i><sup>[23]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 6)</i><sup>[25]</sup></p> <p><i>Handbook of Diagnosis and Treatment of the Pneumonia Caused by the Novel Coronavirus in TCM</i><sup>[31]</sup></p> <p>Each province (autonomous region and municipality) as well as the Xinjiang Production and Construction Corps, formulated provincial-level TCM-based treatment programs, in addition to those for the four provinces (regions) of Shanxi, Anhui, Fujian, and Qinghai.<sup>[19]</sup></p>	<p><i>Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)</i><sup>[33]</sup></p> <p><i>Recommended Programme for Treatment of SARS with TCM</i></p> <p><i>Guidelines for Diagnosis and Treatment of SARS in TCM</i><sup>[30]</sup></p>
Rehabilitation	<p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 4)</i><sup>[21]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5)</i><sup>[22]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 5 of Revision)</i><sup>[23]</sup></p> <p><i>Diagnosis and Treatment Programme of COVID-19 (Tentative Version 6)</i><sup>[25]</sup></p> <p><i>Handbook of Diagnosis and Treatment of the Pneumonia Caused by the Novel Coronavirus in TCM</i><sup>[31]</sup></p> <p><i>Suggestions on Rehabilitation in the Convalescent Stage of COVID-19 in TCM (Tentative Version)</i><sup>[26]</sup></p> <p>TCM-based recovery stage programs were included in some provincial-level treatment programs, including those for Beijing, Tianjin, Hebei, Shanghai, Sichuan, Shaanxi, Tibet, Gansu, Yunnan, and Guangdong<sup>[19]</sup></p>	<p><i>Technical Programme for Prevention and Treatment of SARS with TCM (Tentative Version)</i><sup>[33]</sup></p> <p><i>Recommended Programme for Treatment of SARS with TCM</i></p> <p><i>Recommended Programme for Treatment of SARS with TCM in Convalescent Stage</i></p> <p><i>Guidelines for Diagnosis and Treatment of SARS in TCM</i><sup>[30]</sup></p>

TCM: Traditional Chinese medicine, SARS: Severe acute respiratory syndrome, COVID-19: Coronavirus disease 2019

**Table 4: Comparison of the resource investments for traditional Chinese medicine-based prevention and treatment of coronavirus disease 2019 and severe acute respiratory syndrome in clinical settings**

COVID-19	SARS
Until February 17, 2020, more than 630 TCM hospitals in 28 provinces (autonomous regions and municipalities) have sent more than 3100 doctors and nurses to support Hubei <sup>[34]</sup>	According to incomplete statistics, 2163 doctors and nurses from 96 TCM hospitals were sent to 195 designated hospitals to participate in the treatment of SARS. This accounted for 52.3% of the total number of designated hospitals <sup>[35,36]</sup>
Thirty-one provinces (autonomous regions and municipalities) as well as the Xinjiang Production and Construction Corps have set up provincial expert teams on TCM <sup>[18]</sup>	1822 TCM hospitals had set up fever clinics and received 278,400 patients. <sup>[35,36]</sup>

TCM: Traditional Chinese medicine, SARS: Severe acute respiratory syndrome, COVID-19: Coronavirus disease 2019

**Table 5: Comparison of the resource investments in scientific research for the prevention and treatment of coronavirus disease 2019 and severe acute respiratory syndrome with traditional Chinese medicine**

COVID-19	SARS
On February 3, 2020, the national science and technology emergency research project- <i>Clinical Research on Prevention and Treatment of COVID-19 with Integrated Traditional Chinese and Western Medicine</i> -was started <sup>[34,37]</sup>	On April 9, 2003, the National Administration of Traditional Chinese Medicine urgently started the scientific research project, <i>Special Clinical Research on the Treatment of SARS with Combination of Traditional Chinese and Western Medicine</i> <sup>[38]</sup>
The other science and technology emergency research project- <i>Research on Prevention and Treatment of SARS-CoV-2 by TCM</i> -was also started quickly <sup>[34,37]</sup>	On May 29, 2003, the P3 laboratory of the Institute of Basic Theory for Chinese Medicine, China Academy of Chinese Medicine Science, was transformed into a laboratory with the conditions needed for experimental research on SARS virus <sup>[27]</sup>

TCM: Traditional Chinese medicine, SARS: Severe acute respiratory syndrome, COVID-19: Coronavirus disease 2019

investments for scientific research in TCM between the COVID-19 and SARS epidemics. In clinical settings, compared with that during the SARS epidemic, a higher number of TCM doctors and nurses have been involved in supporting the Hubei Province in the fight against the COVID-19 epidemic. Thirty-one provinces (autonomous regions and municipalities) as well as the Xinjiang Production and Construction Corps have set up provincial expert teams on TCM. TCM-based prevention and treatment of COVID-19 has been carried out more comprehensively. In scientific research, the projects involving special emergency have been initiated more rapidly. These projects are led by academicians to solve key scientific and technological problems.

## COMPARISON OF THE PREVENTION AND TREATMENT EFFECTS

Since the outbreak of COVID-19, TCM has been at the forefront of the anti-epidemic fight and achieved good results. Until February 17, 2020, a total of 60,107 confirmed cases were being treated with TCM, accounting for 85.20% of the total reported cases, as compared with 58.28% during the SARS period. Table 6 lists the effects of TCM on the prevention and treatment of COVID-19 that have been reported in some provinces (municipalities). It also lists the effects of TCM on the prevention and treatment of SARS in some designated hospitals in Guangzhou and Beijing.

## SUMMARY AND PROSPECT

Epidemic diseases have been recorded historically as early as during the Spring and Autumn and the Warring States periods.<sup>[43]</sup> TCM has long recognized that the epidemic of

plague was the result of the comprehensive actions of many factors in a given time and space. A physician named Youke Wu, at the end of the Ming Dynasty, wrote *The Theory of Febrile Diseases*. It was the first monograph on febrile diseases in the history of medical development in China.<sup>[44]</sup> In modern times, TCM is still advantageous for the prevention and treatment of plague. It has made an important contribution to the prevention and treatment of COVID-19 and SARS. However, in the early stage of the SARS epidemic, limited attention was paid on the role of TCM in the prevention and treatment of SARS. At that time, there was no effective treatment for SARS in modern medicine. However, the hospital of TCM in Guangdong Province successfully treated patients with SARS using integrated traditional Chinese and Western medicine. It was only then that people gradually realized the importance of TCM. The advantages of early TCM-based treatment and the opportunity to collect a large amount of data were missed.<sup>[45]</sup>

In recent years, some important policies related to TCM have been issued, such as *Opinions of the State Council on Supporting and Promoting the Development of Traditional Chinese Medicine*, *Law of the People's Republic of China on Traditional Chinese Medicine*, and *Opinions of the Communist Party of China Central Committee and the State Council on Promoting the Inheritance and Innovative Development of Traditional Chinese Medicine*. This support for TCM has led to new opportunities for its development. Compared with that during the SARS epidemic, TCM has participated earlier, faster, and more comprehensively in the front line of the fight against the COVID-19 epidemic. In terms of preventive and treatment strategies, the National Administration of Traditional Chinese Medicine set up a leading group for the rapid prevention

**Table 6: Comparison of the preventive and therapeutic effects of traditional Chinese medicine for coronavirus disease 2019 and severe acute respiratory syndrome**

COVID-19	SARS
<p>Until February 17, 2020, a total of 60,107 confirmed cases were being treated with TCM, accounting for 85.20%<sup>[34]</sup></p> <p>Until February 14, 2020, the participation rate of TCM in twenty designated hospitals in Beijing was 90%, and the total effective rate was 81%<sup>[39]</sup></p> <p>Until February 15, 2020, there were 925 confirmed cases in Jiangxi Province. There were 878 patients who were being treated with TCM or integrated traditional Chinese and Western medicine, accounting for 95% of the reported cases. Among them, 719 patients showed improvement with an effective rate of 82%. Two hundred and thirty-nine patients were cured of COVID-19 and discharged; among them, 218 patients were treated with integrated traditional Chinese and Western medicine, accounting for 91% of the cases<sup>[40]</sup></p> <p>On February 17, 2020, the Joint Prevention and Control Mechanism of the State Council held a press conference. According to the press conference, 701 confirmed cases in ten provinces used <i>Qingfei Paidu Decoction</i>. Among them, 130 cases were cured of COVID-19 and discharged. The clinical symptoms in 51 cases disappeared, improved in 268 cases, and remained stable without further aggravation in 212 cases. The <i>Qingfei Paidu Decoction</i> has obvious curative effects on fever, cough, fatigue, anorexia, sore throat, etc.<sup>[34]</sup></p> <p>Until February 18, 2020, the total effective rate of TCM treatment among confirmed cases in 42 designated TCM hospitals in Hubei Province was 81.3%<sup>[41]</sup></p> <p>Until February 18, 2020, there were 1331 confirmed cases in Guangdong Province, and 1245 cases were treated with TCM, accounting for 93.54%. Among them, 448 cases were cured of COVID-19 and discharged; 660 cases showed improvement of symptoms, with an effective rate of treatment of 89%<sup>[42]</sup></p>	<p>Among the 5326 confirmed SARS cases in the mainland of China, 3104 cases received TCM treatment, accounting for 58.28%<sup>[35,36]</sup></p> <p>In the First Affiliated Hospital of Guangzhou University of Chinese Medicine, 73 patients with SARS were treated with TCM or integrated traditional Chinese and Western medicine. All patients were cured of SARS and discharged, with no reports of death, transfer to other hospitals, sequelae, or infection among doctors and nurses. The hospital studied the quality of life of SARS patients 1 year after they were cured and discharged from this hospital. The results showed that there was no significant difference between the SARS patients and healthy controls (<math>P&gt;0.05</math>)<sup>[4]</sup></p> <p>Twenty patients were treated with TCM in Beijing YouAn Hospital. Except one patient who died, the pulmonary inflammation in the other patients improved significantly. The mortality rate was much lower than that of patients who received non-TCM treatments in the same period<sup>[16]</sup></p> <p>The Beijing YeJin Hospital had adopted the method of integrated traditional Chinese and Western medicine. This approach shortened the course of treatment by 1/5th in 56 patients, without any death<sup>[16]</sup></p> <p>The Beijing Chest Hospital adopted TCM-based treatment for SARS. Among the 42 patients who received treatment, 14 patients had obvious signs of lesion resorption within 1 week of treatment, 3 patients needed reduced hormonal dosage, and hormone use could be successfully stopped in 4 patients<sup>[16]</sup></p> <p>Seventeen patients in the China-Japan Friendship Hospital were treated with TCM. Sixteen patients experienced a reduction in their fever within an average of 4 days and improved roentgenogram findings within an average of 10 days. After using integrated traditional Chinese and Western medicine treatment, the mortality rate due to SARS in this hospital had reduced to 2.7%, which was far lower than the average mortality rate of 7% reported among patients in Beijing<sup>[16]</sup></p>

TCM: Traditional Chinese medicine, SARS: Severe acute respiratory syndrome, COVID-19: coronavirus disease 2019

and control of COVID-19. The prevention and treatment of COVID-19 with TCM is being promoted rapidly. In terms of preventive and treatment programs, the National Health Commission and the National Administration of Traditional Chinese Medicine have issued four versions of TCM-based diagnosis and treatment programs including one revised version. Each province (autonomous region and municipality) as well as the Xinjiang Production and Construction Corps formulated provincial-level TCM-based treatment programs, in addition to those for the four provinces (regions) of Shanxi, Anhui, Fujian, and Qinghai. These programs combined the characteristics of the local climate and clinical practice. In terms of preventive and treatment measures, TCM has been used in the period of prevention, isolation, and observation; clinical treatment; and rehabilitation of COVID-19. In terms of the resource investments for the prevention and treatment of COVID-19, until February 17, 2020, more than 630 TCM hospitals in 28 provinces (autonomous regions and municipalities) have sent more than 3100 doctors and nurses

to support Hubei. Until February 21, 2020, five national TCM medical teams have been sent to Wuhan Jinyintan Hospital, Hubei Provincial Hospital of Integrated Chinese and Western Medicine, Jiangxia Fangcang Hospital, and Leishenshan Hospital. These four hospitals are important designated hospitals for the prevention and treatment of COVID-19.<sup>[46-50]</sup> The National Administration of Traditional Chinese Medicine has rapidly started two special emergency projects led by academicians to solve key scientific and technological problems. In terms of preventive and treatment effects, until February 17, 2020, a total of 60,107 confirmed cases were being treated with TCM, accounting for 85.20% of the total reported cases, which is a significant increase compared with 58.28% during the SARS epidemic. The early intervention of TCM could block further development of COVID-19, shorten its clinical course, improve the clinical symptoms of patients, reduce the use of hormones, reduce complications, and reduce sequelae. Moreover, TCM has good clinical effects and treatment prospects.

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## Conflicts of interest

There are no conflicts of interest.

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