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SPECIAL ISSUE

A MULTI-DIMENSIONAL EXPLORATION
OF THE DISSEMINATION AND
TRANSFORMATION OF
TRADITIONAL CHINESE MEDICINE
FROM A GLOBAL PERSPECTIVE



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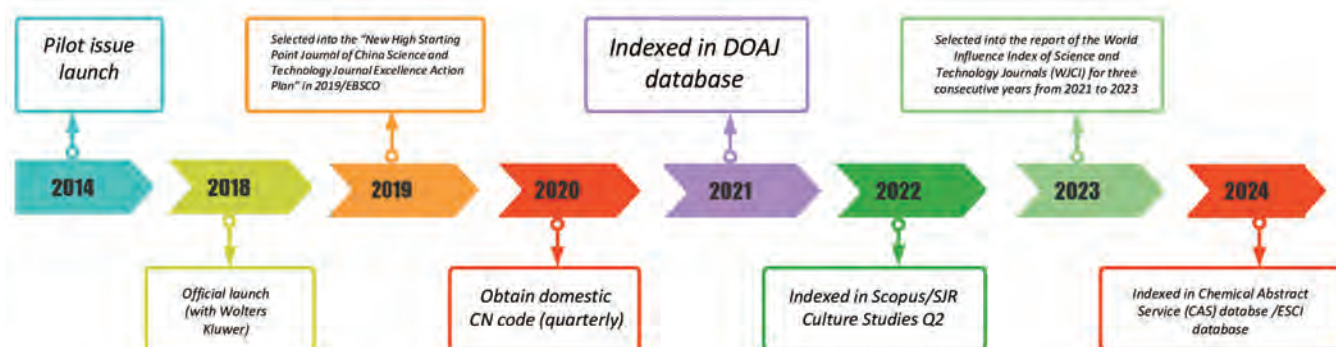
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Chinese Medicine and Culture is an interdisciplinary academic journal focusing on the study of Chinese medicine. It aims to promote communication and dialogue between researchers in the natural sciences and humanities of Chinese medicine. The objectives are to build an interactive platform for interdisciplinary research on Chinese medicine and to comprehensively reflect the high-level and latest research results of Chinese medicine in the fields of medical science research, cultural exchange and historical heritage conservation.

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Case Records as Medical Stories: A Song-dynasty Doctor's Narration of His Own Medicine—Xu Shuwei (1080–1154)

Asaf Goldschmidt^{1,*}

Abstract

The key point in studying or teaching the history of Chinese medicine is on the doctrines underlying it and on its perception of the body, physiology, pathology, and its treatment. Namely, there is often a tendency to focus on reading and analysing the classical canons and therapy-related texts including formularies and materia medica collections. However, focusing on these sources provides us with a one-sided presentation of Chinese medicine. These primary sources lack the clinical down-to-earth know-how that encompasses medical treatment, which are represented, for instance, in the clinical rounds of modern medical schools. Our traditional focus on the medical canons and formularies provides almost no clinical knowledge, leaving us with a one-sided narrative that ignores how medicine and healing are actually practiced in the field. This paper focuses on the latter aspect of medicine from a historical perspective. Using written and visual sources dating to the Song dynasty, clinical encounters between doctors and patients including their families are depicted based on case records recorded by a physician, members of the patient's family, and bystanders. This array of case records or case stories will enable us to narrate the interaction between physicians and patients both from the clinical perspective and from the social interaction. This paper will also discuss visual depictions of the medical encounter to provide another perspective for narrating medicine during the Song dynasty. Medical case records and paintings depicting medical encounters are exemplary of the potential of Chinese primary sources for narrative medicine.

Keywords: Clinical encounter; Medical practice; Song dynasty; Xu Shuwei; Case records

1 Introduction

One of the earliest examples of evidence of Narrative Medicine in Chinese medical sources was recorded during the 12th century, when a prominent physician of the Song dynasty authored over one hundred and fifty case records. These records provide us a glimpse of clinical medicine as practiced during this period and enable us to learn about doctor-patient relationships and clinical encounters. The medical encounter between a doctor and a patient is the epicenter of medicine. It is during these brief moments that years of preparation and training culminate in what the physician hopes would be a cure for the patient's disease. Even the slightest mistake during

these encounters can cause deterioration in the patient's condition or even lead to fatal consequences. Given the importance of the medical encounter, it is quite surprising how little we know about how it actually unfolded in practice in China before the 12th century.

This paper includes two parts. The first part, the introduction, provides a brief background about the Song-dynasty physician at the focus of this study. The second part titled "Medical Encounter in the Song Dynasty" will present various aspects concerning the medical encounter, including its location, the participants and the public characteristics of the encounter, the missing voice of the patient, diagnosis procedures, and treatment.

2 Song physician Xu Shuwei's medical case histories

In 1149, a Song physician, Xu Shuwei (许叔微, 1080–1154), finished compiling a first-of-its-kind book—a collection of his medical case records—*Shang Han Jiu Shi Lun* (《伤寒九十论》 *Ninety Discussions on Cold Damage Disorders*, from here onward, *Ninety Discussions*) (Note 1). Additionally, he published over sixty additional case records in his widely known formulary titled *Pu Ji Ben Shi Fang* (《普济本事方》 *Basic Formulary for the General Welfare*) (Note 2). A physician publishing his case records was unheard of prior

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to the twelfth century, predominantly since such a physician would undercut his own and his lineage's livelihood. This changed once scholar-officials took interest in medicine during the Song dynasty.^{1,2} Xu, who was a doctor but passed his civil-service examinations in 1132 when he was 52 years of age, is one of the most prominent representatives of this trend.

Xu authored this collection of cases probably in response to a changing medical environment, in which newly printed government-sponsored ancient medical treatises became widely accessible to physicians, revealing a theoretical and practical gap between the contents of the older canons and contemporary practice. This was especially true for the availability of the *Shang Han Za Bing Lun* [《伤寒杂病论》 *Treatise on Cold Damage and Miscellaneous Disorders*, better known as the *Shang Han Lun* (《伤寒论》 *Treatise on Cold Damage Disorders*, in short the *Treatise*)] by Zhang Ji [张机, ca. 150–219 CE, also known as Zhang Zhongjing (张仲景)] (Note 3). It seems that Xu chose this innovative narrative style in order to convey his understanding of the *Treatise's* doctrines and practices and their integration with contemporary medical knowledge. In other words, he chose the medical-case-history genre as a means of transmitting both his own clinical medical knowledge and how it fits with his interpretation of newly available ancient classical medical knowledge concerning cold damage disorders. In each case, Xu described the specific encounter and its circumstances, the relevant underlying doctrines as Xu understood them from the canons, the clinical knowledge he used to treat the patient at hand, and information about how he communicated with patients, their families, and with other healers competing with him for livelihood. In the next section, I will first present Xu's personal history, then introduce his published books, and, finally, describe the structure and content of his medical case histories.

2.1 Xu Shuwei's personal history

Xu Shuwei was a Song-dynasty physician from a locality named Baisha (白沙) in Zhen Prefecture (真州) (present-day Jiangsu). He came from a poor family that was not part of a lineage of physicians; however, his father apparently at one point served as a physician in the military.^{3,4} When Xu was eleven, his father succumbed to a "seasonal epidemic" (*Shi Yi* 时疫). A few months later, a hundred days to be precise, he lost his mother to a disease as well.⁴⁻⁶ This traumatic loss occurring at such a young age took a great toll on young Xu. This is evident from the preface he wrote to his formulary decades later:

"When I was eleven years old, we continuously encountered family misfortune. My father caught a seasonal epidemic, and my mother had a syndrome called *Qi Zhong* (气中) disorder (Note 4). Within one hundred days, I had lost them both. I was anguished by the thought that there was not a single good doctor in our

village [who could help them]. Initially, my mother and I, and then I alone waited powerless for the [inevitable] end. When I grew up, I painstakingly read all available formularies [that I could find]. I swore wholeheartedly to devote my life to saving all living beings. Amid the darkness there seems to have been something that guided me as the years went by. Now I am old and have already collected an extensive number of proven formulas. I also have come to the point of ascribing new meaning [to medicine]."^{7,8}

At the beginning of his formulary, where he presented his mother's disease as a case record, Xu reiterated his frustration with the inadequate medical care available to his family during his parents' sickness. He described her symptoms and the treatment she received only to conclude that if the attending physician had been competent, he should have realized that he had misdiagnosed her. In fact, Xu claims, she had a disease that could have been easily treated and cured. Xu provided his after-the-fact diagnosis as well as the recommended treatment for the correct disease of his mother in this case history while expressing his own grief and reiterating the incompetence of the attending doctor.⁹ The separate "parallel chart" of modern-day narrative medicine is arguably integrated into this deeply personal medical case history.

The inability of local physicians to help his ailing parents and prevent their deaths, as well as the need to earn a living to support himself as an orphan, motivated Xu to study medicine. He focused on cold damage disorders since his father's disorder fell under this general category of disorders. Besides pursuing a medical career, Xu never relinquished his dream of passing the civil-service examinations. In 1132, after repeatedly failing them, he finally passed the highest level of the imperial examinations, ranked fifth in the empire no less, and became an official at the age of fifty-two. Subsequently, he was appointed to a number of official teaching and scholarly positions, including serving as a scholar at the Imperial Hanlin Academy. Consequently, he acquired the nickname *Xu Xue Shi* (许学士 Xu the Scholar). Xu was a prolific writer, authoring eight titles; however, only four of his texts have survived to the present.¹⁰ The renowned Qing-dynasty doctor Xu Bin (徐彬) (fl. late 17th century) summed up Xu Shuwei's standing among those who studied cold damage disorders: "from antiquity, among the sages of cold damage only Zhang Zhongjing [stands out]. Of those who promoted and honored [Zhang] Zhongjing and interpreted [his work], singly Xu Shuwei was the best."¹¹⁻¹³

2.2 Xu's books

Xu Shuwei authored eight books in total. However, four of his earlier books were lost during his flight south due to the Jurchen invasion to China in 1127. His later four books survived to the present. They included three titles focusing on cold damage disorders and a formulary. The

latter became Xu's most famous book. The surviving books were:

1. *Shang Han Bai Zheng Ge* (《伤寒百证歌》) *Hundred Mnemonic Verses on Cold Damage Manifestations*, in five *juan* – completed around 1135.
2. *Shang Han Fa Wei Lun* (《伤寒发微论》) *Subtleties of Cold Damage Revealed*, in two *juan* – completed around 1135.
3. *Pu Ji Ben Shi Fang* (《普济本事方》) *Basic Formulary for the General Welfare*, in ten *juan*, the formulary included about 60 case records) – completed after 1143.
4. *Shang Han Jiu Shi Lun* (《伤寒九十论》) *Ninety Discussions [case records] on Cold Damage*, one *juan*, the collection of 90 case records) – completed after 1149.

Xu Shuwei, like many physicians during the late eleventh and early twelfth centuries, struggled with the incongruence between contemporary medical practice and the contents of the newly available government-printed edition of the *Song Ben Shang Han Lun* (《宋本伤寒论》) *Song Edition of the Treatise on Cold Damage*). The availability of this centuries-old, unadulterated and not updated medical knowledge dated to the 3rd-century CE, provided a unique challenge since it did not conform to contemporary, Song-dynasty medical practice. Xu and his peer physicians highly regarded this text, which doctors had praised and coveted for centuries while only a handful had access to it (Note 5). Xu praised the importance of the *Treatise* but also warned his readers, “Discussing cold damage disorders without reading Zhang Zhongjing’s book [the *Treatise*] is like discussing Confucianism without first understanding the six canons of Confucius.¹⁴” This statement suggests that Xu thought that contemporary physicians diagnosed and treated patients afflicted by cold damage disorders according to fixed patterns of symptoms based on accumulated know-how without understanding the underlying causes and the pathology of the disease according to the doctrines of the *Treatise*.

Xu's three books on cold damage disorders complement each other while serving different purposes. The first made knowledge about cold damage disorders accessible and easy to memorize by rewriting the information in rhymes. The second summarized and simplified representation of cold damage pathology. In this paper, we will focus predominantly on the third one. Xu's *Ninety Discussions* was a collection of ninety of his own medical case histories spanning a period of a few decades. Of Xu's books concerning cold damage disorders, this one has the least documented history. All three of Xu's cold damage books were printed probably during the Qiandao (乾道) reign period (r. 1165–1173) of the Southern Song dynasty (1127–1279). Unlike the other two books, the *Ninety Discussions* quickly fell

out of circulation, to the point of being considered lost. The earliest fragments of this book, ten discussions, appear in *juans* 3614-3615 of the *Great Compendium of the Yongle Era* (永乐大典), completed in 1408 from the Ming dynasty. A printed version of the book resurfaced during the Qing dynasty in the hands of an avid book collector named Zhang Jinwu (张金吾 1787–1829) (Note 6).^{15,16} Nevertheless, case histories from Xu's *Ninety Discussions* were quoted abundantly, often verbatim, in various medical books and Ming-dynasty collections of case histories (*Yi An* 医案), including in the renowned *Ming Yi Lei An* (《名医类案》) *Cases of Famous Physicians Arranged by Category*.¹⁷ The *Ninety Discussions* we possess at present has no preface or introduction to elaborate on the author's goals or intentions; there is also no information regarding the selection method of its content. With no evidence to rely on, we can only assume that Xu himself chose the cases in the book. Perhaps this selection indicates that these were the best possible examples of the knowledge he wanted to transmit to his readers.

Xu Shuwei's most famous book, completed in 1143, was a formulary, titled *Basic Formulary for the General Welfare* (《普济本事方》), in short, *Basic Formulary*). The *Basic Formulary* included ten chapters or *juan* and these were divided into 23 disease categories. It included more than 370 prescriptions (including acupuncture and other healing methods). This book focuses on the treatment of miscellaneous diseases including cold damage disorders, seasonal disorders or epidemics, and gynecological treatments, just to name some of the diseases discussed. The book records prescriptions originating from ancient sources, prescriptions arising from Xu's accumulated experience as a physician, prescriptions of Xu's contemporaries, and even what we would label “folk remedies”. The concluding part, titled the *Zhi Yao Zhi Du Zong Li* (治药制度总例 General Examples on the Preparation of Treatment Medicines), records the preparation methods of eighty-eight kinds of medicines. In addition to recording prescriptions and the symptoms they treat, Xu included over one hundred case records of various disorders to explain his diagnosis, syndrome differentiation, and treatment. He even included in his formulary cases of his own illnesses and medical issues of his family members. In fact, as discussed above, in the preface to this formulary Xu discussed his mother's death due to a physician misdiagnosing her disease as a case record. Xu provides many citations from Song-dynasty reprinted ancient canons to provide authority and doctrinal foundation for the prescriptions he listed. The canon he quotes the most is Zhang Zhongjing's *Treatise on Cold Damage Disorders*.

2.3 Xu's cases: structure and content

All the 90 cases in Xu's *Ninety Discussions* follow a similar general structure. About 50 of the case histories

also include a discussion segment, which further elaborates on various issues, such as differential diagnosis or treatment in the specific case. Each of the cases begins with some personal details about the patient, such as their name, locale, social status, and sometimes even the patient's rank or personal relationship to Xu. Next, Xu details the duration of the disease, its major symptoms, and its changes or development over time. The list of symptoms that follows is rather detailed, especially in comparison to other medical records surviving from the Tang and Song dynasties. The most important detail Xu provides is the type of pulse that he palpated at the patient's wrists. In some cases, Xu delineates the symptoms in a specific order to single out one symptom that requires the physician's closer attention since the diagnosis hinges on it. In some of the cases, Xu documents the treatment that other doctors prescribed to the patient in order to point out its problems, how it was the result of a misdiagnosis, and in some cases how it exacerbated the patient's condition. Once Xu has stated his diagnosis of the patient's disorder, he lists the corresponding treatment. In the majority of the cases, Xu applies a formula taken from Zhang Zhongjing's *Treatise* as a treatment. However, in at least three cases, Xu specifically states that the *Treatise* does not record a treatment for the condition but that he has devised a treatment based on his own clinical experience (Note 7). This evidence demonstrates that as much as he revered the *Treatise*, his own accumulated clinical experience was just as important. Following the proposed treatment, Xu often provides a short quotation from the *Treatise* and then a description of the effects of the treatment on the patient. In some of the cases, Xu expands on the clinical scene and records conversations or debates he had with members of the patient's family or with physicians present at the scene. In these dialogues with patients, family members, and even other physicians, Xu answers direct questions posed to him regarding his diagnosis, treatment, and the sources of his knowledge.

As mentioned above, about 50 of Xu's case records do not end after his report of the outcome of the patient's disorder but also include a second part titled "Lun" (论 discussion). This part of the case record consists of a theoretical discussion concerning the origin of the symptoms, the rationale behind the diagnosis of the manifestation type, or an explanation of the treatment. This discussion is unique to Xu's case histories; in fact, it is here that Xu details how his clinical case record draws from the doctrines and practices of the ancient medical books reprinted during the Northern Song dynasty. In some of the cases, the discussion is almost a verbatim repetition of sections from Xu's second book, *Subtleties of Cold Damage Revealed*. Once Xu came up with the idea to employ case histories as a means to facilitate the transmission of clinical knowledge, he readily incorporated these earlier discussions into the new format.

3 The clinical encounter as depicted in the cases

In the majority of Xu's cases, members of the patient's family initiated the medical encounter seeking help. Once they realized their relative, the patient, was not healing or getting better spontaneously, they invited a physician to their residence to diagnose and treat the patient. Usually, they did not limit themselves to summoning just one physician; rather, they invited a few doctors, either sequentially or concurrently. In these cases, Xu recorded that other physicians diagnosed the patient and applied their treatment with no improvement. This may have been a didactic means by Xu Shuwei to exemplify to the reader some possible incorrect diagnoses and treatments and their consequences. In some cases, the patient's condition following the other doctor's deteriorated leading the family to call in yet another physician, sometimes after the first physician fled the scene.¹⁸ In other cases, they invited a number of physicians at the same time and asked each of them to diagnose the patient, present their differential diagnosis, and propose a treatment. The family, then, had to decide which physician would treat the patient. In other words, members of the patient's family had complete control over the encounter and made the essential decisions concerning which physician to trust for the diagnosis and treatment. We have to wonder, however, how did family members reach their decision on which doctor to choose and what diagnosis and treatment to approve? Xu's cases also suggest that non-doctors also possessed medical knowledge sufficient to allow members of the family to discuss and reach educated conclusions concerning which physician to grant permission to treat the patient.

In a limited number of cases, however, the physician was the initiator. For example, in one case Xu went to pay his respects to a newly appointed official at his office, and while there diagnosed the official's disease based on his behavior.¹⁹ In another, while staying at an inn and after hearing an irregular noise, he diagnosed the son of the Inn's owner.²⁰ Sometimes Xu was summoned to an official space, such as a military camp²¹ or in a civil-service examination hall²² to diagnose and treat patients. However, it is important to point out that these are a minority of cases in comparison to those that families summoned Xu to the patient's residence. In this section on the medical encounter, I will first analyze a visual source depicting a medical encounter, and then I will discuss the medical encounter based on Xu's written case records.

3.1 A visual depiction of the clinical encounter

Before we discuss the location of the medical encounter based on case records, I want to introduce a visual depiction of the medical encounter. It is one of the most

famous and well-known paintings in Chinese history titled *Qing Ming Shang He Tu* (清明上河图 *Qingming on the River*), painted by Zhang Zeduan (张择端, 1085–1145). There is some uncertainty surrounding the date of the painting, but good evidence points to it having been produced during the reign of Emperor Huizong (r. 1100–1126).^{23,24} The name of the scroll, *Qingming on the River*, probably refers not to the Qingming festival, but to the month of Qingming or the third month of the year.²⁵ The scroll depicts the life in the Chinese capital during the early twelfth century, including vibrant everyday life, economy and trade, collective work and play, leisurely activities (such as eating in restaurants), and even the occasional manageable daily-life drama (i.e., an out-of-control boat heading to the bridge). Focusing on the leftmost segment of the painting, we even find a physician's stall. A sign hanging horizontally over the main entryway identifies the place as the *Zhao Tai Cheng Jia* [赵太丞家 Shop of Imperial (Medical Service) Director Zhao] (Note 8, Fig 1). The sides of the stall are flanked by advertisement banners, which are only partially legible. On the left side *Zhi Jiu Suo Shang Zhen Fang Ji Xiang Wan* (治酒所伤真方集香丸 Cure the Damage of Alcohol: The Authentic Formula of Collected Fragrance Pill) (Note 9). The other single sign on the right side refers to *Chang Wei Bing* (肠胃病 disorders of the stomach and intestine). A third banner that is on the left side of the doorframe advertises remedies for the *Wu Lao Qi Shang* (五劳七伤 Five Over-exertions and Seven Injuries). All the vertical banners provide the names of recipes for common ailments, promoting the skills of the stall's occupant (Note 10).



Figure 1 Medical encounter between a physician, two ladies, and a boy as painted in the *Qing Ming Shang He Tu* (清明上河图 *Qingming on the River*) (source from: Palace Museum, Beijing).

Inside the doctor's stall, in plain view from the busy street, we see a doctor examining a small child held on his mother's lap, while another female stands by her side. There is no privacy. Anyone passing down the busy street can intervene and offer their opinion. It is important to note that Xu's cases document similar scenes. He noted when outside hecklers sometimes offered their unsolicited opinions or advice. It is impossible to conclude additional details concerning diagnosis or treatment.

3.2 The social milieu in medical case records

Going back to Xu Shuwei's cases, we see that one of the most prominent features of medical encounters during the Song dynasty was the fact that mostly they occurred in a public space. The encounter did not necessarily take place outside, but it was public in the sense that participation was not limited to only a physician, a patient, and maybe an accompanying family member. In the majority of the cases, there are additional members of the patient's family, a number of doctors and healers, and sometimes even bystanders or hecklers who contribute to the encounter. This is true in many of Xu's cases, for example, in one case the medical scene includes three physicians, a patient, over a dozen family members, and Xu Shuwei.²⁶

Since cases are at the heart of my essay, I will now provide a translation of one of Xu's cases here where one finds the presence of various doctors but no family members.

Case #3: Manifestation Type [Requiring Treatment with] Magnolia Officinalis and Apricot Kernel added to Cassia Twig Decoction.²⁷

In the first lunar month of 1128, there was a military official in the city of Yizhen (仪征) who fell prisoner of Zhang Yu (张遇). He was held captive and was tied day and night [in the storage space] beneath the deck of a large ship, where he could not stretch out. After several days, he managed to escape. [Following his escape] he ate his fill, and disrobed and picked the lice off his body, after which he was quite comfortable. The next day, he came down with a cold damage disorder. A certain physician thought that he had become sick because he had overeaten, and purged him [to expel the excess]. Another doctor thought that when he disrobed, he was hit by pathogenic [qi]. Consequently, this doctor applied a sudorific [to expel the pathogen]. After the patient had received such miscellaneous treatments over several days, he gradually became confused and sleepy. He had upper panting and high breathing. The doctors who treated him panicked, not knowing what caused this [new] disorder.

I examined him and said: "This is a Mature Yang [circulation tract] disorder, one needs to purge it. When the exterior aspect is not resolved and the patient experiences slight panting, Zhang's method is to use

Cassia Twig with Magnolia Officinalis and Apricot Decoction.”

A doctor challenged me: “In my whole life, I have never used a Cassia Twig [Decoction]. Moreover, this medication is heating. How can it cure panting?”

I replied “This is not something you know about.”

After I administered one dose [of the decoction], the panting subsided. Upon administering a second dose, much sweat poured out. By evening, the patient’s body was cooler and the vessels were already harmonized.

The other doctor said “I did not know that Zhang’s methods are as divine as this.” I said: “How could his method have deceived and confused later generations? People seldom study [this topic], so they have no way to comprehend it.”

In the final sentence of the case, Xu hints about his motivation for authoring this collection of cases, namely to educate his peers about a topic they seldom studied—cold damage disorders. In general, Xu’s cases provide us with a rich database from which we can learn about various social aspects of the medical encounter. One of the most intriguing aspects of this case, however, is the role of the patient in the encounter, or lack thereof.

3.3 The missing voice of the patient

When discussing the medical encounter, either historically or in current medical literature, the patient’s voice is of a special focus. Ever since Roy Porter’s 1985 article titled “The Patient’s View: Doing Medical History from Below”,²⁸ we cannot discuss the history of medical practice without representing patients—their feelings, emotions, reactions, and perception of the disorder, its symptoms, and the ensuing treatment. Browsing through Xu’s medical cases records one realizes something is missing—it is the patient’s voice. In the vast majority of these medical cases, the patient is silent. There is no mention of the patient’s feelings, emotions, or the reaction to the doctor’s diagnosis and treatment. Even when the physician inquires about intimate issues or symptoms such as the various aspects of urination, or when a young woman is supposed to receive her period, a family member conveys the answer, not the patient.²⁹ Only when there are no family members present at the encounter, such as in a case that includes a nun, or an official in his office, then the patient answers directly.³⁰ However, even in some of the cases when the patient was alone, as in the case quoted above, Xu does not echo the patient’s voice. Even then, the patient’s input to the encounter is limited. Only a handful of cases record lengthier discussions between the physician and the patient. For example, in one case, Xu Shuwei holds the longest discussion with the patients, who are in this case a couple that transmitted the disorder from one to the other.³¹

It is not clear why the patient’s voice is missing. This may arise from the fact that these are physician’s cases,

suggesting that he may not have bothered to represent his patients adequately. It may be a social custom or some sort of respectful way to present the patient. The missing voice of the patient in Xu’s cases stands out especially when we compare his cases to late Ming-dynasty case records (医案). According to Joanna Grant’s book, the 16th-century physician Wang Ji (汪机, 1463–1539) did record the patient’s voice. Moreover, these cases often provided dialogues between the patient and the doctor concerning nuances of symptoms.³² It is noteworthy then that despite records of patients’ voices before him and afterwards, that Xu chose largely to not record his patients’ voices; rather he focused on recording details of diagnosis and treatment.

3.4 Diagnosis

Turning back to the clinical aspect of the Xu’s medical encounters, we first focus on diagnosis. The diagnosis section of Xu’s cases is limited in scope. Each of the cases lists only a few major symptoms and sometimes a pulse palpated by another doctor. When Xu arrives on the scene, he predominantly relies on palpating the pulse for his differential diagnosis. He usually stresses the importance of the pulse and uses it when debating about diagnosis with other physicians. Xu mentions or relies on other diagnostic methods sporadically. The only other diagnostic measure in his records is tongue diagnosis, where in several cases Xu provides details concerning the tongue’s texture, color, or appearance.³³ Furthermore, discussions concerning diagnosis as part of the discourse among the physicians or with members of the patient’s family are rather scant. This is surprising since diagnosis is at the heart of the clinical encounter, especially if we consider the information recorded by other physicians in their treatises. It is possible that Xu Shuwei did not provide more details about his diagnoses since he thought it was redundant or obvious, since he intended his collection of cases for an audience of physicians. In short, Xu focused less on diagnosis and much more on treatment and especially on applying prescriptions from Zhang Ji’s *Treatise* as discussed below.

3.5 Prescribing and procuring treatments

The prominent treatment strategy in Song cases was medicine therapy, predominantly in the form of *Ji* (剂 prescriptions) or *Fang* (方 formulas) made of several simples, i.e. *Yao* (药 singular medicines). The medical encounter concluded when the physician, much like present-day TCM doctors in China do, told the patient’s family what prescription or medicinal recipe would cure the patient’s disease. What is unclear from Xu’s case is whether the physician provided the family with the ingredients making the recipe. It is also unclear if, much like present-day physicians, he provided the patient’s family just a prescription name, or a list of its ingredients along

with preparation instructions. This leads to another mystery, namely who was in charge of obtaining the simples and concocting them into the medication. None of Xu's cases elaborates on this.

The majority of Xu's cases lack details on the matter, but when they do, it is telling. For example, in one of the cases Xu Shuwei treats a patient from the family of an Imperial Physician. He provides them with the prescription and then leaves. He returns after a few days for a checkup and realizes that there is no change in the patient's condition. He inquires with members of the patient's family about whether they had obtained the medicines, made the recipe, and administered it to the patient. Once they confirm that, Xu asks to see the simples. Upon examining the medicines, he scolds the patient's family members saying, "Cassia Bark and Cassia Twig are not the same [medicine]".³⁴ He then prepares the decoction and administers it to the patient, who subsequently recovers. Besides the above case and another one, written to stress a difference between two single medicines and their diverging clinical application, Xu does not name nor provide the simples needed to prepare the prescription.³⁵ The cases also do not elaborate on the preparation method of the prescription, which is essential to its efficacy.

One of the most interesting conclusions from surveying Xu's cases is the fact he almost never recorded the simples or the medicines that make up the prescription. Additionally, none of the case records specified where or how the family could have obtained the ingredients for the recipe. This is especially strange given the fact that during the 12th century, the Imperial Pharmacy had many local branches in every prefecture throughout the empire.³⁶ Moreover, even the painting mentioned above, "*Qingming on the River*", depicts several pharmacies in the capital.³⁷ It would be reasonable to assume that at least a few case records would mention the patients or their family going to the pharmacy or to a market to purchase the medicines composing the prescriptions. However, none of Xu's records includes such reference.

The Imperial Pharmacy actually may provide an explanation why Xu did not detail in his cases the singular medicines making the prescription. Since it seems physicians gave prescriptions to members of the patient's family. They, in turn, did not have to worry about the ingredients since the Imperial Pharmacy provided them, or the pharmacy sold a ready-made prescription. During the twelfth century, the government established local branches of the Pharmacy in prefectures reaching up to 10-20 branches in a prefecture.³⁸ These branches of the Pharmacy sold prepared medicine or ready-made prescriptions prepared by other segments of the Pharmacy. It is possible that patients took the prescription they received and bought the medicine in the Pharmacy to consume it.

Besides medicine prescriptions or recipes, Xu's case records document other treatments including enemas (in three cases), acupuncture, moxibustion (in several cases),

and changes recommended to the diet.³⁹ It is interesting to note, that Xu did not perform any of these treatments. Moreover, in only a handful of cases Xu returns to check on the patient. Lastly, in all of Xu's cases that he treated and recorded, the patient recovered. In a number of cases, however, Xu did not treat the patient at all, because either, he concluded that there was no effective treatment for the condition, or the family declined to use his suggestions.

4 Conclusions

Xu Shuwei's case records are rich in clinical and social details providing us a detailed depiction of the medical encounter during the 12th century. These cases provide the interactions between doctors and even their discussions concerning the correct diagnosis and treatment strategy as well as its doctrinal foundations. Xu's cases differ from earlier recorded cases, such as those of Chunyu Yi (淳于意), Bian Que (扁鹊), and Hua Tuo (华佗), since Xu's were physician's records not scribes records of physicians to be included in a historical dynasty.

Xu documented his cases to present his audience realistic situations of the medical encounters and the challenges they present to physicians. These challenges included diagnosis, differential diagnosis, choosing the adequate treatment strategy and applying it. The most formidable challenges were not clinical but social, namely convincing the patient's family as well as other doctors and participants that the physician's diagnosis and proposed treatment was the correct one. Here Xu applied his knowledge of the ancient medical canons and especially the *Treatise* to convince others that he was correct.

These 12th century cases were probably useful in the past, but they are also relevant to draw on for narrative medicine ends at present.

Notes

1. Recent studies have raised doubt concerning the authenticity of Xu's *Ninety Discussions on Cold Damage*. See, Chen RY. "Publishing with Proof: Empirical Evidence in Medicine in Song China (960–1279)". presented at "Tang-Song Transition" a conference held at Princeton, June 2022. See also, Lu MX. *Academic and Literature Review of Cold Damage Diseases in Song Dynasty* (宋代伤寒学术与文献考论). Beijing: Science Press; 2016. p. 202-204. These concerns are not new; however, there is no way to resolve the issue. The new studies raise some linguistic points about a few cases that may suggest that this book may be a later revision. However, the fact that 17 case records of *Ninety Discussions* are present almost verbatim in Xu's formulary is telling. Similarly, the fact that the majority of the roughly 50 'discussions' adjoining the cases in *Ninety Discussions* appear in

Xu's *Subtleties of Cold Damage Revealed* carry similar weight.

2. Sometimes this book can be found under the title *Lei Zheng Pu Ji Ben Shi Fang* (《类证普济本事方》 *Original Formulary of Classified Manifestation Types for Popular Relief*).

3. For further discussion concerning the definition of cold damage disorders see, Hanson M. *Speaking of Epidemics in Chinese Medicine: Disease and the Geographic Imagination in Late Imperial China*. London: Routledge Curzon Press; 2011. p. 35-37; Goldschmidt A. *The Evolution of Medicine in China: The Song Dynasty, 960–1200*. London: Routledge Curzon Press; 2009. p. 10-11.

4. This is a type of “being struck by wind” (*Zhong Feng* 中风) disorder. This disorder arises from an excess of feelings of depression or anger, which causes the liver's *qi* (气) to flow contrary to its designated path. See Li JW et al. 2005. *The Great Dictionary of Chinese Medicine* (中医大辞典). Beijing: People's Medical Publishing House (Second edition); 2005.

5. Goldschmidt A. *The Evolution of Medicine in China: The Song Dynasty, 960–1200*. London: Routledge Curzon Press; 2009. chap. 5. The best evidence for the limited accessibility of the *Treatise* before the Song dynasty can be found in the Tang dynasty physician Sun Simiao's (孙思邈) preface to his *Bei Ji Qian Jin Yao Fang* (备急千金要方 *Essential Prescriptions Worth a Thousand Gold Pieces for Emergencies*), where he comments that “in Jiangnan (江南 a region in South China) there are various masters who conceal Zhang Ji's essential formulary and do not transmit it.” It took Sun thirty years to obtain part of the *Treatise* in 682. See Sun SM. *Essential Prescriptions Worth a Thousand Gold Pieces for Emergencies* (备急千金要方). Beijing: Huaxia Publishing House; 1993. Chaps. 9 and 10.

6. See also, Lu MX. *Academic and Literature Review of Cold Damage Diseases in Song Dynasty* (宋代伤寒学术与文献考论). Beijing: Science Press; 2016. p. 201. The surviving printed copy we have today is dated to 1853 (咸丰三年) and is part of the *Lin Lang Mi Shi Cong Shu* (琳琅秘室丛书 vol. 11).

7. For example, see cases 4, 9, and 10 in Goldschmidt A. *Medical Practice in Twelfth-century China – A Translation of Xu Shuwei's Ninety Discussions [Cases] on Cold Damage Disorders*. Cham: Springer; 2019. From here on, all reference to Xu's cases are to this translation.

8. An abbreviation for *Tai Yi Ju Cheng* (太医局丞), also abbreviated *Tai Yi Cheng* (太医丞), a position in charge of the Imperial Medical Service, established during the Xining period (1068–1077) and continued into the Southern Song (Hacker). See Hinrichs TJ. *Picturing medicine in daily life: court and commoner perspectives in Song era paintings*. In: Lo V, ed. *Imagining Chinese Medicine*. Leiden: Brill Press; 2018. p. 243-245.

9. *Collected Fragrance Pills* is a prescription recorded in a number of sources, including *Formulary of the Bureau of Taiping People's Welfare Pharmacy* (太平惠民和济局方).

10. For additional information concerning the banners, refer to Hinrichs TJ. *Picturing medicine in daily life: court and commoner perspectives in Song era paintings*. In: Lo V, ed. *Imagining Chinese Medicine*. Leiden: Brill Press; 2018. p. 243-245.

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Author contributions

Asaf Goldschmidt drafted and reviewed the article.

Conflicts of interest

The author declares no financial or other conflicts of interest.

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Acupuncture Legislation in the United States: Minnesota as a Case Study

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Abstract

2023 marks the 50th anniversary of legal regulation of acupuncture in the United States, as the first acupuncture law was enacted in Nevada. Acupuncture, like any other medical modality, is regulated at the state level, with each state formulating and enforcing its own laws and statutes over time. This article narrates the legislative process and major developments of the acupuncture profession in Minnesota, in the context of legislative developments across the country. It tells how this midsize, Midwest state's acupuncture profession became regulated, and examines the challenges faced by the profession before and after state statutes were enacted. Minnesota stands as a representative example of the legislative process in other states.

Key words: Acupuncture; Acupuncture law; Legislature; Minnesota Acupuncture Association; Minnesota Board of Medical Practice; Minnesota Department of Health

1 An overview

In 1973, Nevada became the first state to adopt a system of licensure for acupuncturists, and, more broadly, for Chinese medicine. In 1974, Oregon conducted the first formal examinations of candidates for licensure after passing its acupuncture law in the previous year. New York adopted a standard for licensure in 1975, although its acupuncture law was not actually passed until 1991. Today 47 states (with the exception of Alabama, Oklahoma, and South Dakota), plus the District of Columbia, have instituted acupuncture statutes and license the professional practice of acupuncture (Table 1).^{1,2} Most states designate their practitioners as “Licensed Acupuncturist”, while “Doctor of Acupuncture” is the legal title in Rhode Island; “Acupuncture Physician” in Florida; “Doctor of Oriental Medicine” in New Mexico; “Doctor of Oriental Medicine” or “Acupuncture Assistant” in Nevada; and “Acupuncture Assistant” in Louisiana. California uses both “Licensed Acupuncturist” and “Certified Acupuncturist” to designate its practitioners.

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Licensure in most states requires candidates to pass the examinations provided by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM), with the exception of California and Nevada, which have their own examinations. Most states have separate acupuncture boards to govern the practice of acupuncture, such as the State Board of Acupuncture and Related Techniques (Arkansas) and the Acupuncture Board of the Department of Consumer Affairs (California), while some states choose other governance options such as the Board of Medical Practice (Minnesota), Department of Public Health (Connecticut), Department of Regulation and Licensing (Wisconsin), or Committee on Acupuncture under the Board of Registration in Medicine (Massachusetts).³ The acupuncture boards in most states generally consist of acupuncturists who review applicants and regulate the practice of acupuncture. States which regulate acupuncture practice through their Medical Board or Department of Public Health generally have an advisory board to assist the review of applicants and regulation of the field. Thirty-two states allow medical doctors to practice acupuncture without specific training, while 11 states, plus Washington D.C., clearly indicate that acupuncture is not in the scope of practice of an MD without specific training. Seven states remain undetermined on this issue. Only seven states allow doctors of chiropractic to practice acupuncture without specific training, while 35 states, plus Washington, D.C., clearly stipulate that acupuncture is not in the scope of practice of a doctor of chiropractic without specific training, and 5 states are undetermined. The practice of Chinese herbology is included in the definitions of acupuncture and Oriental medicine in states such as Florida, Minnesota,

Table 1 Chronology of State Acupuncture Legislation in the United States (source from: Wang TF, *Acupuncture's Diversified Development in the United States* (《针灸在美国的多元化发展》). Beijing: China Medical Science and Technology Press; 2016, and NCCAOM Website: <https://www.nccaom.org/>)

Year	State passing acupuncture law
1973	Nevada, Oregon, Maryland
1974	Hawaii, Montana, South Carolina
1975	Louisiana, California
1978	Rhode Island
1981	New Mexico, Florida
1983	New Jersey, Utah
1985	Vermont, Washington
1986	Massachusetts, Pennsylvania
1987	Maine
1989	Colorado, Washington, D.C.
1990	Alaska
1991	New York
1993	Iowa, North Carolina, Texas, Virginia
1995	Connecticut, Minnesota
1996	West Virginia
1997	Illinois, New Hampshire, Arkansas
1998	Arizona, Missouri
1999	Indiana, Idaho
2000	Georgia, Tennessee, Ohio
2001	Nebraska
2006	Michigan, Kentucky
2008	Delaware
2009	Mississippi
2015	North Dakota
2016	Kansas
2017	Wyoming
?	Alabama, Oklahoma, and South Dakota

California, Texas, New Mexico, and Oregon, while no clear definition is provided in many other states.³

Most states require NCCAOM certification as a basis for licensure,³ but each state specifies which particular NCCAOM examinations it requires for licensure. For NCCAOM certification in acupuncture, NCCAOM requires passing four exams: Foundations of Oriental Medicine; Acupuncture with Point Location; Biomedicine; and Clean Needle Technique. For NCCAOM certification in Oriental medicine, candidates must also pass the Chinese herbology exam. In New Mexico, Oriental medicine licensure does not require NCCAOM Oriental medicine certification, but does require passing the other four exams. In Arkansas, acupuncture licensure requires NCCAOM Oriental medicine certification, which means passing all exams including the Chinese herbology exam.

In New York and Wisconsin, licensure for practicing acupuncture only requires passing the Foundations of Oriental Medicine and Acupuncture with Point Location exams, not the Biomedicine exam. Illinois, Massachusetts, New Jersey, Ohio, and Washington, D.C. require Chinese Herbology or Oriental Medicine certification in order to prescribe Chinese medicinal herbs. In Pennsylvania and Vermont, Acupuncture certification is not required; however, passage of the Chinese Herbology exam is required to practice herbs.

Dr. Arthur Yin Fan (樊莹) has authored or co-authored a series of articles published in the *Journal of Integrative Medicine* regarding acupuncture legislation at the state level, specifically in Nevada, California, and Virginia, and has documented some leading figures in promoting acupuncture legislation in the United States.⁴⁻¹⁵ In the early stage of acupuncture legislation, an intensive discussion by the medical and legal communities was held.¹⁶⁻²⁴ Following Dr. Fan's example, I will present an inside view, as a participant and witness, of the history of acupuncture legislation in Minnesota, highlighting some unique features of the Minnesota legislative process.

My involvement in the Minnesota acupuncture community has extended over 30 years. It has been my privilege to become acquainted with the acupuncture pioneers and activists who drove the legislative process, and to join them in their long struggle for professional recognition. Minnesota's professional association, the Minnesota Acupuncture Association (MAA), has changed its name several times since its inception in 1978 as the Acupuncture Society of Minnesota (ASM) (Note 1). Between 1995 and 2023, I supported the Association in many ways: as its continuing education Chair; as a frequent contributor to its newsletter, *The Meridian*; as a host for continuing education seminars and Association Board meetings; and as an ally in its legislative lobbying (Fig. 1). I was involved in the legislative battle that resulted in the official regulation of acupuncture as a licensed practice in 1997, in the insurance controversy that resulted in the Equal Access to Acupuncture Act of 2009, and in the struggle to reclaim dry needling as an acupuncture technique, rather than a physical therapy modality.

2 Four stages of Minnesota acupuncture legislation

The early stages of acupuncture legislation provoked intense discussion in medical and legal communities across the country. Dr. Arthur Yin Fan¹² and Dr. Yong Ming Li (李永明)²⁵ describes a particularly dramatic process in the pioneering state of Nevada. In Minnesota, before the 1997 licensing statutes were passed, things were more low-key: on one hand, acupuncture was never prohibited, nor subject to serious police surveillance or harassment as it was in New York and Washington, D.C.; on the other hand, the medical community by and large took a non-supportive stance.

established the efficacy of acupuncture in the treatment of substance abuse. These groundbreaking clinical trials are discussed in the next section of this article (1985–1995) in some detail.

Nancy Vitalis deserves inclusion as one of the early acupuncture pioneers in Minnesota. She studied five-element style acupuncture with Jack Reginald (known as J.R.) Worsley in England, and contributed that perspective to the acupuncture community in Minnesota.

A number of chiropractors who were practicing acupuncture in the 1980s were enthusiastic about its benefits, and were very supportive of acupuncture regulation. These included Russell De Marais, Robert Thatcher, Jay Greenberg, and Victor Youcha. Chiropractic doctor Robert Thatcher was the first person in Minnesota to post a sign advertising acupuncture outside his office. He was subsequently charged for practicing medicine without a license by the Minnesota Board of Medical Practice. Commenting on this incident, Edith Davis said “His case never went to trial, but it reinforced the paranoia that kept practitioners underground.”

Some highlights of early professional development in Minnesota include:

In 1982, the first acupuncture clinic in Minnesota—Bao Jen (Good Health) Clinic—opened in south Minneapolis. Practitioners at Bao Jen included Edith Davis, Edith’s daughter Barbara Davis, Patricia Culliton, Michael Helffrich, and Jean Yu. Blue Carstenson, a former lobbyist and Department of Health employee, was Bao Jen’s clinic administrator. Jean Yu was trained in Fujian, China and was the first Chinese-trained practitioner and teacher in Minnesota. Also in 1982, Patricia Culliton started the Acu-Center on Grand Avenue in St. Paul and established a connection with Hennepin County’s detox/chemical dependency community.

In 1983, Edith Davis established The Healing Point clinic in Richfield, a suburb of Minneapolis. Edith had been informally teaching Chinese medicine to a group of interested students in her home since 1978, and her clinic now served as an observation opportunity for her students.

In 1988, John Harvey established the Northern School of Chinese Medicine in Minneapolis. The school relocated to Northwestern Chiropractic College in the Minneapolis suburb of Bloomington for a few years and closed in 1992. This short-lived school was really the first professional acupuncture school in Minnesota, and trained a group of graduates who were actively involved in the early days of state acupuncture legislation.

In 1990, Edith Davis moved her Healing Point clinic to Minneapolis and founded the Minnesota School of Acupuncture and Herbal Studies—soon to be renamed the Minnesota Institute of Acupuncture and Herbal Studies (MIAHS)—at that location. MIAHS offered a diplomate degree in acupuncture and herbal studies. I visited Edith’s clinic in 1990 with my wife, Wei Liu (刘伟), who graduated from Shandong University of

Traditional Chinese Medicine in Jinan, China. Edith immediately recruited Wei Liu to become an instructor in MIAHS’ Chinese medicine program.

2.1.2 Establishment of state and national acupuncture organizations

As noted earlier, Sean Marshall and Edith Davis established the ASM in 1978. ASM’s mission was to advance the art of acupuncture through public information and education, promote licensure for acupuncturists, and maintain high professional and ethical standards. As noted at the end of this article, the Association has changed its name multiple times since its inception.

On February 5th, 1979, ASM held its first public meeting at Hamline University in St. Paul. The meeting featured Dr. Richard Stallard, DDS, who was a company director and department head of periodontology at Group Health Plan, Inc., in St. Paul. At the meeting Dr. Stallard presented a lecture, “Chinese and Western Medicine: A Common Denominator”, distributed a report on Progress of Licensure for Acupuncturists in Minnesota, and showed a film titled “Acupuncture in America Today”.

Minnesota acupuncturists soon became engaged in national efforts to organize the profession. A landmark event in the development of acupuncture at the national level was the 1982 Chicago conference, which drew educators and state organizers from around the country. Edith Davis attended the conference and assumed a position on the board of directors for the newly established National Commission for the Certification of Acupuncture (NCCA) from 1982 to 1990. According to Edith, the 1982 Chicago conference was “... the hatching ground of the present national network of professional agencies. At that meeting, the plans were laid for development of the Council of Schools, the Accreditation Commission and the NCCA”. All the participating leaders at the Chicago conference joined the newly formed American Association of Acupuncture and Oriental Medicine (AAAOM) which began to coordinate and direct the state and national organizations.

The National Council of Acupuncture Schools and Colleges (NCASC), founded in 1982, made acupuncture education and the establishment of professional standards its primary mission. To ensure that educational programs were standardized and monitored, NCASC instituted the National Accreditation Commission for Schools & Colleges of Acupuncture & Oriental Medicine (NACSCAOM), later changed its name as the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) and now known as the Accreditation Commission for Acupuncture and Herbal Medicine (ACAHM). In 1993, the NCASC articles of incorporation were amended to change the organizational name to Council of Colleges of Acupuncture and Oriental Medicine (CCAOM), and is now the Council

of Colleges of Acupuncture and Herbal Medicine (CCAAM). ACAOM was recognized as an official accreditation agency by the US Department of Education in 1990. The third major organization founded in 1982 was the NCCA, now known as the National Commission for the Certification of Acupuncture and Oriental Medicine (NCCAOM). NCCAOM is responsible for administering the national board examinations for certifying acupuncture practitioners. NCCA offered its first certificate exam in 1985. Minnesotans Patricia Culliton, Victor Youcha, Les Crawford and Patti Clucas traveled to New Jersey that year to take the test, and to Chicago to receive their certificates.

2.1.3 Legislative efforts

In 1979, ASM representatives Edith Davis and Michael Helffrich participated in their first meeting with Minnesota Department of Health's Human Services Occupational Advisory Council. ASM took on the challenge of acupuncture regulation in Minnesota, and began by organizing its stakeholders. ASM created organizational bylaws, actively recruited ASM members, and established contacts with state regulatory agencies. An article in the February, 1981 ASM Newsletter summarized the state's approach to acupuncture regulation as follows: "The commissioner of Department of Health, Dr. Petterson announced his decision to regulate the practice of acupuncture by establishing 'limited practice standards.' A Technical Advisory Group is being formed to develop the rules which will be included in a bill that the Minnesota Department of Health will send to the legislature. These rules will not include educational requirements or proof of competency. This form of regulation is very different from licensure, which limits practice to individuals who meet established criteria. The intent of this regulation is to allow the orderly emergence of an occupation that has been in part an underground practice."

The process for passing regulatory laws or statutes in Minnesota requires that both the House and the Senate sign off on the legislation. Based on demand from a constituent, a bill is drafted either by a senator in the Senate, or by a representative in the House, and is then sent for discussion and approval to a House or Senate committee. After a bill is passed by the committee, the bill is sent to the House floor or Senate floor for further discussion and a vote. If it passes the House first, then the bill will be sent to the Senate for a vote. If it passes the Senate first, then the bill will be sent to the House for a vote. Some modifications might be made before both the Senate and House to pass a bill. After both the Senate and House pass a bill, it is sent to the governor to sign into law.

In 1982, Minnesota State Representative Karen Clark and Senator Linda Berglin introduced acupuncture regulation based on a bill drafted by Karen Clark.

Representative Clark had studied acupuncture before becoming a legislator in 1981. The bill was intended to regulate the practice of acupuncture itself, rather than the acupuncture practitioner, and focused on sanitary practices, sterile needles and confidential records. Therefore, licensure for acupuncturists was not at issue in this bill. Representative Clark's bill did not pass the committee stage, and the 1982 legislative session closed without any action on acupuncture regulation. However, the 1982 Yellow Pages listed a group of "certified acupuncturists" for the first time, putting pressure on regulatory agencies to pay attention to this emerging profession.

2.2 Lead-up to legislation: a decade of development (1985–1995)

In December, 1985, AAM published the following call to action in its newsletter, *The Minnesota Acupuncturist*: "The 12th of December is going to be a big day for acupuncturists in the State of Minnesota. The Health Department will be holding a public hearing. The fate of acupuncture is on the agenda. Recommendations will be made to the Commissioner as to whether the practice of acupuncture should be an independent regulated profession in Minnesota. You are urged to attend. You need to show that acupuncture does indeed work and that acupuncturists are valuable members of the health care community. Encourage patients to write to Commissioner Sister Mary Madonna Ashton. TIME IS RUNNING OUT, ACT NOW." It had been 3 years since the first attempt at acupuncture regulation with Representative Karen Clark's bill, and it would be 10 more years before acupuncture regulation was finally passed into law, but the acupuncture community in Minnesota continued to pursue the goals of regulation and licensure with increasing momentum.

2.2.1 Acupuncture established as effective treatment for substance abuse

In 1985, Patricia Culliton joined Hennepin Faculty Associates (HFA) as an acupuncturist. HFA was established in 1984 as a private, non-profit group of physicians who contracted with Hennepin County Medical Center to provide primary and specialty care services. The clinic that Pat and other early practitioners worked in was originally called the Neuromodulation Research Center, since it was considered too controversial to present an acupuncture clinic in a mainstream hospital. However, Patricia Culliton lost no time in adapting the resources of a major medical center to the clinical study of acupuncture as a treatment for substance abuse. She had been working closely with Dr. Michael Smith from Lincoln Hospital in the south Bronx, New York City. In the 1970s, Dr. Smith was instrumental in developing an ear-acupuncture protocol for mitigating withdrawal symptoms from drug and alcohol abuse. Pat and Dr.

Smith were founders of the NADA in 1985. To this day, NADA educates and trains healthcare providers in the United States and around the world in the use of their effective protocols. In 1986, Pat brought Dr. Smith to Minneapolis to present a lecture, “Acupuncture in Detoxification and Public Health”, at the Hennepin County Government Center.

Between 1987 and 2003, various leading medical journals published seven articles which were based on acupuncture research spearheaded by Patricia Culliton.^{27–33} The first article, published in *Alcoholism: Clinical and Experimental Research* (1987) as a pilot study,²⁷ was a randomized clinical trial of acupuncture on a group of 54 hardcore alcoholic recidivists to determine if sobriety could be achieved and episodes of drinking and/or admissions to detoxification treatment could be decreased. Patients in the treatment group were needled on acupuncture points specific for the treatment of substance abuse, while patients in the control group received acupuncture on nonspecific points. The study showed that patients in the treatment group expressed less need for alcohol, and had fewer drinking episodes and admissions for detoxification during the study than did control patients. The differences between the treatment group and the control group were statistically significant. This is the first study showing that acupuncture can be used to interdict the cycle of alcoholic recidivism.

Patricia Culliton’s team expanded their pilot study on alcoholic recidivism from 54 to 80 patients and published the study “Controlled Trial of Acupuncture for Severe Recidivist Alcoholism”, which was published in *The Lancet* in 1989.²⁸ This placebo-controlled study recruited 80 severe recidivist alcoholic patients. The treatment group received acupuncture at points specific for the treatment of substance abuse, while the control group received acupuncture at nonspecific points. In this very early trial, 21 of 40 patients in the treatment group completed the program compared with 1 of 40 controls. The study showed that significant treatment effects persisted at the end of the 6-month follow-up: by comparison with treatment patients, more control patients expressed a moderate to strong desire for alcohol, and had more than twice the number of both drinking episodes and admissions to a detoxification center. Although it looks a very small-sized rudimentary clinical trial,²⁸ this remains the only clinical trial on acupuncture published in *Lancet* to the present day. Funding for the study was provided by the Hennepin County Board of Commissioners. It was supported by Dr. Milton Bullock, Medical Director at Hennepin Faculty Associates, and Robert Olander, Director of Hennepin County Chemical Dependency Services.

Following the 1987 and 1989 studies, Patricia Culliton’s HFA team established itself as a driving force in acupuncture research, and also as a primary stakeholder in the continuing struggle for legislative recognition in Minnesota. Additional recognition came with

the publication of “Acupuncture for the Treatment of Cocaine Addiction: a Randomized Controlled Trial”,³¹ published in the *Journal of American Medical Association (JAMA)* in 2002, and studies on acupuncture for alcoholism³² and cocaine addiction³³ published in the *Journal of Substance Abuse Treatment* in 1999 and 2002. Patricia Culliton also collaborated with a number of national leading figures in acupuncture research, such as Richard Hammerschlag, Helene M. Langevin, and Lixing Lao (劳力行).³⁴ Just as Bob Duggan, Sherman Cohn, Raph Coan, Louis Gasper, and Edith Davis were founding fathers and mother for the national infrastructure organizations of the acupuncture profession, Patricia Culliton was a co-founder of another group of national organizations including NADA in 1985 and the Society for Acupuncture Research (SAR) in 1993. She participated in the FDA hearing for reclassifying acupuncture needles (eventually resulting in needles being re-classified from Class III “for investigational use only” to Class II “for general use, by qualified practitioners”), and also participated in the National Institutes of Health hearing which resulted in an acupuncture consensus statement.

In 1993, HFA’s acupuncture clinic was finally given official recognition as Hennepin Faculty Associates Alternative Medicine Clinic, with Patricia Culliton as clinic director and Dr. Milton Bullock as medical director. This was the first acupuncture clinic in an academic medical institution in the United States. My wife, Wei Liu, became one of the first full-time acupuncturists at the Alternative Medicine Clinic, along with Martin Buchbender. Wei Liu and I met Patricia Culliton in the fall of 1992 at a Chinese restaurant located near the University of Minnesota campus where we were pursuing our graduate studies. We were quickly given an eye-opening overview of the status of acupuncture and Chinese medicine in the United States, and became engaged in the political and professional development of acupuncture in Minnesota.

2.2.2 Acupuncture education and outreach

As mentioned in the Section 1 of this article, acupuncture pioneer Edith Davis founded the MIAHS in 1990. MIAHS operated as an independent organization until 1999, when it merged into Northwestern Health Science University (NWHHSU) in the Minneapolis suburb of Bloomington, Minnesota and was renamed the Minnesota College of Acupuncture and Oriental Medicine. In 2020, NWHHSU reorganized their acupuncture programs as a new college, the College of Acupuncture and Chinese Medicine (CACM).

In 1993, the Society for Acupuncture Research (SAR) was founded by Patricia Culliton, Hannah Bradford, and Stephen Birch, and was originally based in Bethesda, Maryland. SAR is a medical society dedicated to advancing research into acupuncture and related interventions.

Prominent acupuncture researchers in the United States have served as presidents of SAR presidents. Currently, SAR is located in Winston-Salem, North Carolina, with Vitaly Napadow and Robert Davis serving as co-presidents.

In November 1993, lawyer, acupuncturist, and expert on acupuncture law Barbara Mitchell was invited to Minneapolis as guest speaker at an AAM general membership meeting to speak about acupuncture legislation in Minnesota. She reviewed the history of the national acupuncture organizations and described the process of acupuncture legislation in other states. Barbara Mitchell chaired the NCCAOM from 1987 to 1995, and wrote *Acupuncture and Oriental Medicine Laws: 1999*.

During this period of time Dr. Miles Belgrade, a practicing neurologist, led a major effort in promoting acupuncture among physicians in Minnesota,³⁵ organizing multiple conferences to familiarize medical doctors with acupuncture. Dr. Belgrade went to China after his first year of medical school in 1976, and visited Sri Lanka to study acupuncture with SmithKline Fellowship. In 1982 the *New England Journal of Medicine* published Dr. Belgrade's article "Acupuncture and the Law: A Rebuttal" in regard to the Federal Court decision in *Andrews vs. Ballard*.³⁶ He published "Effect of Acupuncture on Experimentally Induced Itch" in *Acta Dermatology Venerology* in 1984.³⁷ And he wrote "In Response to the Position Paper of the NCAHF (National Council Against Health Fraud) on Acupuncture", published in the *Clinical Journal of Pain* in 1992.³⁸ He started a training program in acupuncture for physicians, and actively trained residents and fellows in acupuncture. Dr. Belgrade incorporated acupuncture into his neurology practice from the beginning of his career, and was a strong advocate for acupuncture licensure in Minnesota. He has been the medical director at Fairview Hospital Pain Management Center, and Department of Neurology professor at the University of Minnesota Medical School. He was also a member of the first Acupuncture Advisory Council when acupuncturists were licensed under the Minnesota Board of Medical Practice in 1996.

At the national level, 1993 was significant for the release of journalist Bill Moyers' Emmy Award-winning series "Healing and the Mind", which included an episode on *The Mystery of Chi*. In *The Mystery of Chi*, Bill Moyers, along with Dr. David Eisenberg, revealed the full spectrum of traditional Chinese medicine modalities to the American public.

2.2.3 Professional organization efforts and options

In February 1991, AAM organized the first Acupuncture Week at the Minnesota Legislature. Acupuncture Week brought as many stakeholders as possible to the state capitol in St. Paul to lobby their legislators on behalf of professional recognition, and included the showing of *The Art of Acupuncture* on Twin Cities' cable channels. Another Acupuncture Week at the Capital was

organized in 1993. AAM member Michael Studer coordinated Acupuncture Week activities including displays, acupuncture videos, and sample treatments for legislators and their staff members.

In January 1994, the National AOM Alliance, a new national organization, was formed from the Coalition of Concerned Acupuncturists (COCA). Barbara Mitchell and Minnesota acupuncturist Vicky Radel served as co-chairs. Later, the Alliance merged with the AAAOM. The Alliance's main mission was to promote acupuncture licensure at state legislatures.

In 1994, the Acupuncture Certification Bill, which had been rolled into a Healthcare Finance Supplemental bill, passed both the Minnesota Senate and House of Representatives. But nothing came of this legislative effort because the entire bill was vetoed by Governor Arne Carlson. As it turned out, the defeat of this attempt at acupuncture legislation was a good thing for acupuncturists. For one thing, acupuncturists felt that licensure was more professionally advantageous than certification. For another thing, the Acupuncture Certification Bill would have put acupuncturists under the direct jurisdiction of Minnesota Department of Health. Due to the way the Department of Health was organized, members of a recognized professional group such as acupuncturists had to fund the Department's fiscal burden for administration through an annual fee. The Department's estimate of its costs was about \$55,000, and there were an estimated 75 practitioners in Minnesota at the time, which meant that every applicant would have an annual fee of \$734.

At that time (1994), Minnesota acupuncturists faced three options for professional organization. Establishing a separate Acupuncture Board would cost each practitioner \$700 per year, and certification through the Minnesota Department of Health would also cost about \$700 per year. The last option, registration through the Minnesota Board of Medical Practice, would cost individual practitioners about \$150 per year. (One can reflect on the cost burden of being self-governing: a profession can establish its own governing body to issue licenses, but it must be self-sustaining. This depends on the size and fee structure of the profession. The cost-benefit balance works automatically.)

Following dialogs with the Minnesota Board of Medical Practice in regard to licensure and the Minnesota Department of Health in regard to certification, it became obvious that registration with the Minnesota Board of Medical Practice would be the better choice, professionally and economically. In December 1993, acupuncturists Pam Weiss and Deah Cain had a meeting with Minnesota Board of Medical Practice Director Leonard Boche to explore the avenue of licensing acupuncturists under the Board of Medical Practice. Dr. Boche provided them with the template that athletic trainers were using for their regulation under the Board of Medical Practice. AAM began the process of setting up an advisory board

to represent acupuncturists under the Minnesota Board of Medical Practice.

2.2.4 Licensure enacted

In the May, 1995 Legislative Session, a Minnesota acupuncture statute was introduced as HF1598/SF1369 by chief sponsors Senator Dallas Sams and Representative Peggy Leppik. Acupuncturists Vicky Radel, Deah Cain, Jilun Zhang and Pam Weiss testified at hearings held in both Houses by the Government Operations and Finance committees. The statute as a clean acupuncture regulation was signed into law by Governor Arne Carlson the same month. Minnesota became the 28th state in the country to regulate acupuncture. The new acupuncture law³⁹ required NCCA certification, and/or a 2-year period for transitional licensing for qualified applicants, and reciprocity for qualified applicants. The law defined acupuncture practice as “a comprehensive system of health care using Oriental medical theory and its unique methods of diagnosis and treatment. Its treatment techniques include the insertion of acupuncture needles through the skin and the use of other biophysical methods of acupuncture point stimulation, including the use of heat, Oriental massage techniques, electrical stimulation, herbal supplemental therapies, dietary guidelines, breathing techniques, and exercise based on Oriental medical principles”. The law created an acupuncture advisory council to the Board of Medical Practice consisting of “seven members appointed by the board to three-year terms. Four members must be licensed acupuncture practitioners, one member must be a licensed physician or osteopathic physician who also practices acupuncture, one member must be a licensed chiropractor who is NCCAOM certified, and one member must be a member of the public who has received acupuncture treatment as a primary therapy from a NCCAOM certified acupuncturist”. The law asked the advisory council to: “(1) advise the board on issuance, denial, renewal, suspension, revocation, conditioning, or restricting of licenses to practice acupuncture; (2) advise the board on issues related to receiving, investigating, conducting hearings, and imposing disciplinary action in relation to complaints against acupuncture practitioners; (3) maintain a register of acupuncture practitioners licensed under section 147B.02; (4) maintain a record of all advisory council actions; (5) prescribe registration application forms, license forms, protocol forms, and other necessary forms; (6) review the patient visit records submitted by applicants during the transition period; (7) advise the board regarding standards for acupuncturists; (8) distribute information regarding acupuncture practice standards; (9) review complaints; (10) advise the board regarding continuing education programs; (11) review the investigation of reports of complaints and recommend to the board whether disciplinary action should be taken; and (12) perform other

duties authorized by advisory councils under chapter 214, as directed by the board.”

Minnesota acupuncture law waives three groups of medical practitioners from the requirement for NCCAOM certification. Medical doctors and osteopaths may practice acupuncture in Minnesota without any specific training. Chiropractors must be certified with 100 hours of training by their own board, the Minnesota Board of Chiropractic Examiners (MBCE). Although Minnesota acupuncturists felt that these waivers were not compatible with their professional standards, they accepted this concession to achieve their larger goal of legal recognition. Deah Cain, then-president of AAM, observed that the large lobby of medical doctors and chiropractors as opposed to the small number of acupuncturists left little choice in the matter. A similar outcome has been the norm in most states where the acupuncture profession is licensed.

Even with this deficiency, passage of the statute was celebrated by the acupuncture community on a rainy Sunday afternoon in June, 1995 at Robert Decker's house. Senator Dallas Sams and Representative Peggy Leppik were invited, and about 50 members from the acupuncture community attended the celebration. Robert Decker is a pharmacist and practicing acupuncturist. I was pleased to have him teach western pharmacology at my school, the American Academy of Acupuncture and Oriental Medicine (AAAOM), for over 10 years.

2.3 Transitional period: from enactment to implementation (1995–1997)

The first Acupuncture Advisory Council under the Minnesota Board of Medical Practice was organized in 1996. Advisory Council members included Vicky Radel, Deah Cain, Michael Studer, Tin Yam Lam, Evie Schulte(licensed acupuncturists), Miles Belgrade (acupuncture-practicing physician), and Janice Raphael (public member). They began reviewing acupuncture license applications in 1996. Applicants included those who wished to be grandfathered in, and practitioners who passed the NCCAOM national board exams. The first cohort of licensed acupuncturists took their place in Minnesota history. Pam Weiss obtained Minnesota's #1001 license and Michael Studer was awarded Minnesota's #1002 license. Wei Liu got Minnesota acupuncture license #17. Twenty acupuncture licenses (#1001–1020) were issued in 1996, and 57 more (1021–1077) followed in 1997.

From 1996 to 1999, Andy Lininger served as the president of AAM, and I served as Chair of the Association's Continuing Education Committee. In the fall of 1996, before the official implementation of the acupuncture statutes, I brought Dr. Li Gu from Los Angeles to teach a class, “Miu Ci (繆刺 Opposite Needling)”, for AAM, which drew close to a hundred attendees. In 1996 and 1997, Wei Liu and I joined Janet Dahlem to

build an advisory team of more than 30 members for St. Catherine University in St. Paul. Our objective was to do a feasibility study for establishing an acupuncture and Chinese medicine program at St. Catherine's. Janet Dahlem was a holistic medicine teacher and practitioner. The advisory team included most of the leading figures of alternative and complementary medicine at that time in Minnesota. We held multiple rounds of meetings for almost 2 years without a productive result. In 1997, after the failure of this effort, Wei Liu and I decided to create our own college of Chinese medicine, which resulted in the establishment of the AAAOM.

A significant positive development on the national stage was the Food and Drug Administration's reclassification of acupuncture needles from Class III, "for investigational use only", to Class II, "for general use, by qualified practitioners" on March 28th, 1996. This very important change came about due to petitions submitted by the national acupuncture community. The FDA decision was based on a hearing held in 1995. Patricia Culliton appeared to testify before the FDA on acupuncture needle reclassification, along with Dr. Stephen Birch (Ph.D.), acupuncturist and researcher; Margret Naeser, acupuncture researcher; Allen Trachtenberg, MD, MPH, and former head of the Office of Alternative Medicine at the National Institutes of Health; and numerous other stakeholders in the national acupuncture community.

An equally significant national breakthrough for acupuncture occurred at the end of 1997. The National Institutes of Health held a 3-day conference on acupuncture, organized by the National Institute of Health (NIH) Office of Alternative Medicine and the NIH Office of Medical Applications of Research. Participants in the conference were experts from the fields of acupuncture, pain, psychology and psychiatry, physical medicine and rehabilitation, drug abuse, family practice, internal medicine, physiology and biophysics, health policy, epidemiology and statistics. The conference culminated with the consensus statement that "there is clear evidence that acupuncture is effective for postoperative and chemotherapy nausea and vomiting, nausea of pregnancy, and postoperative dental pain"; and "there are a number of other pain-related conditions for which acupuncture may be effective as an adjunct therapy, an acceptable alternative, or as part of a comprehensive treatment program, but for which there is less convincing scientific data. These conditions include but are not limited to addiction, stroke rehabilitation, headache, menstrual cramps, tennis elbow, fibromyalgia (general muscle pain), low back pain, carpal tunnel syndrome, and asthma." As an invited speaker at the NIH conference, Patricia Culliton presented a study, "Current Utilization of Acupuncture by United States Patients". Other speakers included such familiar acupuncture professionals as Richard Hammerschlag, Ji-Sheng Han (韩济生), Brian Berman, Steven Birch, Bruce Pomeranz, Margaret Naeser, Jin Yu (余瑾), Xiaoding Cao (曹小定), Lixing Lao and others.

1997 was the first year of official regulation of the practice of acupuncture in Minnesota. Only practitioners who held a license issued by the Minnesota Board of Medical Practice could call themselves licensed acupuncturists. (Medical doctors and chiropractors could perform acupuncture in their scope of practice, but could not refer to themselves as licensed acupuncturists unless they passed the NCCAOM exams and were licensed through the Acupuncture Board.)

2.4 Post-licensure developments and controversies (1998–present)

After the acupuncture statutes became effective in Minnesota on July 1st, 1997, I filed my registration with the Minnesota Secretary of State to incorporate my school, the American Academy of Traditional Chinese Medicine, the AAAOM, and followed up with an application to the Minnesota Office of Higher Education for registration recognition. A period of intensive curriculum construction, faculty recruitment, and library development culminated in AAAOM's first day of operations in January, 1999. The Academy became the second operational institution in Minnesota to offer acupuncture and Chinese medicine education. In 2001, the Academy moved from the university area of Minneapolis to a larger facility in Roseville, MN. The Academy obtained accreditation from ACAOM in 2003, and the first cohort of students were awarded a Master's degree that year. In 2016, the Academy initiated its doctoral degree program in acupuncture and Oriental medicine, and in 2020, the DAOM program obtained full accreditation.

The year 1999 saw the beginning of the AAAOM and the merger of the MIAHS with NWHSU. Before MIAHS's merger with NWHSU, its curriculum had been influenced by several TCM traditions, including five-element acupuncture, French-Vietnamese acupuncture, and Leon Hammer's Flying Dragon approach. AAAOM's curriculum was modeled on a traditional Chinese medicine curriculum as taught in Chinese TCM universities, with a balanced Western biomedicine and medical (experimental) acupuncture input.

Since 1999, the two institutes of acupuncture education in Minnesota have each attracted a cluster of prominent acupuncture and Chinese medicine practitioners and educators from China and the United States. NWHSU quickly established its annual 3-day Great River Symposium event, hosting a variety of guest speakers on TCM-related subjects. AAAOM sponsors the *International Journal of Clinical Acupuncture*, which publishes four issues a year, and hosted seminars by leading figures in the field of acupuncture. These two educational institutions and their activities combined to make Minnesota a leading state in the development and integration of acupuncture in the United States.

The tale of two acupuncture schools in the same metropolitan area is worth a separate chapter. However, as

the president of one of those schools for over 20 years, I am not going to elaborate that story here. Several years ago, I was pleased to collaborate with NWSU administrator Charles Sawyer to try to help the South Dakota acupuncture community establish acupuncture regulations. We held several meetings and contacted multiple people/practitioners in South Dakota, urging them to establish an active acupuncture association and find a state senator or representative to draft a bill to send to the floor. The relevant Minnesota Statutes, Chapter 147B: Acupuncture Practitioners, provided a good model for them. Unfortunately, South Dakota's acupuncture community has not yet achieved a critical constituency, and South Dakota remains the "wild west" in terms of acupuncture legislation: one of three states without acupuncture law, the other two being Oklahoma and Alabama.

Meanwhile, the MAA maintains a central position in the acupuncture community. It continues its active involvement in acupuncture legislation, organizing Acupuncture Day at the Capitol events when acupuncture-related issues come up for debate, educating and mobilizing its membership to represent and defend acupuncture practice before the state legislature and with the general public.

At its 2000 meeting, the AAM officially changed its name to the Acupuncture and Oriental Medicine Association of Minnesota (AOMAM). It was felt that this name was more consistent with the names of the four national organizations: NCCAOM; CCAOM; America Association of Acupuncture and Oriental Medicine (AAAOM); and Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM). It would change its name yet again in 2016, to the MAA. After 2001, AOMAM held its monthly administrative meetings alternately between NWSU in Bloomington and AAAOM in Roseville. From 2015, when NWSU went through a period of restructuring its colleges and programs, AOMAM held most of its meetings on the AAAOM campus until the COVID-19 pandemic hit America early in 2020.

2.4.1 "Equal Access to Acupuncture" law

On March 4th, 2008, the AOMAM organized an Acupuncture Day at the Capitol event in regard to insurance companies' reimbursement for acupuncture services. AAAOM was a strong presence at this event, sending 30 students and four faculty and staff members to the state capitol. It was vital to demonstrate to the legislators that the acupuncture and Oriental medicine profession in Minnesota is strong and unified, and that our rigorous professional training deserves to be recognized and validated. We shared information with the state senators and representatives and answered their questions. We made the point that insurance companies did not recognize the validity of professional acupuncturists

when it came to reimbursement for services. Many third-party payers include acupuncture in their coverage, but most of the major companies in Minnesota limited reimbursement to MDs and chiropractors, even though MDs and DCs often have minimal training in acupuncture. HF3526, the "Equal Access to Acupuncture" law, set forth legislative action to correct discriminatory inequality. HF3526 was introduced by Representatives Jim Abeler and Karen Clark. HF3526 is a bill for an act relating to insurance; requiring equal access to acupuncture services by certain group policies and subscriber contracts; requiring claim determinations regarding acupuncture services to be made or reviewed by acupuncture practitioners; requiring reporting on referrals to acupuncture practitioners and reimbursement rates. This bill acted to amend Minnesota Statutes 2006, section 62A.15, subdivision 4, by adding a subdivision; proposing coding for new law in Minnesota Statutes, chapter 62D. The heart of this bill is equal treatment of acupuncturists as medical providers: if acupuncture services performed by physicians are covered by third-party payers, acupuncturists should be covered for providing the same services. Governor Tim Pawlenty signed HF3526 into law in the spring of 2009. The Equal Access to Acupuncture Act (commonly referred to as the Parity Bill) became effective on August 1st, 2009.

After the years-long effort to achieve licensure for Minnesota acupuncture practitioners culminating in 1995, the 2008 rally for equal insurance coverage was the second major intervention in state legislation achieved by the Minnesota acupuncture community. It was an especially useful lesson for the AAAOM and NWSU students who engaged with the process, demonstrating that ordinary citizens can alter the legislative processes that affect them.

2.4.2 Minnesota's dry needling battle

After the first legal challenge surfaced in Maryland, acupuncturists and physical therapists confronted each other across the country in battles over the issue of dry needling. But each state had its own theater of war. The various aspects and ramifications of this confrontation between acupuncture and physical therapy are of interest at both the intellectual and legal levels. Fan et al. and other authors⁴⁰⁻⁴⁸ have published a series of articles providing support for the acupuncture profession. I followed and documented legal battles over dry needling in many states, and feel that Minnesota's (inconclusive) experience reflects a prevalent trajectory.

In 2009, a physical therapist submitted a complaint to the Maryland Board of Acupuncture that an acupuncturist had used the term "dry needling" in a medical chart. In the complaint, the physical therapist asserted that the acupuncturist used proprietary language that was unique to physical therapy. The Maryland Board of Acupuncture took the stance that "dry needling" was

equivalent to “acupuncture” and dismissed the case on the basis that the procedure had been performed by a licensed acupuncturist who was trained in the use of dry needling (ie, acupuncture), and that the acupuncturist was using language that was common across professions.

In 2003, the NCCAOM conducted a survey of acupuncturists and issued a job analysis report. According to the report, 82% of acupuncturists surveyed used needling of trigger points in patients that presented with pain. Of the patients that present for acupuncture treatment, an estimated 56% present with trigger point pain. In 2010, the CCAOM took the position⁴⁹ that dry needling is an acupuncture technique, and that any intervention utilizing dry needling is the practice of acupuncture, regardless of the language utilized in describing the technique.

In the years following the Maryland case, acupuncture associations or groups in different states assumed the CCAOM position to ward off “acupuncture poaching” by physical therapists, chiropractors, registered nurses, and even athletic trainers. Representative legal cases include: Wisconsin Acupuncture Society v. Physical Therapy Examining Board (2013); South Sound Acupuncture Association (“SSAA”) v. Kinetacore (2014); Texas Association of Acupuncture & Oriental Medicine v. Texas Board of Chiropractic Examiners (2014); Oregon Association of Acupuncture and Oriental Medicine v. Oregon Board of Chiropractic Examiners (2014); North Carolina Acupuncture Board v. North Carolina Physical Therapy Association (2015); and Acupuncture Association of Colorado v. Colorado Physical Therapy Board (2016). Outcomes of these and other cases have been mixed. In California, Washington and Oregon, acupuncture associations have fought successfully against physical therapists. However, suits brought by the acupuncture profession in Wisconsin, North Carolina, Colorado, and Texas resulted in ambiguous or unfavorable outcomes.⁵⁰

As legal challenges continued to spread, Minnesota acupuncturists began to feel the heat. In 2014, acupuncture professionals became aware that dry needling training classes were being held in Minnesota, and that some health insurance companies were credentialing physical therapists with very minimal training to provide dry needling services. The AOMAM was moved to debate and take action.

On January 25th, 2014, AOMAM member Bonnie Bolash met with Kathleen Picard and Rebecca Vosglund at the Physical Therapy Associations Office in St. Paul. According to Bonnie Bolash, the representatives of the Physical Therapy Associations Office would not admit to using acupuncture needles. When Bonnie asked them if they intended to add dry needling to their scope of practice, they responded that it was already in their scope of practice. Bonnie reported to AOMAM after the meeting.

Dr. Brian Grosam, an AOMAM director, began to organize seminars and mobilize resources to counteract physical therapists utilizing dry needling. (Dr. Grosam graduated from the AAAOM with a master’s degree and obtained his Ph.D. degree from Shandong University of Traditional Chinese Medicine in China.)

However, as eager as AOMAM and Minnesota acupuncturists in general were to stop physical therapists from practicing dry needling, the financial aspects of conducting a protracted legal battle became a decisive obstacle. Any lawsuits or legislative action would take years of personal and financial commitment. It was encouraging that the Oregon battle between acupuncturists and chiropractors ended with the decision that dry needling was not in the chiropractors’ scope of practice, but as acupuncture associations in other states ramped up their fund-raising efforts, AOMAM members came to the conclusion that they did not have the resources to pursue a legal battle. The dry needling fight in Minnesota was sidelined.

2.4.3 National legislative trends and objectives

The national organization, the American Society of Acupuncturists (ASA), has been at the forefront of rallying efforts in support of acupuncture at federal and state levels. ASA’s strong leadership brings state association efforts in line with the national legislative agenda, and supports state legislative activities. In 2019, ASA organized a Day at the Capitol in Washington, D.C., and the MAA coordinated a similar Day at the Capitol in St. Paul, mobilizing Minnesota acupuncture students and practitioners for a series of activities including individual meetings with district senators or representatives. The focus of these efforts is the emerging consensus in the acupuncture community that acupuncturists should be independent providers of acupuncture for Medicare, Medicaid, and VA patients. The Acupuncture for our Seniors Act and Acupuncture for Our Heroes Act exemplify this trend.

In July 2021, U.S. Representative Judy Chu (D-CA) introduced H.R. 4803, the Acupuncture for our Seniors Act. U.S. Representative Brian Fitzpatrick (R-PA) co-sponsored this bill in 2022 (Fig. 2). H.R. 4803 instructs the U.S. Centers for Medicare and Medicaid Services (CMS) to recognize qualified acupuncturists as Medicare providers; enables acupuncturists to provide covered services to Medicare beneficiaries (generally those 65+); removes Medicare’s physician-supervision requirement for acupuncturists, enabling acupuncturists to bill Medicare directly for these services. Medicare recognition would align Medicare policy with the acupuncturist scope-of-practice laws so acupuncturists could provide care to over 60-million Medicare beneficiaries, establishing an acupuncture-coverage model for other payers that follow CMS coverage policies.



Figure 2 Congresswoman Judy Chu issued certificates to recognize the contributions made by American TCM Association Board (source from: the author).

The Acupuncture for Our Heroes Act has been introduced by U.S. Representative Judy Chu (D-CA) multiple times. This bill asks the Department of Veterans Affairs (VA) to provide qualified acupuncturist services to veterans enrolled in the VA health care system. A “qualified acupuncturist” is an individual who is licensed, certified, or otherwise accredited and may be appointed as an employee of the VA or as a contractor. Although Representative Chu’s bill garnered 10 co-sponsors in the 116th Congress (2019–2020), it seems that there is still a long way to go for acupuncturists to independently provide acupuncture service to veterans. An encouraging sign is the mention of acupuncture in the 2020 Commander John Scott Hannon Veterans Mental Health Care Improvement Act, a bipartisan legislation introduced by Senators Jon Tester and Jerry Moran, which was signed into law by President Donald Trump.⁵¹ It is a comprehensive and aggressive approach to connect more veterans with mental health care services, and has a provision mandating a written report on “the feasibility and advisability of providing complementary and integrative health treatments, such as acupuncture, at all VA medical facilities”. The Veterans Administration directs the largest health care system in the United States, serving more than 9 million veterans annually at about 1255 outpatient clinics and hospitals throughout the US.

The opioid crisis furnishes another avenue for acupuncture therapy to become mainstream at the national level. Since opioid overdoses and deaths became a public health crisis in 2015, the ASA has led the acupuncture profession in promoting acupuncture as a powerful means to manage chronic pain and offer non-medicine

options. Medicare and Medicaid coverage of acupuncture for pain control is a high-priority goal for acupuncturists (Fig. 3).

At the state level, legislative activities and proposals vary from state to state. According to the American Society of Acupuncturists,⁵² there are 462 acupuncture-related bills currently under review by state legislatures in 47 states as of March 10th, 2023, with the majority clustered in Illinois (49), California (31), Washington (29), New Jersey (28), New York (16), Virginia (25), Arizona (24), New Mexico (21), Oregon (17), Utah (16), Minnesota (15), Ohio (14), Nevada (13), Hawaii (10), Iowa (10), Texas (9), and Idaho (9). These bills are not necessarily specifically about acupuncture, but may contain an acupuncture-related component such as coverage of acupuncture services provided by acupuncturists, or an amendment of a standing acupuncture law.

In New York, a bill called A.B.1012 was introduced to authorize the care and treatment of injured employees by duly licensed or certified acupuncturists under the worker’s compensation program. Another New York bill, A.B. 3165 relates to mandatory health insurance coverage for acupuncture services. In Arizona, S.B.1255 was introduced to add auricular acupuncture and modifies acupuncture board membership. In Florida, S. 0530 was introduced requiring physicians and other health care providers to offer their patients alternatives to opioids such as acupuncture, and discuss the advantages and disadvantages of the alternative therapy with patients, including whether the patient is at high risk for, or has a history of, controlled substance abuse. In Montana,



1925 West County Road B-2, Roseville, MN 55113, (651) 631-0204

February 15, 2019

Respected Legislators:

The purpose of this letter is to voice strong support for HF400 the Opioid Product Stewardship Bill. More than 20 years ago I founded the American Academy of Acupuncture and Oriental Medicine as a means of providing a proper education to students wishing to enter into this dynamic and effective field. AAAOM has offered an accredited Master's of Science Degree for over 20 years and is now excited to offer a Doctor of Acupuncture and Oriental Medicine Degree, as the demand for practitioners with a Doctorate level of training is rapidly growing. My voice of support for this bill is given not only for Academy, but for the more than 250 graduates of the Academy, current and prospective students, and for patients and practitioners that reside in Minnesota as a whole.

Acupuncture has shown itself to be an extremely safe and cost-effective non-pharmacologic treatment for decreasing the use of opioids for pain management, with many evidence-based studies to support its efficacy. When performed by a properly trained and qualified practitioner, acupuncture is extremely successful in managing pain. HF400 takes two important steps towards stemming the tide of opioid addiction and death: it provides a meaningful option to patients by ensuring them access to acupuncture, and it helps to educate providers on how to understand and utilize this service. These components together make this legislation timely, effective, and meaningful.

There is a glaring discrepancy between clinical practice guidelines recommending acupuncture's use and access to that same service. The lack of uniformity in insurance coverage makes the use of acupuncture problematic and extremely complicated for patients already in need of care. Lack of proper provider education on how to integrate acupuncture into pain management plans also hinders progress. HF400 solves both of these very active problems.

Thank you for your consideration of this compassionate legislation that is also a step forward for care for Minnesota patients. Please feel free to contact me if I can be of any assistance.

Sincerely,

Changzhen Gong, Ph.D.
AAAOM
email: tcmhealth@aol.com

Figure 3 Dr. Gong wrote letters to support Minnesota acupuncture legislature (source from: the author).

S.B. 121 was introduced to revise the state's legal definition of acupuncture to reflect modern techniques and standards.

2.4.4 Minnesota legislation

The landscape of legislative activities is still very dynamic, both at the national and state levels. MAA's coordination

with ASA's Day at the Capitol in Washington, D.C. in 2019 indicates a continuing commitment to legislative participation and engagement.

In Minnesota, a few bills have been introduced in the legislature. Bonnie Bolash, an activist in the Minnesota acupuncture community, was very involved with the drafting of S.F.1058. According to Bonnie, S.F.1058 involved a requirement for acupuncture services health

plan coverage, and was referred to the Health and Human Services Finance and Policy Committee. The authors of this bill want an inclusive healthcare system where acupuncture/Chinese medicine is delivered in a way that acknowledges and respects its history and culture.

At the time I concluded writing this article, bill HF 1405 had been introduced to the newly inaugurated Minnesota 93rd Legislature (2023–2024) by co-authors Rep. Cedrick Frazier (DFL) from District 43A and Rep. Mike Freiberg (DFL) from District 43B. HF 1405 is a healthcare act, providing health plan coverage for certain acupuncture services and proposing coding for the new law in Chapter 62Q of the Minnesota Statutes. Specifically, it mandates health plans to cover acupuncture services for the treatment of pain and ongoing pain management when those services are performed by a person who is authorized to practice acupuncture; and coverage under this section must include at least 30 visits for acupuncture services before a health plan company can require a prior authorization for further acupuncture services. This section would be effective January 1st, 2024, and would apply to health plans offered, issued, or renewed to a Minnesota resident on or after that date.

The history of a profession is a history of emergence, legislation, and enforcement and protection of legal rights. For acupuncturists in the United States, Minnesota history may provide an illustrative case study of this bumpy road to professional autonomy and acceptance.

Notes

1. There have been a number of name changes for acupuncture-related organizations or publications in Minnesota from 1978 to the present: (1) ASM (1978–1981) → AAM (1981–2000) → AOMAM (2000–2016) → MAA (2016–present); (2) MAA’s newsletter: *The Minnesota Acupuncturist* (1979–1998) → *The Meridian* (1998–present); (3) Minnesota School of Acupuncture and Herbal Studies (1990–1993) → MIAHS (1993–1999) → Minnesota College of Acupuncture and Oriental Medicine at Northwestern Health Sciences University (1999–2018) → Acupuncture and Chinese Medicine School at Northwestern Health Sciences University (2018–present); (4) AAAOM (1997–2021) → American Academy of Health and Wellness (AAHW) (2021–present).

2. Sources of this article: Besides the references cited below, this article depends on many interviews, e-mail communications, newsletter articles, and personal archives. When I first arrived in Minnesota in 1989, the first generation of acupuncture pioneers was still very active. I had direct contact and communication with all the figures who were involved in acupuncture legislation. It is not my intention to omit mention of anyone who contributed to Minnesota’s legislative process

and professional development, and I regret any lapses. Any errors or omissions in this history are the author’s responsibility.

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Author contributions

Changzhen Gong wrote and reviewed the article.

Conflicts of interest

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International Communication of Acupuncture and Moxibustion Popular in the West

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Abstract

With the development of traditional Chinese medicine (TCM) acupuncture and moxibustion, research on acupuncture and moxibustion in the Western world is deepening. The concept of acupuncture and moxibustion popular in the West is formed. By investigating the localization of acupuncture and moxibustion in the Western world, this paper introduces several kinds of acupuncture and moxibustion popular in the West and concludes the spread of acupuncture and moxibustion popular in the West through hospitals and clinics, academic works, social organizations, education, and training. This paper provides a global vision developing domestic acupuncture and moxibustion and promoting academic prosperity and technical progress of world acupuncture and moxibustion system.

Key words: Acupuncture and moxibustion; International communication; Western world

1 Introduction

As traditional Chinese medicine (TCM) has spread to 196 countries and regions in the world, experts and scholars in the West deepened their research on acupuncture and moxibustion. Combined with TCM acupuncture and moxibustion and local characteristics, acupuncture and moxibustion popular in the West emerged. In this paper, acupuncture and moxibustion popular in the West are regarded as a kind of culture carrier. By investigating the localization process of acupuncture and moxibustion in the Western world, this paper takes three kinds of acupuncture and moxibustion popular in the West as examples. It analyzes international communication path and characteristics to help more people further understand acupuncture and moxibustion popular in the West. Due to the limited space, this paper will not discuss specific academic contents.

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2 The meaning of acupuncture and moxibustion popular in the West

Before clarifying the meaning of acupuncture and moxibustion popular in the West, it is necessary to determine the scope of "West". Different criteria for dividing the East and the West often contain different countries and regions. According to the geographical location, the dividing line between the East and the West is 20 degrees west longitude and 160 degrees east longitude. The western hemisphere is the "West". Depending on the cultural background, the West refers to countries and regions that developed from the ancient Greek civilization, which has been deeply influenced by Western civilization through the Roman Empire, the Middle Ages, the Renaissance, the Industrial Revolution, the Bourgeois Revolution, Modern Scientific and Technological Revolution. Depending on the political system, the West refers to Japan, South Korea, Europe, and other countries and regions that implement capitalist political system. In this paper, acupuncture and moxibustion popular in the West are regarded as cultural phenomena, so the scope of the West is limited to countries and regions influenced by Western civilization.

Acupuncture and moxibustion popular in the West have been deeply influenced by TCM acupuncture and moxibustion. However, there are some differences between acupuncture and moxibustion popular in the West and TCM acupuncture and moxibustion. Acupuncture and moxibustion popular in the West refer to the type of acupuncture and moxibustion combining local characteristics with TCM theory, which absorbs the essence of TCM acupuncture and moxibustion. Acupuncture and moxibustion popular in the West discussed in this paper include TCM acupuncture and

moxibustion, Western medical acupuncture, and classical acupuncture.

2.1 TCM acupuncture and moxibustion

The continuous inheritance and innovative development of TCM acupuncture and moxibustion in Western countries is the inheritance and innovation of the new modern Chinese acupuncture system developed and formed after decades in China. It is the further inheritance and development of TCM acupuncture and moxibustion.

In 1927, French diplomat George Soulie de Morant learned acupuncture in China. After returning to his country, he spread TCM acupuncture and moxibustion in France and published *L'Acupuncture Chinoise (Chinese Acupuncture)*.¹ He ran private clinics to treat patients actively, and his disciples also spread worldwide. Known as the “father of French acupuncture”, George Soulie de Morant has dramatically promoted the resurgence of acupuncture in the western world. His understanding of TCM theory and TCM acupuncture and moxibustion promoted the development of acupuncture in France.

After the transmission of TCM acupuncture and moxibustion in France by George Soulie de Morant, acupuncture started to receive a large number of clinical applications. Some features of TCM acupuncture and moxibustion have remained, but the names of some acupoints in France differ from TCM. These acupoints are named after meridians and numbers. French acupuncturists also found some new acupoints. They found that stimulating the Zhubin (KI9) acupoint of the pregnant woman at a specific period will be helpful for miscarriage prevention and promoting the health of infants.¹

As TCM acupuncture and moxibustion were introduced in France, the innovation of acupuncture in gynecology and obstetrics was more prominent. Christian Rempp was an obstetrician and gynecologist. He actively promoted the development of acupuncture in obstetrics and gynecology and created a subject system of acupuncture and moxibustion during pregnancy and the perinatal period. He conducted clinical research on pregnant women's lumbago and monthly maintenance of the Fetus. In 1992, he published the book *La Pratique de L'acupuncture en Obstétrique (The Practice of Acupuncture in Obstetrics)*, which is still an essential reference in this field today.² He carried out clinical studies in the use of acupuncture to treat and prevent pregnancy complications, and low back pain and lumbar spine disease in pregnant women. He made necessary explanations of Chinese thought and Chinese medicine by applying acupuncture and moxibustion to human body. He carefully observed and explained the monthly evolution of pregnant women from the perspective of western medicine and TCM.³

From the original 43 indications of acupuncture and moxibustion proposed by the WHO to the current 64 indications, it is not difficult to see that the disease

spectrum of TCM acupuncture and moxibustion is increasingly widespread. TCM acupuncture and moxibustion have significant curative effects on the nervous, immune, digestive systems, physical and mental diseases, and many other aspects. The standardization system of acupuncture and moxibustion has been increasingly improved, and relevant international organizations have formulated and issued international standards for acupuncture and moxibustion. International Organization for Standardization (ISO) has released 20 international standards for acupuncture and moxibustion since 2013. The World Federation of Acupuncture-Moxibustion Societies (WFAS) has released 20 standards, including the name and location of auricular acupuncture points, scalp acupuncture manipulation, etc.⁴ The number of acupuncture and moxibustion standards is gradually increasing, which reflects that TCM acupuncture and moxibustion are gradually becoming scientific, standardized, and systematic in the world, thus supporting TCM acupuncture and moxibustion into the mainstream medicine (Fig. 1).

2.2 Western medical acupuncture

Western medical acupuncture in this paper refers to TCM acupuncture and moxibustion combining with Western knowledge system, such as anatomical medicine, biomedicine, cellular and molecular medicine, which has local characteristics. Western medical acupuncture includes electroacupuncture, ear acupuncture, point injection therapy, nerve stimulation therapy, and so on. The Western people put forward the idea of electrifying the needle and created electroacupuncture. Electroacupuncture is a typical Western medical acupuncture, so this part takes electroacupuncture as an example and explores the development of Western medical acupuncture.

Electroacupuncture is an innovative therapy based on acupuncture. It combines modern technologies with acupuncture. An electric current is applied to the needle, and electric stimulation replaces acupuncture. In 1786, Italian scientist Luigi Galvani discovered that muscles of dead frogs' legs twitched when struck by an electrical spark. In 1810, Louis Berlioz first proposed applying electric current to the needle. In 1825, Jean-Baptiste Sarlandière put forward the technique of generating a small electric current to the subcutaneous tissue *via* an acupuncture needle. In 1947, French acupuncturist Dr. Roger de La Fuye created the word “electroacupuncture”.⁵ In the 1930s, China's electroacupuncture therapy also developed. In 1951, China manufactured the first electric stimulator machine, which promoted the development of electroacupuncture in China.

In the development of electroacupuncture, it is not difficult to find that it learned from TCM classics. With the improvement of acupuncture and moxibustion theory, French homeopathic therapist and acupuncturist Roger de la Fuye assumed that there was a physiological

WFAS 针灸标准				
序号 Order	标准名称 Name	标准编号	发布单位 Organization	发布时间 Time
1	针灸针 Acupuncture Needles	WFAS Standard 001-2012	WFAS	2013
2	耳穴名称与定位 Name and Location of Auricular Acupuncture Points	WFAS Standard 002-2012	WFAS	2013
3	针灸技术操作规范 - 艾灸 Moxibustion Manipulation	WFAS Standard 003-2012	WFAS	2013
4	针灸技术操作规范 - 头针 Scalp Acupuncture Manipulation	WFAS Standard 004-2012	WFAS	2013
5	针刺安全使用风险控制通则 General requirement for the risk control in the safe use of acupuncture	WFAS Standard 001-2019	WFAS	2022
6	刮痧安全使用操作规范 Gua Sha Safety Manipulation	WFAS Standard 002-2019	WFAS	2022
7	针灸戒烟临床实践指南 Clinical guideline of Acupuncture for Smoking Cessation	WFAS Standard 003-2019	WFAS	2022
8	透灸法 操作标准 Moxibustion Heat-Penetration (Touju) Method Standard	WFAS Standard 004-2019	WFAS	2022
9	眼针安全使用操作规范 Operation Specification for Safe Use of Periocular Acupuncture	WFAS Standard 005-2019	WFAS	2022
10	头针安全使用操作规范 Technical Specification of Acupuncture-moxibustion Part VI Safety manipulations of Scalp Acupuncture	WFAS Standard 006-2019	WFAS	2022

Figure 1 A part of WFAS standards on acupuncture and moxibustion of TCM (source from: the authors).

relationship among acupoints, homeopathy, and disease. Roger de la Fuye combined TCM acupuncture and acupoints with electricity and founded the School of Electroacupuncture. German doctor and homeopathic therapist August Weihe combined TCM with homeopathy. He published a list of acupoints where pain occurs after taking poisonous medicines and named these acupoints after the specific homeopathic remedies that cure pain at these acupoints. He found that most acupoints have the same location as acupoints of TCM. This method was improved by Roger de la Fuye. He not only emphasized the correlation between some acupoints and acupoints of TCM, but also soaked the needle in homeopathic medicine before inserting the needle into the patients' skin.

In 1953, German acupuncturist Reinhold Voll invented Electro-acupuncture According to Voll (EAV)

and applied it to clinical treatment.⁶ EAV can not only test acupoints, but also test the effects of various medicine information on human body. In 1959, Voll founded the International Association of Electroacupuncture according to Voll and the members coming from 17 countries including America, India, Japan, etc. Since then, EAV has spread worldwide and people have accepted the method of testing acupoints and medicine information.

Dr. Voll found that there were over 250 measurement points on human skin. He designed Voll Electroacupuncture Instrument to observe the change of Resistance and determine the disease. These measurement points are approximately matched with acupoints of TCM. However, there are also some innovations in electroacupuncture. EAV can not only treat the disease

with the rich and professional experience of acupuncturist, but also have the function of testing the changes in organs. This feature is an innovative point of western medical acupuncture.

Electro-acupuncture is more prevalent in Western countries and is often used in treating musculoskeletal, neurological, obstetric, gastrointestinal intraoperative, and postoperative analgesia, all of which can be explained by neurophysiology. Different waveforms and frequencies, such as dilatational waves and continuous waves, can be applied to different symptoms. Electroacupuncture is an innovation of TCM acupuncture and moxibustion, combining acupuncture with modern electrical technology, giving new content to TCM acupuncture and moxibustion, and improving the efficacy of acupuncture and moxibustion treatment.

2.3 Classical acupuncture

Classical acupuncture refers to acupuncture and moxibustion, introduced from China to different countries and regions. However, in the long-term development, combined with Western culture, classical acupuncture formed different systems and features, and its theory and method have distinct differences from TCM acupuncture and moxibustion.

Acupuncture with local characteristics around the world was also deeply influenced by TCM acupuncture and moxibustion. Due to the colonial background, some countries and regions with local cultural characteristics were influenced by Western civilization. Acupuncture and moxibustion in those countries and regions can also be included in the scope of acupuncture and moxibustion popular in the West. Acupuncture representatives in some countries, such as Bejoy Kumar Basu from India, and Nguyen Tai Thu from Vietnam, established acupuncture schools, compiled and translated acupuncture and moxibustion textbooks and standards, established social organizations and promoted the development and spread of particular therapies.

Five Element (*Wu Xing* 五行) acupuncture is a representative of the school of natural healing acupuncture. Five Element acupuncture originated from *Huang Di Nei Jing* (《黄帝内经》 *The Yellow Emperor's Inner Classic*), rooted in traditional Chinese culture, and learned from the classical theory of ancient Chinese medicine, with the five elements as the core elements of diagnosis and treatment and regulated mind by regulating the qi of the five viscera. At the same time, integrating into modern psychology, Five Element acupuncture stressed therapy together with body and mind and put people first.⁷

British Five Element acupuncture emerged in the 1960s. J. R. Worsley created the school of British Five Element acupuncture. Professor Worsley learned acupuncture in regions including Taiwan, China and Hong Kong, as well as countries such as China, Singapore, Vietnam, etc.

In the process of learning acupuncture, he learned and was enlightened by Five Element theory. After returning to his hometown, he focused on spreading the Five Element acupuncture theory. Establishing the College of Traditional Acupuncture, Institute of Traditional Acupuncture and Worsley Institute of Classics, Professor Worsley taught and spread Five Element acupuncture theory in the UK, and even in the world.⁸

Since the development of acupuncture in the UK, this school has trained countless disciples to inherit and carry forward the Five Element theory. In 2011, Nora Franglen, a student of J. R. Worsley took the British Five Element acupuncture back to China. Nora Franglen has lectured in China many times and published *The Handbook of Five Element Practice, Blogging a Five Element Life, On Being a Five Element Acupuncturist*, etc. Some of her works have been translated into Chinese and spread in China and the world.

The theory of British Five Element acupuncture is closely related to the theory of yin and yang and five elements, and five elements are related to five viscera of the human body. When acupuncturists who advocate Five Element acupuncture therapy diagnose the patient, they will consider the patient's personality, emotion, voice, and other factors to judge the patient's dominant five elements and make treatment plans according to the patient's personal experience and psychological states.⁹

Qi is a concept of ancient Chinese philosophy. Qi is the foundation of the matter, the foundation of five-element acupuncture. Worsley believes that acupuncturists must understand natural law and then diagnose the disease and treat the patient, so that the normal force of *Dao* (道) will be recovered and qi can cure the pathogenic factors of disease. British Five Element acupuncture unified with five-element classification in *Huang Di Nei Jing*. In Five Element acupuncture, the classification of five elements depends on distinguishing the patient's color, voice, smell, and emotion and the description of those four aspects manifests the concept of correspondence between man and universe. The character, temperament, emotion, and behavior described by the order and features of seasons constitute the basic framework of the classification of five elements.¹⁰

After the localization development, the innovation of British Five Element acupuncture is that the description of five elements is added to the facial spectrum and behavioral posture. It also combines modern psychology with five-element theory. A group of psychologists led by Abraham H. Maslow absorbed and learned from Oriental civilization, including Taoism and formed humanistic psychology. The British Five Element acupuncture born at the same time was also a response to the social, historical, and cultural background.¹¹

3 Communication path and characteristics of acupuncture and moxibustion popular in the West

Acupuncture is a kind of treatment technique, and it can also be regarded as a symbol of Chinese culture. The communication path of acupuncture and moxibustion is rich and varied. Acupuncture and moxibustion have spread from ancient China to neighboring countries in Asia, Europe, North America even the whole world. Acupuncture and moxibustion popular in the West gradually formed and developed. Its development cannot be without some communication paths, such as hospitals and clinics, academic works, social organizations, and education and training.

3.1 Hospitals and clinics

In the 1990s, a new wave of immigration emerged, and many acupuncturists migrated to Western countries so the number of TCM clinics increased in the West. In the Cleveland Hospital, a special TCM outpatient clinic was established. As a complementary therapy to western medicine, acupuncture was effective in relieving pain and was increasingly accepted by Western people.

The spread of acupuncture and moxibustion popular in the West is inseparable from the early immigration of overseas Chinese. On the one hand, as a professional medical means, it is often difficult for the general public to understand the operation technique and mechanism of acupuncture and moxibustion, and they may only feel the efficacy of acupuncture by experiencing the therapeutic process by acupuncturists. Therefore, acupuncturists play an essential role in the international communication of acupuncture and moxibustion popular in the West. On the other hand, due to the significant differences between Chinese and Western medicine, it is difficult for Western people to accept this mysterious Chinese medicine when they initially confront acupuncture and moxibustion. Therefore, in the early stage of the development of acupuncture and moxibustion popular in the West, acupuncturists in TCM clinics in the Chinese quarter and patients who received acupuncture treatment played an essential role in the international communication of acupuncture.

Under this international communication path, acupuncture and moxibustion popular in the West mainly enable the Western public to experience the treatment process and treatment effect of acupuncture therapy by relying on acupuncture practitioners who used acupuncture and moxibustion to cure diseases, aiming to help more people understand acupuncture and promote the development of acupuncture in the world.

Although acupuncturists' treatment cannot be ignored, the treated patients played a more significant role in the communication of acupuncture and moxibustion. Patients who benefit from acupuncture will continue to consider

going to a TCM clinic for acupuncture treatment when they fall ill again. At the same time, their treatment process will spread orally or in written form, so that more people hear their acupuncture treatment stories and more groups are willing to try to receive acupuncture treatment when they get sick.

3.2 Academic works

Academic works accelerated the development and international communication of acupuncture and moxibustion popular in the West. While the Western public gradually recognized and accepted acupuncture and moxibustion therapy, scholars in Western medicine began to focus on acupuncture and moxibustion. Many Western physicians went to China, Japan, and other Asian countries to learn the knowledge of acupuncture and moxibustion. Based on the characteristics of local diseases in the West, they published books, papers, and other academic works to discuss the unique effects of acupuncture in pain relief, midwifery practice, treatment of gout and treatment of emotional diseases, and they gradually formed a local school of acupuncture and moxibustion.¹²

Acupuncture and moxibustion popular in the West are inseparable from the inheritance and development of TCM acupuncture and moxibustion. In the early days, Western scholars deepened their understanding of acupuncture and moxibustion by reading literature and translations of TCM acupuncture and moxibustion.¹³ Later, the efficacy of acupuncture was verified by experiments. For example, in October 1823, a review of acupuncture was published in *The Lancet*. The experimenters published the experimental process and results in journals and more scholars could know about the experimental results to promote academic development of acupuncture and moxibustion.

From understanding acupuncture and moxibustion to verifying its curative effect, Western medicine physicians have more in-depth understanding of acupuncture and moxibustion, and gradually creating unique schools of acupuncture and moxibustion. In 1957, Paul Nogier published a paper in *Deutsche Zeitschrift für Akupunktur*, in which he first proposed the theory of auricular somatotopy of the inverted fetus and paired it with an auricular point map.¹ In 1969, Paul Nogier published his first monograph *Treatise of Auriculotherapy*, which was translated into English in 1972.¹⁴ In 1975, Paul Nogier founded the journal *Auriculo-medicine*, which provided a platform for communication with auricular therapy. Nowadays, auricular therapy has become a treatment for curing disease.

With professional, scientific and theoretical characteristics, the communication path of academic works can provide a platform for academic exchanges among experts and scholars in Chinese and Western medicine. In the form of books, journals, etc, scholars analyzed

and discussed the mechanism and operation methods of acupuncture and moxibustion. They demonstrated the efficacy of acupuncture and moxibustion through experiments, which made up for the deficiency in Western medicine and took into account both Chinese and Western medicine, thus promoting the development of acupuncture and moxibustion discipline. With books and journals as the carrier, the spread of academic works is easier to carry out literature traceability, so that more scholars can share their academic achievements and realize theoretical innovation based on the existing achievements.

3.3 Social organizations

Social organizations provide a platform for academic exchanges among like-minded experts and scholars in acupuncture and moxibustion. Experts and scholars gather according to their professional branches and interest fields. With more people participating in, acupuncture and moxibustion social organizations with local characteristics are gradually formed. The International Council of Medical Acupuncture and Related Techniques (ICMART) is a typical social organization founded in Vienna, Austria in 1983, and represented medical acupuncture and related techniques worldwide. "Medical acupuncture refers to the use of assessment and treatment techniques that have developed from integrating of a traditional East Asian therapy into contemporary Western (or orthodox) medical practice."¹⁵ ICMART is dedicated to promoting the effective, safe, and cost-effective concept of evidence-based medicine in medical acupuncture and related techniques.

The establishment of social organizations has promoted academic exchanges and achievements popularization in related fields. ICMART has hosted a variety of international events since its establishment over 30 years ago, including Statutory ICMART World Congresses, ICMART Symposium, National Congresses with International Participation, etc, which built a platform for the academic exchange of acupuncture and moxibustion.

Social organizations have a more comprehensive range of communication. Social organizations gather experts and scholars in a particular field, such as Portuguese Association of Electric Acupuncture, which mainly includes experts in the field of electroacupuncture. Regarding academic exchange, on the one hand, social organizations provide a platform for experts and scholars in the field of acupuncture and moxibustion popular in the West. Based on the theory of acupuncture and moxibustion popular in the West and with the help of the platform advantages of social organizations, theories that different scholars advocated are further spread. On the other hand, social organizations hold academic conferences and other activities to communicate and exchange acupuncture theory, clinical research, scientific experiments and other aspects, and create opportunities

for the integrated development of acupuncture and moxibustion popular in the West. At the level of popularization of acupuncture and moxibustion, as acupuncture and moxibustion is a highly professional discipline, social organizations organize voluntary service groups to hold activities such as free clinics, so that more Western people can experience acupuncture and moxibustion, and help ordinary Western people to understand and accept acupuncture and moxibustion.

3.4 Education and training

The development of acupuncture and moxibustion popular in the West cannot be separated from generation to generation, and education and training are the crucial ways of transmission. In the early stage of the development of acupuncture and moxibustion popular in the West, few doctors knew and studied acupuncture and moxibustion in the Western society, and there were few TCM clinics in the community. Some acupuncturists recruited disciples and taught acupuncture experience in private clinics. After development period, some relatively standardized acupuncture and moxibustion colleges were gradually formed. In 1956, J.R. Worsley founded the College of Chinese Acupuncture in Leamington, UK, to teach Five Element acupuncture.¹⁶ In 1975, the New England School of Acupuncture was established in the United States, which was the first TCM acupuncture and moxibustion school in the United States. In 1989, the French government approved acupuncture courses in public universities, and nine medical universities in Paris, Marseille, Lyons and Strasbourg offered acupuncture and moxibustion courses. In 1995, Westminster University offered acupuncture and moxibustion courses, which is the first university in the UK to offer acupuncture and moxibustion courses.¹⁷

With the development of acupuncture and moxibustion popular in the West, education and training are gradually standardized and the curriculum is becoming increasingly comprehensive. Taking Germany as an example, the German acupuncture course is based on traditional acupuncture ideas, combining modern science with traditional medicine and new knowledge in various scientific fields. Training time is also strictly required. In Australia, as doctors must be certified before using acupuncture to cure diseases, they need to attend accredited courses approved by The Joint Consultative Committee on Medical Acupuncture (JCCMA), including 100 hours of lectures and seminars and 30 hours of mentor guidance, and pass the first part of the Fellowship of the Australian Medical Acupuncture College (FAMAC) examination. The training covers TCM diagnosis and treatment, laser, neurophysiology, safety, and other contents.

From apprenticeships in private clinics to systematic learning in universities, education and training in acupuncture and moxibustion popular in the West have been improving. More medical professionals can learn

acupuncture and moxibustion, expanding the scope of acupuncture and moxibustion education groups, improving the professional degree of acupuncture and moxibustion education, and promoting the inheritance of the theory and practical skills of acupuncture and moxibustion popular in the West.

4 International communication strategy for TCM acupuncture and moxibustion

TCM is the treasure of Chinese civilization. The spread of acupuncture and moxibustion popular in the West promotes the spread of TCM acupuncture and moxibustion.

4.1 Leading by national policies and advancing with multiple subjects

The country should play the leading role and make international communication policies according to the different conditions of different countries. On the one hand, under the support of national policies, TCM acupuncture and moxibustion can be spread more effectively and influentially; on the other hand, the national mainstream media will better guide the public opinion.

With the support of national policies, social organizations, scholars and experts, doctors, medical students, and even the public can play an essential role in TCM acupuncture and moxibustion “going global”. For instance, the WFAS, an international organization, holds international conferences, WFAS “Belt and Road” Tour of Acupuncture-Moxibustion and other activities to contribute to international communication. Experts and scholars give lectures and participate in forums online and offline. Doctors and medical students can improve their acupuncture skills to help more foreign patients to relieve pain. They can also send popular science of TCM acupuncture and moxibustion on social platforms (Fig. 2).

4.2 Excavating TCM classics and adhering to cultural confidence

From the development of acupuncture and moxibustion popular in the West, it is clear that acupuncture and moxibustion popular in the West originated from TCM classics. Guided by the basic theory of TCM, acupuncture and moxibustion popular in the West are combined with the characteristics of localization. For the school of acupuncture and moxibustion popular in the West with a good development trend and curative effect, we should promote inclusiveness and respect for differences. We can learn some advanced acupuncture skills from acupuncture and moxibustion popular in the West and combine TCM acupuncture and moxibustion with modern medicine.

Since the outbreak of COVID-19, TCM has provided Chinese wisdom for the global fight against COVID-19. Tu Youyou (屠呦呦) and other Chinese scientists provide treatment plans for the pandemic worldwide. Countless facts have proved that TCM is popular among people around the world and benefits human health. We should strengthen cultural confidence in TCM acupuncture and moxibustion and release the charm of TCM.

4.3 Innovating communication channels and creating brands with characteristics

The development of science and technology brought various media. From traditional media like books, periodicals, and newspaper to new media like TikTok, Facebook, and Twitter, the development of media also brought opportunities and challenges to the international communication of TCM acupuncture and moxibustion. We can combine the advantages of traditional media with new media to spread TCM acupuncture and moxibustion to the public. We can publish acupuncture books in multiple languages. With plain language, these publications will promote the spread of acupuncture and moxibustion. People can also make attractive short



Figure 2 WFAS “Belt and Road” Tour of Acupuncture-Moxibustion held in Egypt, Ethiopia and Seychelles, in September 2023 (source from: the authors).

videos and upload them to social media, so that people around the world will know about TCM acupuncture and moxibustion. Meanwhile, using the advantages of big data and establishing digital publishing, we should try world-class journals. *The British Medical Journal*, *The Journal of the American Medical Association*, *The New England Journal of Medicine*, and *The Lancet* are top journals in Western medicine, but there has not been world-class representative journal in the field of TCM acupuncture and moxibustion. Since the founding of the *World Journal of Acupuncture-Moxibustion* in 1991, it has achieved rapid development. However, there still exists a wide gap between TCM journals and top journals in the field of Western medicine. Journals and magazines, as traditional media, are still important tools in the academic communication of TCM acupuncture and moxibustion. We can establish a digital academic platform with an intelligent editing, and reading system so that scholars and experts at home and abroad will share the digital periodical resources.

4.4 Focusing on audience and achieving targeted international communication

TCM acupuncture and moxibustion focus on different aspects. When disseminating TCM acupuncture and moxibustion, we need to consider audience preference. For different target populations, we can adopt different communication strategies and achieve accurate and targeted communication. When spreading TCM acupuncture and moxibustion to Western countries, we can focus on spreading the academic content that they are interested in. For example, suppose we plan to spread TCM acupuncture and moxibustion to the school focusing on the research on electroacupuncture. We can publicize the latest theoretical achievements of electroacupuncture in China. If we plan to spread TCM acupuncture and moxibustion to a school focusing on classical acupuncture, we can demonstrate TCM classics closely linked with the school. Due to the enormous differences between Chinese and Western culture, some concepts in TCM acupuncture and moxibustion may be hard for ordinary people in the West to understand. Against this background, we can convey the history and culture of TCM acupuncture and moxibustion in pictures or videos, which are easier for ordinary people to understand. We can also cooperate with local organizations to carry out free clinics so that people can experience the charm of TCM acupuncture and moxibustion.

5 Conclusion

Acupuncture and moxibustion popular in the West are formed through cultural exchanges between the East and West. It has local characteristics, promotes and innovates diagnosis and treatment techniques that are neglected or forgotten in China in the process of international

communication. Acupuncture and moxibustion popular in the West provide a world vision for developing domestic acupuncture and moxibustion, as well as more extensive and in-depth communication opportunities. The development of contemporary acupuncture and moxibustion should have an inclusive and win-win spirit. While consolidating China's leading position in acupuncture and moxibustion and maintaining Chinese characteristics, we should actively absorb treatment techniques related to acupuncture and moxibustion, strive to promote acupuncture and moxibustion into local medical care system in international promotion, and promote the academic prosperity and technical progress of acupuncture and moxibustion system in the world.

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Ethical approval

This article does not contain any studies with human or animal subjects performed by either of the authors.

Author contributions

QIAO Huijun participated in the writing of the draft. LIU Jingyuan and HU Weiguo participated in the performance of the research and provided many new ideas. YANG Yuyang supervised the process and revised the draft. All authors agreed to the contents of the whole manuscript.

Conflicts of interest

YANG Yuyang is a Youth Editorial Board member of *Chinese Medicine and Culture*. The article was subject to the journal's standard procedures, with peer review handled independently of this Youth Editorial Board member and their research groups.

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Introduction of Western Medicines into China and Improvement on Decoctions during Modern China

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Abstract

During the late Qing dynasty (1840 A.D.-1912 A.D.), a large quantity of Western medicines entered China, which continuously impacted the traditional Chinese medicine (TCM) market and revealed the shortcomings of Chinese medicines. Some personages in the TCM community followed the trend of learning from the West, and attempted to reform TCM, with the improvement on decoction becoming an important aspect of this effort. Through debates and trials, the improvement on decoction underwent three stages of conceptual evolution: “taking Chinese medicines as the foundation and referring to the dosage forms of Western medicines”, “introducing Western techniques to serve the preparation of decoctions” and “integrating the theories of TCM and Western medicine to improve decoctions”. The study highlights the effective complementarity between modern TCM and Western medicine in the field of pharmacy, and provides valuable experience and support for the reevaluation of the value of TCM in contemporary society.

Keywords: Western medicine; Improvement; Decoction; Traditional Chinese medicine; Scientization

1 Introduction

Decoction is a liquid preparation form by boiling or soaking the ingredients in water, and taken after the sediment is removed. In modern China, with Western medicines gradually occupying the market, decoctions that had always been praised highly by doctors were criticized as the dross of backwardness. During the late Qing dynasty and the Republic of China (1912-1949), the climate of learning from the West led to a decades-long dispute over the preservation and abolition of traditional Chinese medicine (TCM). By now, many studies have described the dispute in detail.¹⁻⁷

However, few studies investigate the response and reflection towards the introduction of Western medicines into China from the perspective of medicines. The public's acceptance of Western medicines, as well as their choice between Chinese and Western medicines, is also neglected.

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The improvement and development of Chinese medicines in modern times was related to national interests and rights, and had always been the focus of attention of all sectors of society. Without the support of the government and legal status of TCM, the responsibility for the improvement was split and shouldered by both apothecaries and doctors. Because of complicated preparation, decoction became the focus of the improvement on TCM in modern times. Li Yanchang (李彦昌) studied and discussed the process of “abolishing TCM theories and reserving Chinese medicines” and “scientization of Chinese medicines” in modern times. He provided detailed historical data and insights.^{8,9} However, the above studies mainly focus on the re-examination of historical facts in the social debate, without a review of the improvement process of decoction from theory to practice.

The pharmaceutical methods of Chinese medicines were innovated in modern times, which was a significant aspect of the value re-modeling of TCM. Under the given criticism and self-criticism, TCM personages re-recognized “scientization” and “Westernization” through the reform of decoction, and found a unique way to scientization. To discuss the influence of Western medicines going into China on the improvement on decoction, the practical conflicts and the contradictions of doctors in the improvement, and the choice of the general public on Chinese and Western medicines will help to re-examine the relationship between TCM and Western medicine, reflect the consumption culture of Chinese and Western medicines in modern times, and

demonstrate the tortuous process of traditional Chinese society interpreting and transforming Western medicine in its own way. In addition, sorting out and displaying the thoughts and preliminary results of the integration of TCM and Western medicine in modern times, to a certain extent, can respond to the doubts of contemporary society towards TCM and provide valuable theoretical basis and practical reference for the contemporary inheritance and development of TCM.

2 Introduction of Western medicines into China and its influence

The medical exchanges between China and other countries have never ceased since ancient times. The Western medicinal materials or medicines introduced into China are named Western medicines by Chinese people. In the 8th century, the introduction of alchemy laid the foundation for Western pharmacy. After the Renaissance, innovation in natural science research furthered botany and pharmaceutical chemistry in modern times. Paracelsus from Switzerland advocated that “chemistry serves medicine”. Targeted chemicals gradually replaced natural medicines and became the mainstream of clinical treatment in the West. In 1606, the Italian missionary Sabbatino de Ursis translated a work by Agostino Ramelli on hydraulic mechanisms, which was put into Chinese by Xu Guangqi (徐光启). The book was published under the name *Tai Xi Shui Fa* (《泰西水法》 *Hydraulic Machinery of the West*). The pharmaceutical distillation method described in this book marked the beginning of the introduction of Western pharmaceutical methods into China. In 1634, the German missionary Johann Schreck and Philippos collaborated to translate *Tai Xi Ren Shen Shuo Gai* (《泰西人身说概》 *An Overview of Human Anatomy of the West*) (Fig. 1). After that, Western medicine doctors gradually entered and practiced Western medicine in China.

During the Ming and Qing dynasties (1368-1912), owing to the scarcity and remarkable efficacy of Western medicines, they were exclusively reserved for the ruling class and privileged households. In 1693, a missionary cured Emperor Kangxi's (康熙) malaria with chinchona bark. Therefore, Kangxi allocated a dedicated facility to produce Western medicines, which led to the successful development of quinine. Due to the excellent efficacy of quinine, Kangxi highly recommended it to his ministers. He once bestowed the medicine to Cao Yin (曹寅), the director of Liaoning Weaving Bureau. He ordered a servant, riding a swift horse day and night without rest, to send the medicine and the instructions.¹⁰ The integration of quinine with traditional Chinese medication experience is considered the beginning of Western medicine's clinical application in China. In the late Qing dynasty, Western missionaries, using Macau as a base, entered the Pearl River Delta region around Guangzhou, and established church hospitals to propagate their religious

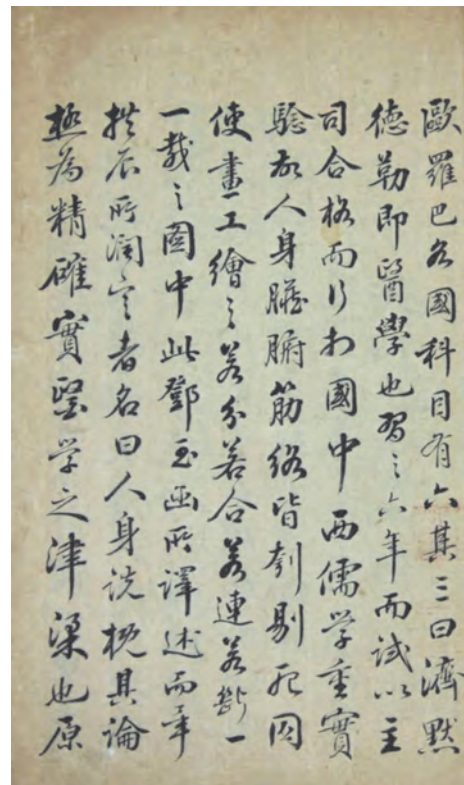


Figure 1 Contents from *Tai Xi Ren Shen Shuo Gai* (《泰西人身说概》 *An Overview of Human Anatomy of the West*) (source from: Zhejiang Chinese Medical University).

beliefs. In 1828, the British doctor Peter Young established the Canton Dispensary to facilitate foreign merchants to seek medical treatment and purchase medicines in Guangzhou. As a result, Western medicine gradually took root there. Perhaps due to a lack of trust in the unfamiliar Western medicine, ordinary Chinese people still regarded TCM as their preferred choice for treatment.¹¹

In 1858, the Qing government signed *Tong Shang Zhang Cheng Shan Hou Tiao Yue* (《通商章程善后条约》 *Treaty on the Aftermath of the Articles of Commerce*) with foreign countries, which included *Hai Guan Shui Ze* (《海关税则》 *Customs Tax Regulations*). Since then, foreign medicines sold in China had been exempt from customs duties.¹² Large quantities of Western medicines were poured into China through foreign trading firms, and “medicines are one of the main goods imported into China from foreign countries”.¹³ In 1882, six Western medicine doctors from Boji Hospital who were returning Chinese immigrants from the United States, including Luo Kaitai (罗开泰), founded the *Tai An Yao Fang* (泰安药房 *Tai'an Dispensary*) in Guangzhou. They not only sold Western medicines but also processed raw Western medicine materials into common medicines such as mercurochrome and iodine tincture, marking the beginning of Chinese people running Western medicine dispensaries and producing chemical medicines. However, at the early stage, Western medicines were not accepted by the Chinese market. TCM doctors held that the nature of

Western medicines was incompatible with the constitutions of Chinese people, and the properties of Western medicines were unclear, so Chinese people should not try them. The general public was even more resistant to Western medicine. Taking the example of quinine, “foreigners have studied it for many years and consider it a precious medicine, while Chinese people, due to our lack of understanding of its properties, treat it as if it is a poison” and refused to take it.¹⁴

The ravages of war and natural calamities hastened the spread of epidemics, leading to successive outbreaks of varying plagues in different regions. Many Chinese doctors of Western medicine combined effective chemical medicines with Chinese medicines or manufactured chemical medicines into the dosage forms for ordinary people (such as medicated oil, pill, and powder). These products were sold under the names of the Chinese medicines they contained, and received a warm welcome. In 1902, malaria broke out in southern China. Liang Peiji (梁培基), graduating from a Western medical school, adhered to “developing Western medicines into dosage forms of Chinese medicines”, and creatively combined the Western medicine “quinine sulfate” (used for malaria) with Chinese medicines, such as licorice powders to make the *Liang Pei Ji Fa Leng Wan* (梁培基发冷丸 Liang Peiji Malaria-Curing Pills). Well-versed in product marketing, he combined the pill with popular folk rhymes and proverbs in Guangzhou, promoting it in a unique and memorable way. Upon launch, the pill enjoyed large sales throughout southern China, facilitating the major transformation in dosage forms. For example, the *Zhi Ke Wan* (止咳丸 Antitussive Pills) developed by Tang Shiyi (唐拾义) in 1912, was a patent medicine representative in combining Western and Chinese medicines, with ingredients including sodium benzoate, ephedrine hydrochloride, *Zhang Nao* (樟脑 Camphora), *Yuan Zhi* (远志 Radix Polygalae), *Jie Geng* (桔梗 Radix Platycodonis) and *Gan Cao* (甘草 Radix et Rhizoma Glycyrrhizae). These localized Western medicines contained systematic effective components, with simple administration and satisfying efficacy. They were praised by the patients from China and the southeast Asian countries. Taking *Lei Tian Yi Liu Shen Shui* (雷天一六神水 Lei Tianyi Liushen Potion) as an example, Dr. Zou Lu (邹鲁), president of the Sun Yat-sen University then, once said that the popularity of it in Japan led to the jealousy of the Japanese government and a ban on importation (Fig. 2).

The prevalence of the localized Western medicines significantly changed the public’s perception towards Western medicine. Foreign Western pharmaceutical companies, which relied on smoking cessation medicines as their main products, took advantage of massive capital to suppress Chinese medicinal merchants. They poached consumers by overwhelming advertisements and high-quality medicines, winning a place in the Chinese market. In the early years of the Republic of China, foreign



Figure 2 Advertisement for *Lei Tian Yi Liu Shen Shui* (Lei Tianyi Liushen Potion) (source from: Zhejiang Chinese Medical University).

medicines trade shifted from a surplus to deficit of more than 4 million Haikwan tael (approximately 6.2 million silver dollars at that time). In 1905, statistics showed that the import volume of cinchona bark doubled compared to a decade ago, leaping to 4.25 million pounds.¹⁵ In 1911, the capital of the Chinese-owned dispensaries in Shanghai increased from several thousand yuan in the late Qing dynasty to 566,000 yuan.¹⁶ Western medicines industry was basically established by the corresponding dispensaries in Guangzhou with a tendency to catch up and surpass Chinese medicines. Labelled as “magic and highly effective”, Western medicines entered the Chinese market and became a fashion, directly influencing the choice of medicines of the people in metropolises. Western medicines, represented by quinine, were praised for their significant efficacy and low price. Pills were either made into capsules or coated with sugar, making them convenient to take with an excellent taste. In 1928, an article published in the *Ta Kung Pao* (《大公报》) reported that “Nowadays, people in rural areas have no access to Western medicines, while those in metropolitan cities can enjoy the profusion of both Chinese and Western medicines”.¹⁷ Although most rural residents dared not to take Western medicines, or were not able to afford them, it was undeniable that urban residents were gradually accepting Western medicines, which made a considerable impact on the Chinese medicines industry.

With increasing importance attached to Western medicine by the late Qing government, a large number of intellectuals were engaged in Western medicine, and thus many doctors proficient in both TCM and Western medicine emerged. They converted the previous attitude of completely rejecting Western medicines to admitting that some Western medicines on the market were indeed more effective than Chinese medicines. Besides, some TCM doctors gradually recognized the efficacy of Western medicines and compiled information on the properties. TCM doctor Zhou Xueqiao (周雪樵) also believed that Chinese and Western medicines could

complement each other, and that Western medicines were favorable for addressing emergencies and relieving pain but should be used cautiously. Nevertheless, Western medicines were also criticized by some doctors for threatening the future of Chinese medicines. “Nowadays, doctors tend to deliver scathing rebukes against TCM and sing the praise of Western medicine. They want to burn the books on TCM, so that all sick Chinese can only drink Western medicine potions for treatment. In this regard, over time, youngsters hardly know about TCM that has a history spanning over 4,000 years.”¹⁸ Quan Hansheng (全汉升) summarized the attitudes of the doctors in the late Qing dynasty to Western medicine into three categories: approval, opposition and compromise. The opposition maintained that TCM was entirely distinct from Western medicine, and therefore, there was no need nor any value in studying Western medicine. The compromise initially advocated improvement on formulas: “The machine for preparing Western medicines is fully equipped...Therefore, it is sensible to learn and follow the modern pharmaceutical methods instead of following old conventions.”¹⁹

After the founding of the Republic of China in 1912, the case of excluding TCM from the education system led to the national petition for developing TCM education. This petition was organized by all TCM doctors (Fig. 3). In 1914, except for delivering a reply, the Ministry of Education took no action to support TCM education. Since then, the controversies between TCM and Western medicine had continued, with looming battles between the products and theories of TCM and Western medicine. The opinions of bolstering Western medicine for its efficiency and depreciating TCM for the prevalence of mediocre doctors caused a great clamor. TCM was seen as relics of the past due to its theoretical foundation closely related to the concepts of yin-yang (阴阳) and five elements. Liang Qichao (梁启超) once publicly stated: “Despite the existence of proficient TCM doctors, they can’t impart their knowledge and experience to others. Therefore, TCM today is no better than that of the era in which Bian Que (扁鹊) and Cang Gong (仓公) lived, or perhaps even worse.”²⁰ Yu Yue’s (俞樾) statement of “abolishing TCM theories while preserving some Chinese medicines” was widely spread, and Zhang Taiyan’s (章太炎) criticism to TCM theories received support from a group of “reform pioneers”. Under the condemnation of TCM and its theoretical foundation, numerous TCM doctors acted to oppose the idea of abolishing TCM theories and preserving Chinese medicines. To reclaim medical authority, they embarked on a path of improving Chinese medicines.

Compared with the convenient proprietary Chinese medicine, decoction greatly meets the needs of TCM differentiation and treatment, and can not only flexibly match the internal service according to the patient’s condition, but also be used externally for gargling, fumigation and bathing; the production method is relatively



Figure 3 Responses to Minister Wang Daxie's (汪大燮) case of abolishing traditional Chinese medicine by TCM doctors [source from: Wan T. Reflections on Minister Wang's plan to abolish traditional Chinese medicine (汪总长拟废中医中药感言). *Shenzhou Medical Journal* 1914;2(3):1-3. Chinese.].

simple and the effect is faster. However, these strengths were overshadowed by comparison to the symptomatic Western medicines. Lin Dakui (林大夔) pointed out the following six shortcomings of decoction: time presuming to decoct, changes in the medicinal properties due to improper decoction methods, inconvenience in carrying, difficulty in storing, complexity of medicinal properties, and challenges in mastering decoction methods of varying medicines. He believed that to compete with Western medicines, priority must be given to the improvement on decoction.²¹

There are many problems with decoctions. Firstly, most decoctions should be taken hot, with a bitter taste, a substantial quantity, and a lengthy course of treatment. “Sometimes the disease might reject the decoction and thus the patient will vomit up the decoction. Doctors can do nothing to deal with this situation.”²² Subsequently, the sufferings of the patient were doubled. A great number of patients turned to Western medicine instead of TCM due to the bitter taste of decoction. Secondly, decoction not only required the cost of raw medicines, but also the expenses and efforts of acquiring a stove and charcoal for preparation. Compared with cheap and specific Western medicines, the cost of decoction was often higher. “Although a dose of decoction may only cost four or five hundred cash, it typically requires additional expenses for water, charcoal and labor.” If valuable medicines were prescribed in the formula, basically a dose may cost tens of *yuan* (元). On the contrary, the

prices of symptomatic Western medicines were no more than 2 *yuan* per bottle, and cheap ones only cost a few *jiao* (角). The administration of Western medicines was simpler, and their efficacy also surpassed that of Chinese medicines. Thirdly, the preparation of decoction was tedious. “Due to the tedious decoction methods, many patients (in mild conditions) would rather suffer than go to a doctor, and thus turn to severe conditions.”²³ If one was away from home alone and had a sudden disease, it was nearly impossible to decoct. Therefore, even those believing in TCM would choose Western medicine.

In addition, it was often difficult to distinguish fake Chinese medicines. High-quality Chinese medicines might be destroyed due to improper processing. In general, TCM doctors referred to ancient classics such as *Lei Gong Pao Zhi Lun* (《雷公炮制论》 *Master Lei’s Discourse on Medicinal Processing*). However, ancient methods might be inapplicable to modern times. Apothecaries in the market prioritized aesthetic appeal when processing medicines in order to cater to societal preference. Subsequently, the medicines were less effective, leading to the embarrassing situation that “doctors only concerned with prescribing formulas and apothecaries only concerned with polishing medicines”. Since modern times, classic formulas and new Chinese medicines have coexisted, and new processing methods emerged constantly. Many doctors believed that the downfall of TCM was attributed to the shortcomings of Chinese medicines.

3 Imitation: taking Chinese medicines as the foundation and referring to the dosage forms of Western medicines

At the end of the 19th century, many European and American medical scholars were keen to translate such TCM classics as *Ben Cao Gang Mu* (《本草纲目》 *The Grand Compendium of Materia Medica*) and *Huang Di Nei Jing* (《黄帝内经》 *The Yellow Emperor’s Inner Classic*), and they adopted chemical research methods to refine Chinese medicines to make varying medicines. In 1899, foreign scholars published the test report on Eumenol, the extract of *Dang Gui* (当归 *Radix Angelicae Sinensis*) developed by the Merck Group in Germany, and stated that it had a significant effect on gynecological diseases (Fig. 4). Labeled as scientific products, a lot of medicinal powders and extracts refined from Chinese herbal medicines were sold to China with exquisite packaging. Despite the high prices, they were quite popular. In the forms of liquid, pill or powder, the medicines were convenient to take orally and the efficacy was superior to decoctions. Therefore, the improvement on decoction in modern China started with simplifying the preparation of Chinese medicines by referring to the dosage forms of Western medicines.

The most notable strength of Western medicines is their high efficiency and convenience. Therefore, the improvement on decoction in the early 20th century aimed at rendering it easily ingestible and portable. TCM doctors believed that if this endeavor succeeded, TCM would gain the upper hand in patients’ choice between TCM and Western medicine. And “for this reason, the discussion on replacing decoctions with pills and powders emerged”.¹³ TCM doctor Yang Zanmin (杨赞民) proposed to “abolish decoctions” and make them into medicated pastes, extracts, liquids and powders. He also listed hundreds of Chinese medicines and their operation methods as a reference for the improvement on decoction.

The first failure went to the attempt to convert decoctions into pills. At that time, the preparation of pills mostly relied on manual work, with a low degree of refinement. The pills were large, and sometimes a pill weighed as much as 3 or 4 *qian* (钱) (about 11-15g). “As a burden for digestion, the pills reduce food intake. Besides, it is difficult for women and children to swallow because of the large size and the bitter taste.”²⁴ Another doctor Zhu Rangqing (朱让卿) once converted decoctions into edible powders. The method was to grind the medicines into coarse particles and then dissolve them in wine or warm water; alternatively, grind the medicines into coarse particles, and then boil them with water. It simplified the decoction process, but made it hard for patients to take orally, as “patients have to pour a small quantity of the coarse particles into a large quantity of water to swallow the sediment”.²⁵ These improved

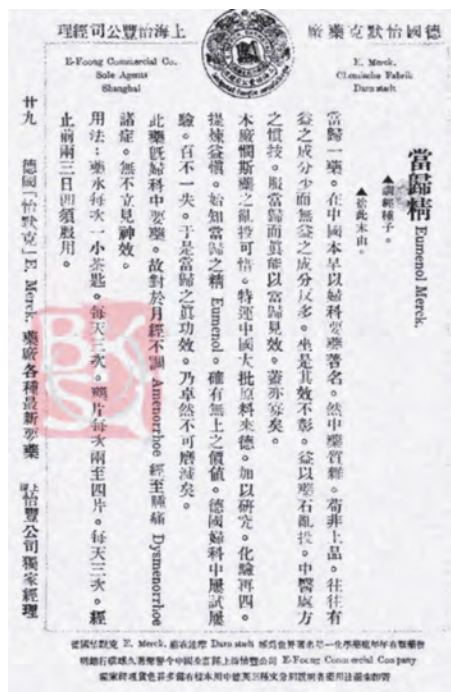


Figure 4 Introduction to “Eumenol” in China [source from: Chen LH. *All Kinds of Latest Medicines in E. Merck* (德国怡默克药厂各种最新要药). Shanghai: Yifeng Company. p.29. Chinese].

medicines were not only inferior to decoctions in efficacy and dosage, but also extended the course of medication. Besides, it was difficult to control heat when making a medicated paste as it spoiled easily. Only the distilled herbal extracts which were most similar to Western liquid medicines could be refined to a certain extent, and the therapeutic effects were also satisfying. However, the herbal extracts were mild in power and thus a small dose would be ineffective. To reach a certain effect, a larger dose was a must, which would inevitably increase the dose of other medicines matched with the main medicines. “This is the medicine for watering a buffalo and how can a patient bear it?”²³

During this period, the missionaries of Western medicine integrated Western medicine into traditional Chinese customs and adapted themselves accordingly. By demonstrating the effectiveness of Western medicine in treating illnesses, they gained the medical discourse power, and Western concepts of health gradually gained popularity in China. The church preached through medical practices in China and received a warm welcome. With a pleasing environment and attentive service, the Western medicine hospitals were in stark contrast with the TCM doctors whose medical skills varied greatly. “All the patients with complicated or critical diseases that cannot be treated by TCM doctors, will recover soon once they are hospitalized to receive surgery and took Western liquid medicines. Therefore, Western hospitals and liquid medicines became well-known.”¹³ Under the climate of “science” and “civilization” in China, the Western liquid medicines in sealed glass bottles became an important symbol of advanced medical experience at that time. A story goes that Sun Yat-sen (孙中山) once had an appointment with the TCM doctor Qiu Jisheng (裘吉生). But unfortunately, Sun’s companion Hu Hanmin (胡汉民) suffered from dysentery suddenly. Hu refused to take the decoction since he did not trust TCM. Qiu then put the decoction into a glass bottle, disguising it as Western medicine, and Hu recovered overnight after taking it. To express gratitude, Sun Yat-sen presented Qiu Jisheng with the words “saving people from sufferings” in calligraphy, which became a deed praised far and wide within the TCM community (Fig. 5). Perhaps for the reasons above, the direction of improving decoctions changed from maintaining traditional dosage forms to imitating the forms of Western medicines, which was to refine such dosage forms of Chinese medicines as pills, powders, pastes and wines, or prepared them as solutions, and sold them in bottles. In 1902, an early pharmaceutical factory in modern China, Zhongxi Dispensary (中西药房) [later renamed Zhongxi Pharmaceutical Factory (中西制药厂)] was set up in Tianjin. The factory took the lead in improving decoctions by imitating the form and packaging of Western medicines. When treating patients with epidemic pestilence, Yao Bangjie (姚邦杰) found that formulas with bitter and cold medicines were often used. Although the

disease was cured, the medicines were harmful to the patients’ health. In this regard, he invented the anti-pestilence liquid, and claimed that “a small cup of the liquid is better than a bowl of decoction”.²⁶

Du Liuhui (杜鎔辉) evaluated that there were no revolutionary innovative achievements in the improvement on decoction in the medical field at that time. He noted, “What I see in the improvement on decoction is nothing but competition in advertising, as well as improvement on medicines and their production”.²⁷ Most TCM doctors extracted decoctions by boiling the Chinese medicines using traditional decoction methods to make a concentrated liquid. Like ointments, powders, and extracts, the concentrated liquids of decoctions faced two major challenges: One was the balance between “efficacy” and “dosage”. Limited by the abilities of doctors and objective conditions, most liquid production often failed because of insufficient efficacy. Another challenge was the complicated decoction procedure. Doctors always highlight decoction methods since the methods play a decisive role in the final quality of the ingredients and greatly influence the clinical efficacy. The amount of water, heat control, what to decoct first, and taking cold or hot should all be adjusted in accordance with the properties of the medicines. The methods were difficult to learn and spread. TCM doctor Zhang Shupeng (张叔鹏) proposed that patients could buy coarse medicine powders to make a condensed decoction by



Figure 5 “Saving people from suffering” (救民疾苦) presented by Sun Yat-sen to Qiu Jisheng for gratitude (source from: Chinese Medical History Museum).

themselves or ask doctors for help, and mix the decoction with boiling water for drinking, which was convenient not only outside but also at home. The prescriptions suitable for this method were limited, and the therapeutic effect of prescriptions also needed to be tailored to the patient's conditions, making it difficult to guarantee the efficacy of the medicines bought by patients. Even if the efficacy was clear at the beginning, over time, patients would be dissatisfied with doctors for not adjusting the amount of decoction according to their conditions, and thus the flexibility of the decoction was lost. In addition, although doctors recommended the free decocting service provided by dispensaries, patients often distrusted them. Moreover, scandals appeared in many places that dishonest dispensaries mixed authentic medicines with fake medicines or reused waste medicines to make decoctions. Apothecaries focused more on profits, and nobody could know whether they changed the prescribed formula. In this regard, the production of decoction could not totally depend on apothecaries.

Reformers tried to imitate Western medicines. In addition to setting up standards for decoction preparation, they simplified the decoction process as much as possible while preserving the properties of the medicines to facilitate the daily use by the general public. In 1928, the government adopted the international system of units for medicine measurement reform. In 1930, *Zhong Hua Yao Dian* (《中华药典》 *Chinese Pharmacopoeia*) was issued, which adopted the Western measurement methods and normalized the decoction methods. In January 1933, the TCM industry in Shanghai switched to the new criteria, requiring TCM formulas added with the sentence that “all the above medicines are weighed in new criteria”, so that patients could determine the dosages when preparing medicines.²⁸ Though the measurement of some foreign TCM formulas mainly adopted the unit “gramme”, it could be transformed into Chinese criteria. Dai Jingxian (戴竟先) asked in *Tie Qiao Yi Xue Yue Kan* (《铁樵医学月刊》 *Tieqiao Medical Monthly*): the ratio of Western medicines and water seems to be correct and quantitative, but the ratio in TCM decoctions depends on the condition of the patient, so how to decide the ratio? The editor replied that twenty-two *liang* (两) of medicines could be decocted in one *dou* (斗) of water to get four *sheng* (升) (in ancient weight).²⁹ Some commonly used decoction methods were published in medical journals. Ye Jingqiu (叶劲秋) summarized the general process of decoction: “Cut the medicines into coarse powders and put them into a pot with some water. Put the pot in a larger pot with water, and decoct for thirty minutes.”³⁰

However, these guidelines did not have a significant impact on practice. The dispute between traditional doctors and reformists over the preservation or abolition of decoction never ceased. TCM doctor Pan Wentian (潘文田) declared in a newspaper that he opposed the abolition of decoction, and it was ridiculous to change the dosage forms and usage of Chinese medicines in

accordance with that of Western medicines.³¹ The reform of decoction methods also faced many difficulties. Most TCM doctors were unwilling to give up their own long-held concepts of decoction, because the dosage of medicines must be adjusted according to the conditions of patients and the processing of some special medicines could not be omitted. It can be seen that the decoction reform was not as easy as expected.

4 Refinement: introducing Western chemical techniques to serve decoctions

In the 1920s, medical reformers advocated “refinement and assay”. Many TCM doctors found that the efficacy of some Western medicines used in the treatment highly overlapped with that of certain Chinese medicines. If these Western medicines could be replaced by Chinese medicines, it would not be a bad idea to improve TCM and safeguard national interests.

The Western medicine doctor Miao Yongqi (缪永祺) proposed using TCM decoctions to replace the expensive and high-side-effect Western medicines. He found that some patients went blind because they overdosed on *santonin* to treat roundworm diseases, a medicine more expensive and less safe than decoctions. *Xing Ren* (杏仁 *Semen Armeniacae Amarum*) and *Tao Ren* (桃仁 *Semen Persicae*) could replace Hydro-cyanic acid without side effects, and *Hua Shi* (滑石 *Talcum*) could replace bismuth agent while avoiding constipation.³² The process of seeking Western medicine alternatives is also a process of gradually deviating from traditional pharmacological knowledge, simply selecting the medicines based on therapeutic effects, and using Western medicine research standards to test the properties of Chinese medicines. Reformers put forward ideas to move away from traditional methods of identifying Chinese medicines based on appearance and odor, and instead advocated for the cultivation of chemical experts who could utilize Western knowledge of pharmacognosy to study the properties of Chinese medicines. They also suggested consulting pharmaceutical experts for thorough and comprehensive screening of Chinese medicines. Such a move could not only assay the Chinese medicines used by TCM doctors, but also develop new medicines unknown to Western doctors. “If such tonifying Chinese medicines as *Sheng Di* (生地 *Radix Rehmanniae*), *Dang Gui*, *Niu Xi* (牛膝 *Radix Achyranthis Bidentatae*), *Huang Qi* (黄芪 *Radix Astragali*), and *Ren Shen* (人参 *Radix et Rhizoma Ginseng*) can be assayed to analyze their constituents, their effects will be promoted. This approach in Western medicine further highlights the efficacy of Chinese medicines”.³³

Expanding from the chemical analysis of medicinal ingredients to the analysis of compound formulas, Lin Dakui et al. proposed a hypothesis based on current

research in pharmacognosy. If the unnecessary and toxic components in TCM decoctions could be removed, decoctions would be just like Western pharmaceutical solutions. Such a Western pharmaceutical method would give the medicines a better taste and make them more accessible and convenient for patients to buy and ingest. However, putting ideas into practice is far from simple.

When cholera broke out in Shanghai in 1919, TCM experts in Shanghai tried to improve the decoction that was used to deal with the epidemic by “refining decoction-ready medicines” and “prolonging the shelf life of decoction”, which effectively curbed the spread of the epidemic when it broke out again the following year, curing thousands of patients within three months. With the initial practical experience, Li Pingshu (李平书) et al. founded Shanghai Cuihua Pharmaceutical Factory (上海粹华制药厂) in 1920 (Fig. 6). They used chemical methods to process geo-authentic Chinese medicines into extracts, powders, pastes, pills and potions. Patients could ingest the medicines in the formula directly instead of decocting them, and the efficacy even surpassed that of decoction, which gained popularity among reformist doctors at that time. As a result, the move initiated by Shanghai Cuihua Pharmaceutical Factory was highly praised as the opening of a “new era” of TCM.

The outcome of producing such medicines was rather embarrassing: TCM doctors were hesitant to use them since they were unsure of the properties of the chemically derived medicines and had only a limited understanding towards Western science. For them, using such medicines was not as proficient as using decoctions. At the same time, Western medicine doctors held them in disdain because they boasted more targeted and efficient Western medicines. Doctor Zhu Juting (朱菊庭) summarized three shortcomings of the Cuihua medicinal liquid: excessively bitter and pungent taste, short

shelf life, and arbitrary & undisclosed ingredients.³⁴ Doctor Zhu Baoxi (朱保熙) once posed a question in a medical journal: Why do the glass bottles used to contain the Cuihua angelica medicinal liquid always seem to break? The respondent was also unclear and uncertain, speculating that the strong properties of the liquid may cause expansion, and subsequently break the bottle. This answer was unsatisfactory.³⁵ Doctor Yuan Zhi (远志) heard that someone explained the bottle breakage in this way: Angelica falls under the wood element and glass falls under the earth element. Wood restrains earth, hence the bottle breaking. He expressed his astonishment at such absurdity. He explained that it could be due to the presence of sugar in the angelica medicinal liquid, which might undergo fermentation during humid weather, thus producing gas that expanded and caused the glass bottle to break.³⁶ In the end, those with more modern views tended to believe that Western medicines were superior, while the conservatives did not believe in the Cuihua Pharmaceutical Factory. As a result, the company went out of business and closed down.

Although the closure of the Cuihua Pharmaceutical Factory was a disappointment to many, the TCM circle was still committed to improving decoctions. Extracting and purifying effective ingredients in formulas to make medicines was regarded by many doctors as the most effective means of preserving TCM. In 1922, doctor Fei Zeyao (费泽尧) found an empirical formula for treating toothache. Experiments showed that this ancient formula could inhibit neuralgia. He said, “If we can extract the essence of this formula and make it into a medicine, I think it will be no worse than Western medicines”.³⁷ In 1930, Shanghai Foci Pharmaceutical Factory (上海佛慈药厂) was established. It also claimed to produce “scientific Chinese medicines”. In this regard, it optimized and standardized the traditional processing and decocting techniques, and began large-scale industrial



Figure 6 Photo of Shanghai Cuihua Pharmaceutical Factory [source from: Shanghai Cuihua Pharmaceutical Factory (上海粹华制药厂). *Times Picture Weekly* 1922;(110): 1. Chinese.].

production. However, in 1936, the Fuzhou agent of the Foci Pharmaceutical Factory faced opposition from local Chinese medicine stores due to the lack of government inspection and unclear raw materials. Definitely, there were issues with medicine supervision and also fierce competition from peers.³⁸ Though the road to scientific development of TCM was full of obstacles, some achievements were made.

During the war of resistance against Japanese aggression, the supply of Western medicines drastically decreased and the prices soared. In order to alleviate the shortage of medicine, a wave of scientific improvement swept through the industry of Chinese medicines. “The scientific improvement on Chinese medicines is the most urgent task in the medical field.”³⁹ The pills, powders, and injections commonly employed in Western medicine were often anaesthetic in nature, and they paid particular attention to alleviating patients’ sufferings during treatment. Song Daren (宋大仁) pointed out that both Chinese and Western medicines were used to cure diseases, with the only difference being that Western medicines were administered by injection to alleviate patients’ sufferings. Decoctions are often boiling hot, and some ingredients contain irritating substances. Therefore, many TCM doctors incorporated Western techniques into TCM treatment. They attempted to inject Chinese medicines into patients’ bodies to avoid the pain associated with taking decoctions orally. Doctor Guo Dingruo (郭定若) repeatedly mentioned during his improving dosage forms that “If it is possible to extract the effective components of raw Chinese medicines for injection, the effect will be even better.”⁴⁰

The effectiveness of Chinese medicines injections had been repeatedly demonstrated in large-scale outbreaks of severe infectious diseases. In 1935, the renowned physician Li Jianyi (李健颐) documented in his book *Shu Yi Zhi Liao Quan Shu* (《鼠疫治疗全书》 *The Complete Book of Pestis Treatment*) that he had successfully transformed *Er Yi Jie Du Tang* (二一解毒汤 *Toxin-Resolving Decoction After Twenty-one Experiments*) into an injection formula for TCM, drawing inspiration from the principles of Western medicine injections. Clinical trials proved that this injection was significantly effective in curing many diseases, including cholera, plague and scarlet fever. Shortly thereafter, he also invented a Chinese medicine injection for treating malaria, and patients who received the injection completely recovered within 20 days. When treating a smallpox patient, the Western medicine doctor Liu Yaozong (刘耀宗) in Huai’an City (Jiangsu province) found that using Western medicine injections had no effect and even aggravated the condition. He then decocted the ingredients of *Sheng Ma Ge Geng Tang* (升麻葛根汤 *Cimicifuga and Pueraria Decoction*) to make an injection by adding a small amount of distilled water, and after intravenous injection, the patient’s condition immediately improved. This gave new life to using decoctions as injections.⁴¹ When

the scarce Western medicines lost the label of “specificity”, the reformed Chinese medicines stood out. “From this, we can see that Chinese medicines injections can be on a par with Western medicine injections.”⁴² However, the discourse power in the medical field still remained in the hands of Western medicine. The reformers learned from the West, while the conservatives adhered to traditional methods, resulting in decades of disputes. Pharmaceutical reform had proven difficult, and a systematic revolution of decoctions had yet to be established. Eventually, the reformed medicines became the exclusive therapy of a certain school or faction, and the decline of Chinese medicines continued unabated.

5 Principle of integration of Chinese and Western medicines & scientization of decoction

In the 1930s, with Western medicine entering the lives of ordinary Chinese people, it fell from grace. The general public found that Western medicine had many limitations in terms of technology, and misdiagnosis or inability to treat often occurred. Most importantly, the service attitude of Western medicine hospitals got worse compared to the past, and the deaths of patients caused by medical accidents occurred frequently. Some intellectuals, while believing in the scientific nature of Western medicine, were reluctant to trust such hospitals that were only available to the wealthy. Western medicine doctor Cao Fangtao (曹芳涛) also held that such hospitals often valued money over human life. “The gatekeeper has a cold expression, the staff for registration answers without a good attitude, the nurse does not comfort, and sometimes the doctors’ words are intimidating and reproachful.”⁴³ Medical staff were both lack of empathy and greed for money, which directly undermined the healthcare experience for ordinary people. Compared to Western medicine, TCM, although criticized for its theories and considered relatively backward in treatment methods, appeared to be more amiable.

The battle in writing between TCM and Western medicine in varying regions became increasingly fierce. News of TCM curing the diseases that Western medicine could not treat and discussions of relevant medical cases were repeatedly reported. The most famous case was the well-known figure, Hu Shi (胡适). In 1920, Hu Shi was diagnosed with diabetes at Peking Union Medical College Hospital, but he was not cured after a long period of treatment. Eventually, Hu turned to TCM doctor Lu Zhong’an (陆仲安) who prescribed a large dose of *Huang Qi* combined with such Chinese medicines as *Dang Shen* (党参 *Radix Codonopsis*). Hu took the decoction orally for several courses of treatment and miraculously recovered. The news that *Huang Qi* could treat diabetes spread rapidly. Doctor Yu Fengbin (俞凤宾) presented several cases of adopting TCM to treat

nephritis and diabetes, and analyzed in detail the prescription used by Lu Zhong'an. He believed that "*Huang Qi* must contain some substance that is necessary for our use", which triggered a research craze for *Huang Qi* in the field of both TCM and Western medicine.⁴⁴ In fact, several years later, medical researchers found that it was highly likely that Peking Union Medical College Hospital misdiagnosed Hu Shi's nephritis as diabetes. *Huang Qi* can drain the pus, regenerate new tissues, stop sweating and eliminate water retention, which happened to deal with such symptoms of Hu Shi's nephritis as "difficult urination, abdominal distension, and leg swelling". Actually, *Huang Qi* itself had no specific effect on diabetes.

The pharmaceutical research capability of Western medicine was also questioned by the TCM community. Under the scientific conditions at that time, it was impossible for foreign researchers to demonstrate whether raw Chinese medicines were effective and to fully understand their value. Foreign researchers usually adopted the splitting method to study ancient TCM formulas. In 1946, *Hua Xi Yi Yao Za Zhi* (*《华西医药杂志》 The Western China Medical Journal*) published Dr. G. C. Basil's analysis of an ancient formula for tuberculosis. After dismantling the formula to study each medicine, he recombined them and indicated that certain ingredients such as mud, grass, soft-shelled turtle, fingernail, and paper ash were indeed miraculous in treating tuberculosis.⁴⁵ Although the efficacy of individual medicines could be understood, it was difficult to determine the effects that occurred within organic tissues when combined in a formula. For example, *Bai Hu Tang* (白虎汤 White Tiger Decoction) showed no antipyretic effect according to laboratory tests, but it was indeed a necessary and effective formula for ordinary Chinese people. Refinement could not guarantee the original efficacy of Chinese medicines, while decoctions made from raw medicines yielded better efficacy. Doctor Hu Demao (胡德茂) cited the conclusions of other medical professionals to compare the efficacy of ephedrine with that of *Ma Huang* (麻黄 *Herba Ephedrae*). He pointed out that due to the lack of experimental comparison, if TCM doctors used ephedrine to save the effort of decocting, the effect of inducing sweating might be unsatisfying.⁴⁶ TCM doctor Huang Guocai (黄国材) proposed that raw medicines were more effective than chemical medicines because raw medicines contained an active substance that would be completely lost during chemical refinement. "This is probably why chemical medicines are not as suitable for the human body as raw medicines", Huang concluded.⁴⁷ Doctor Deng Liang (邓亮) gave examples of various medicines, such as *Huang Lian* (黄连 *Rhizoma Coptidis*), *Ma Huang*, *Shi Gao* (石膏 *Gypsum Fibrosum*), and *Hu Tao* (胡桃 *Juglans regia* L.) which often underwent a change or complete loss of efficacy after being refined through modern scientific methods.⁴⁸

Meanwhile, the study of Chinese medicines flourished abroad. For a long time, "though the European and American countries do not promote TCM as much as China do to Western medicine, they are also quite attentive in absorbing it".⁴⁹ The United States dispatched specialists to China to investigate and study Chinese medicines. For example, Lilg Drug Co. (李利制药厂) and Owl Drug Co. (夜鹰制药公司) of the United States had hired Chinese medical experts with high salary to study Chinese medicines. In 1929, Ko Kuei Chen (陈克恢), a Chinese student in the United States, conducted research on *Ma Huang* at school and extracted the effective ingredients within. He developed the Ephedren and won a prize from the Medical Society of the State of New York.⁵⁰ In 1931, the League of Nations in Geneva invited Ko Kuei Chen to establish the "Traditional Chinese Medicine Research Association", which consisted of health experts from China, Japan, India, the United States, and various European countries to study TCM and seek its progress. In 1936, the Department of Cultural Affairs for China, the Ministry of Foreign Affairs of Japan, dispatched medical doctor Etsuji Mayi (越智真逸) to China. He collected 120 valuable medicines and brought them back to Kobe. He also gathered many Chinese folk medicines and proposed "organizing and modernizing Chinese medicines to conduct a study that integrates TCM and Western medicine".⁵¹

Produced in Germany and Japan, the medicines refined from raw Chinese medicines were poured into the Chinese market. Except for Eumenol (the extract of *Dang Gui*) and Ephedren (the extract of *Ma Huang*), new medicines were also developed in Japan, including Ginsengnin which contained the active ingredients of *Ren Shen* and Alfollin which was extracted from *Jie Geng* (Fig. 7). The medicines showed potent effects in small dosages and thus were widely praised. Domestic doctors and pharmaceutical factories acted without delay to imitate the medicine extracts under the banner of supporting domestic products. For example, in 1935, Hangzhou Minsheng Pharmaceutical Factory (杭州民生药厂) developed Gimenor by refining the active ingredients of *Dang Gui* and claimed that it had the same effect as the medicine Eumenol made in Germany. The advertisement of *Tang Kui Su* (当归素 extract of *Dang Gui*) issued by Foci Pharmaceutical Factory even declared that its efficacy exceeded Eumenol.⁵² Deworming medicines developed by Japanese researchers from *Zhe Gu Cai* (鸚鵡菜 *Caloglossa Leprieurii*), a plant endemic to China, received a warm welcome, and scholars in China immediately conducted similar medicine studies. Based on these achievements, doctor Liang Xin (梁心) produced several condensed decoctions out of Chinese medicines including *Dang Gui*, *Huang Lian* and *Jie Geng*. He also disclosed the preparation methods, instructions, efficacy and precautions, making it convenient for doctors and patients to use.⁵³ Doctor Guo Renji (郭人骥) hoped that Chinese pharmaceutical factories could continue to develop more



Figure 7 Advertisement of Zhong Jiang Tang (中将汤 TyuuJyou Decoction), a TCM formula from Japan to conditioning women's bodies (source from: <http://read.nlc.cn/OutOpenBook/OpenObjectPic?aid=531&bid=29725.0&lid=1317290&did=005051111060072>).

high-quality and affordable new medicines. “I do hope that Chinese pharmaceutical factories like New Asiatic (新亚), Minsheng (民生) and Sine (信宜) can conduct research on *Zhe Gu Cai* as soon as possible and produce new medicines with low prices to meet the needs of the medical industry and also help the poor. This move is not just for reducing the impact of foreign medicines. It is a major concern for the pharmaceutical factories in China now.”⁵⁴

Imitation was never a permanent solution. Some doctors realized that though most medicines made in the dosage forms of Western medicines had achieved remarkable effects, they followed the pharmacological methods of Western medicine completely and went against the treatment concept of TCM. Reformers devoted themselves to studying Western pharmacology, becoming immersed in such mechanized tasks as microscopic examination of raw Chinese medicines, examination of powdered raw medicines and gray image identification. Whether the medicines they produced should be categorized as “Chinese medicines” or “Western medicines” sparked discussions among medical personages in China. Doctor Yun Tieqiao (恽铁樵) believed that these basic medicine studies fell under the category of Western medicine, and could never be mistaken as TCM. In addition, it was still unknown whether the refined medicines could show the efficacy of raw medicines completely. Western medicine doctor Huang Shengbai (黄胜白) believed that it was better to buy a single root of *Angelica Sinensis* and decoct it into a concentrated

solution for ingestion rather than purchase expensive German medicine “Eumenol”, as the therapeutic effects were almost the same. “Ephedren may not be as potent as *Ma Huang Tang* (麻黄汤 Ephedra Decoction), and Eumenol may not be as effective as *Bu Xue Tang* (补血汤 Blood-supplementing Decoction). The attempt to treat diseases only relying on the efficacy of one single medicine can be as ridiculous as claiming that diabetes can be cured by *Huang Qi*.”⁵⁵

Apart from superficial imitation, reformers called for learning from the pharmaceutical research models and methods of Western medicine. First of all, starting with the pharmacological study of decoctions made from compound formulas and in combination with the treatment principles of TCM, they proposed determining the efficacy of formulas and their ingredients, and transforming effective formulas into convenient dosage forms. Doctor Li Huairan (李怀仁) adopted Western physiology to the research on the Chinese medicines that tonify the spleen and stomach. Through research, he explained the mechanism of formulas including *Bai Hu Tang* and proved their efficacy.⁵⁶ Secondly, they recommended summarizing the treatment experience of using Chinese medicines, adopting Western chemical experiments to verify this experience, and using animal experiments and clinical experience to determine the dosage and efficacy of decoctions. Doctor Ye Juquan (叶橘泉) developed the medicinal liquid *Bao Er Fei* (保尔肺 Lung Protecting Liquid) from the formulas for resolving phlegm and stopping coughing. He distributed over 830 samples and received 250 feedback responses, among which 86.4% reported the medicine as effective. Later he developed a new medicine *Di Li Kang* (敌痢康 Anti-dysentery) to replace Emetin, a Western medicine for treating dysentery with significant limitations and side effects (Fig. 8). Ye posted the medicine information in newspapers for medical trials,⁵⁷ which proved that “new medicines must undergo batch testing before marketed”, and had become a consensus among doctors at that time. After testing, the medicines developed by Ye were indeed more effective and affordable than Western medicines. However, due to the lack of systematic planning, most of the trialists made no response after taking the medicine and the test results were unconvincing, and thus the promotion effects were reduced.

In order to further promote the scientific improvement of traditional Chinese medicine, TCM doctors during modern times had always been endeavoring to establish professional TCM schools and cultivate TCM talents. Unfortunately, experiments with Chinese medicines had a long cycle, making it a time-consuming and expensive undertaking. Shi Yiren (时逸人) advocated establishing large-scale pharmaceutical factories in domestic commercial ports and production areas of Chinese medicines. Medical professionals were responsible for researching the components of Chinese medicines, while the factories were responsible for mass production

廣 濟 醫 刊

附 錄

祛痰鎮咳劑「保爾肺」學理研究及處方說明

咳嗽是呼吸器官生理上的一種反射作用。如氣道或肺腔內有異物、細菌或不潔之空氣塵埃、分泌物積滯及腦血等滯留時。則引起喉嚨以排出之。是即所謂自衛性的機能。因喉嚨氣管腔內之迷走神經受刺激而發生咳嗽。故咳嗽實為排除異物及精液而起之自衛作用。如咳出困難者。咳嗽急劇者。咳出粘絲者。咳嗽連綿。所以治咳當先祛痰。本方以遠志、桔梗等。具溶解痰血球之作用。故祛痰之功確著。俱經實驗。則肺腔中稠痰。氣管粘附痰膜。而致咳嗽。此呼吸困難。而面上氣促。不但形成肺炎。而氣道之高肺泡破裂。往往有發生咯血之危險。故

久咳痰血。肺癆初期。最為有效。請試方知
(每瓶裝藥水一五〇。〇六日量)
(承製藥品請用寄費一角五分)

特 項 四
一、原料是完全國產的。
二、處方是合於理論而簡潔的。
三、藥理是根據科學的。
四、功效是注重實驗的。

△附告製藥的主旨
(否則恕不附送函詢州縣林欽)

一、是為學術而努力。不是為謀利。
二、是徵求同仁。得告功效。不是廣告。
三、為研究而犧牲金錢不少。然尚無發行之意。
四、試驗結果如得蒙同仁。認其有效後。再行招股發行。
五、如醫界同仁熱心提倡。願合作。士業歡迎。

咳嗽雖為自衛自衛之作用。然亦有過度之處。以安撫氣道神經。此種喉嚨氣管粘附以輕其咳嗽。而黃藥利其肺血中之毒之功。與五味同於呼吸中。顯見其作用。甘草潤肺以通肺管。百種藥劑。兼具散熱之力。其他如清血通絡之品。以助皮膚之排洩。並含有營養分以強壯。及有機性之強壯劑。組織而成。蓋國產藥物未經提煉。實有其混合之有效成分。故藥效往往有不可思議者。以鄙人之實驗。似較「發多餅」及「愛麗家」等之軍醫藥。誠出而上市。亦可自慰也。

廣 濟 醫 刊

附 錄

敵痢康說明書

不良、故決無效法改製、移使其毒體濃不超變化而後已、近又研究痢疾致方、因痢疾之原因、不外阿米巴菌、其菌的變化、無非腸炎、生瘡、潰爛、因藥主用先用菌下劑、頓挫其毒、清其劑以助腸液、顯合痢理、考實運有清其腸胃之功、厚其腸液、香揮發其毒作用、若其清其腸液、又用大黃根等配互、以達治痢之目的、更設法製其粗淨、使其其精細之成分、製成小小片劑、名曰「敵痢康」、每瓶裝

考本痢疾之原因、不外細菌與阿米巴二者為患、設其治痢之唯一方法、以殺滅病原微生物為原則、阿米巴性痢原蟲、以「瓦基丁」(Vasidol)為特效之止痢品、然本品之對於細菌性痢原蟲、並無殺菌性、所以敵痢康時有效、然其作用甚大、故認其不殺菌、而具阻之效、

且能阻其菌、價值昂貴、不能認其我國社會完美之藥物、是求國產原料之對於滅菌殺菌之藥物、如苦參、黃連、大蒜、梔子等、實有從、其功效實有超出藥品之上者、

「敵痢康」係用具有滅菌殺菌之藥材等藥材等作用的藥產藥物、精製而成、對於細菌及阿米巴之菌、

價二三片、試之於赤白痢疾、或結核不顯、藥所用藥材厚朴取其油、大黃取其纖維汁、消耗大、或本國產藥、藥片之製成、形色皆極粗劣、將率經設法製成薄衣丸或片劑、使其至腸而後溶解、功效更較勝、現將片劑與藥水之試驗、俾便供試用者、無論結果之良否、一經有以報告、俾得確實之統計、懇愛國產藥物者、當體諒及惠顧、務必認明商標、

Figure 8 Instructions for Bao Er Fei and Di Li Kang [source from:Ye JQ. Instructions for Di Li Kang (国产新药: 敌痢康说明书). Kwang Chi Medical Journal 1934;11(9):3-5. Chinese.].

and promotion of the medicines. However, Shi Yiren explicitly pointed out that the proposal was mainly hindered by funding issues.⁵⁸ Ni Weide (倪维德) suggested improving the organization of medical associations by categorizing pharmacy professionals into two groups: biological medicine group and chemical medicine group. He proposed holding weekly meetings to share current research findings and publish them. Although organizational bylaws were drafted, the proposal was put on hold due to a lack of participants.⁵⁹ At first, the medical community turned to the government for TCM education, but after their aspirations were dashed, teaching work largely relied on local TCM social organizations. TCM should be urgently improved, and TCM doctors should take immediate action. Improving decoctions, in particular, posed a significant challenge to researchers' comprehensive abilities. Medical professionals had to integrate knowledge from biological medicine, chemical medicine, and pharmacology, and also, they must have a thorough understanding of medicinal substances and their uses, and possess rich experience in the processing of medicines. "By utilizing scientific methods to investigate the properties of Chinese medicines, as well as combining them with the formulas that could be taken as food, we aim to enhance the efficacy of TCM and promote its widespread application."⁶⁰

In August 1925, the China Education Improving Institute (中华教育改进社) passed a resolution requesting that the Ministry of Education add TCM as a subject in the school system. As part of the curriculum, a "pharmaceutical internship" was established and pharmaceutical factories were set up in order to adopt Western methods to improve Chinese medicines. In 1929, Shanghai College of Traditional Chinese Medicine (上海国医学院) was established. In this college, the students were taught to explain TCM therapies with scientific principles. In 1930, the Central Research Institute of Chinese Medicine, led by Zhao Yuhuang (赵燏黄), conducted systematic research on biological medicine, traditional medical texts, and folk remedies through experimental testing and verification. In 1937, the Pharmaceutical Department of West China University refined more than 30 kinds of Chinese medicines and sent them to the Chengdu Folk Education Museum for the exhibition of Chinese medicines.

Unfortunately, the standards of teaching materials varied from place to place, and the talents trained were scattered. According to statistics, only more than ten schools of TCM were set up nationwide in 1930. The teaching equipment was scarce, and students had no place to practice. They could only borrow equipment and venues from familiar dispensaries and hospitals.⁶¹ The absurd and wrong theories were still used

in teaching. “It is inevitable for different teachers to go their own ways and thus the knowledge they impart is unsystematic and contradictory.”⁶² In addition, because of the war, it is difficult to maintain the funds and venues. Beiping College of Traditional Chinese Medicine (北平国医学院) refused the request of the puppet government to expand the exchange of TCM with Japan, and was forced to move the school site three times. “Japan invades Beiping and covets the College of Traditional Chinese Medicine... We are not willing to give it to the Japanese.” Subsequently, the college was closed in 1944.⁶³ Those wonderful expectations for the development of TCM were forced to go to ruin before they were fully realized.

6 Conclusion

The exchange of medicines between China and other countries has a long history. During the late Qing dynasty, the introduction of Western medicines into China made the development of Chinese medicines not only a requirement for the survival of the TCM industry but also a demand for national dignity and China’s own interests. The TCM community was seeking reform in response to the development of the times. The heavily criticized decoctions were the focus of this reform. The hopefuls in the medical community were continuously delving deeper into the practical and theoretical aspects of Western medicine to objectively examine its strengths. Through the three stages of conceptual evolution—“taking Chinese medicines as the foundation and referring to the dosage forms of Western medicines”, “introducing Western techniques to serve the preparation of decoctions” and “integrating the theories of TCM and Western medicine to improve decoctions”—they made targeted “scientific” improvement on decoctions.

But it should be noted that due to the lack of real political and objective research capabilities in modern China, decoctions have not been fully scientifically developed, and that the improvement of modern decoctions has not been remarkable. Most Western medicine doctors were very disdainful of the TCM reform. Even among the TCM doctors, there was a widespread belief that decoctions could be abolished or reformed. They believed that decoctions are different from existing medicines, and that have the characteristics of medicine which vary from person to person, plus and subtract with evidence. The innovative decoction cannot be fully integrated into the diagnosis and treatment concept of traditional Chinese medicine, which is also an important reason why they do not support the improvement of decoctions. They held that measures such as strict regulation of apothecaries, prohibition of counterfeiting, improvement on and standardization of the processing of medicines were more practical than reforming decoctions.

Although the call for the scientific development of TCM was a recurring theme in the field, specific plans on how to achieve it were scarce. There was no consensus on the methods of improvement, leaving the issue unresolved. *Zhong Xi Yi Yao* (《中西医药》 *Journal of the Medical Research Society of China*) once held an essay contest on the topic of “Scientization of TCM”. Not only were there few participants, but those who argued that “TCM cannot be scientized” were in the majority.⁶⁴ Even the centrally authorized TCM hospital might not have a deep enough understanding towards the “scientization of Chinese medicines”. There was still debate in society regarding the definition of “Chinese medicine” and “national medicine”, and the TCM doctors who fought against bacterial and animal experiments still dominated the TCM community. The understanding of the scientization of Chinese medicines did not become a consensus.

During the late Qing dynasty and early Republic of China, opponents of TCM advocated abolishing TCM theories and retaining only Chinese medicines. However, the selection, compatibility, and preparation of Chinese medicines have no meaning once they are detached from TCM theories. Reviewing the thinking and anticipation of modern doctors on the scientization of decoction, I think their contradictions and tangles are still not out of date. Whether it is the repeated innovation and improvement of modern decoctions, or the development and research of TCM compound preparations, decoctions have their own life and continue to integrate with science and technology to burst out new sparks. As the most valuable part of TCM treatment, TCM decoctions have survived through the continuous efforts of several generations. Although the discussion of the improvement of Chinese medicine decoction in modern society cannot provide a clear answer for the modernization of Chinese medicine, it may inspire some new inspiration for modern Chinese medicine to reflect on the future way forward.

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Perceptions and Controversies on Cholera in the Traditional Chinese Medicine Field in the Late Qing Dynasty

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Abstract

At the beginning of the initial cholera outbreak in China, Wang Qingren (王清任), after years of clinical trials, became an early representative who discovered the infectious characteristics and observed the course of cholera in the field of traditional Chinese medicine (TCM). Kou Langao (寇兰皋) and Xu Zimo (徐子默), both medical practitioners, constructed a diagnosis and treatment system for cholera with cold patterns under the theory of typhoid. They represented “School of Cholera with Cold Patterns” (SCCP). In the 1860s, with the influence of Wang Shixiong’s (王士雄) studies on the nature of cholera under the theory of epidemic febrile disease, the “School of Cholera with Heated Patterns” (SCHP) prevailed thereafter. The two schools complemented each other in theories and contributed to the integrity of TCM in cholera diagnosis and treatment. By reviewing previous literature, books, clinical cases, and historical materials in medical field, this article aims 1) to summarise the influence of TCM on the cognitive development towards cholera in the late Qing dynasty; 2) to explore the origin of the controversy between SCCP and SCHP from historical evidence; 3) to summarize the historical lessons from the debate over cholera in TCM based on the principle of treatment based on pattern identification, and offer suggestions for the current prevention and treatment of new diseases using TCM.

Keywords: Traditional Chinese medicine; Cholera; School of Cholera with Cold Patterns; School of Cholera with Heated Patterns; Wang Shixiong; Xu Zimo

1 Introduction

The term *Huo Luan* (霍乱) had been widely known since ancient China. It was first adopted in the *Huang Di Nei Jing* (《黄帝内经》 *The Yellow Emperor’s Inner Classic*), and many later great works discussed the causes and treatments of *Huo Luan*. For instance, *Shang Han Za Bing Lun* (《伤寒杂病论》 *Treatise on Cold Damage and Miscellaneous Diseases*), *Zhu Bing Yuan Hou Lun* (《诸病源候论》 *Treatise on the Origins and Manifestations of Various Diseases*), and *Shang Han Ming Li Lun* (《伤寒明理论》 *Concise Supplementary Exposition on Cold Damage*). The term has been used to refer to all types of sudden gastrointestinal disease, with symptoms of vomiting

and diarrhoea, caused by the damage of spleen and stomach.¹ It is noteworthy here that *Huo Luan* is a collective term for all types of diseases with symptoms of vomiting and diarrhoea rather than for a particular type of disease.

Cholera, which is different from *Huo Luan*, refers to a virulent infectious disease caused by *Vibrio cholerae*. As an exogenous infection, cholera is believed to have first appeared in China between 1820 and 1822, with four widespread outbreaks and frequent regional cases reported during the late Qing dynasty.² With its terrifying name “the most ferocious and fatal disease”,³ Cholera has been of great concern amongst Chinese medical professionals. It is categorised into *Huo Luan* by traditional Chinese physicians due to its symptoms—vomiting and diarrhoea. In the traditional Chinese medicine (TCM) field, numerous studies had been done on the study of cholera continuously. Practitioners who ploughed this solution of this disease had received enormous achievements, gradually forming the “School of Cholera with Cold Patterns” (SCCP, 霍乱寒证派) and the “School of Cholera with Heated Patterns” (SCHP, 霍乱热证派). In this context, “cold patterns” do not refer to the disease concept of *Shang Han* (伤寒 cold damage), but rather denotes a series of patterns resulting from the invasion of cold pathogens or a condition of yang deficiency and yin excess, which leads to a decrease in the body’s functional activities. The corresponding “heated patterns”

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refer to a series of patterns caused by the invasion of heated pathogens, excessive yang (阳) in the internal organs, or yin (阴) deficiency with yang excess, leading to heightened functional activities of the body. Both cold and heated patterns are classified by TCM based on the nature of the disease. These achievements in the study of cholera in the late Qing dynasty reflect not only the awareness that TCM inherited on its self-development, but also its cultural value in medical field (Fig. 1).

The history of cholera in China has been well studied in academia.⁴⁻⁶ However, current research on the history of cholera, in terms of Chinese medical history, has mainly focused on the study of relevant medical practitioners or medical technology. And in historical academia, most research was conducted to examine the development of the health care system within the modernisation paradigm or theories initiated from the West, and investigated the contemporary issues in modern Chinese society during its transformation process.⁷ This makes it difficult to analyse the causes and perceptive developments of cholera within the then historical context. In this regard, the paper will first analyse the perspective development towards cholera in TCM field through a gaze of its history by reviewing previous literature. After that, the paper will explore the internal dynamics toward the research on cholera in TCM. Before providing the prevention and treatments of epidemic diseases from historical lessons, the paper will discuss the origin of the controversy between SCCP and SCHP from historical evidence to better understand the nature and evolution of TCM.

2 Initial insights towards cholera in TCM field after the Jia-Dao epidemic

The Jia-Dao epidemic [嘉道大疫 The epidemic occurred between Jiaqing (嘉庆) and Daoguang (道光) periods] is

generally considered to be the initial cholera outbreak across China. Cholera was first diagnosed in 1820, then quickly spread and reached its peak infected number in 1821. Shandong and Zhili (直隶) were reported to have the most infected patients. The well-known physician Wang Qingren (王清任) experienced this epidemic. He suggested that though this disease had the similar symptom as *Huo Luan* diarrhoea, it progressed rapidly and could be fatal. Hence, he named cholera *Wen Du Tu Xie Zhuan Jin* (瘟毒吐泻转筋 plague diarrhoea with diarrhoea to cram).⁸

2.1 The nomenclature of cholera in TCM

Owing to its symptoms of vomiting and diarrhoea, cholera was categorised and treated as *Huo Luan* at the period of its initial outbreak. With the increasing understanding towards cholera, the noticeable differences between *Huo Luan* and cholera are identified by many.⁹ Therefore, Cholera then received the name Hanging Feet *Sha* (吊脚痧). Hanging Feet (吊脚) refers to symptoms of convulsion with hands and feet. *Sha* (痧), an expression in Ming and Qing dynasties, represents infectious diseases.¹⁰ In this regard, naming cholera Hanging Feet *Sha* reflects that TCM physicians had well recognised the difference between the *Huo Luan* and cholera, and endeavoured to explore the diagnosis and treatment of cholera.

In addition, according to *Zhu Bing Yuan Hou Lun* by Sui dynasty TCM physician Chao Yuanfang (巢元方), symptoms of cholera were similar to those of the so-called “*Huo Luan* to cram”.¹¹ Hence, some of the TCM physicians treated cholera as *Huo Luan* with symptoms of “cram”. For example, Zhang Nan (章楠) discussed in his book *Yi Men Bang He* (《医门棒喝》 A Stick to Awake Physicians) that Hanging Feet *Sha* is in

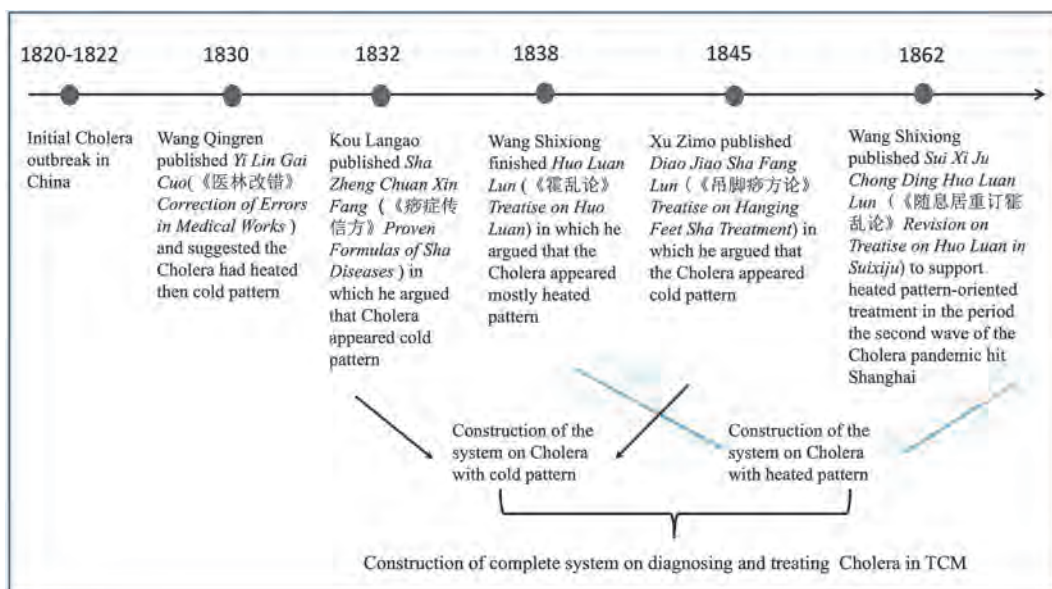


Figure 1 Development of TCM in diagnosing and treating cholera (source from: the authors).

essential a symptom from *Huo Luan* to cramp, rather than *Sha*.¹²

Since then, the late Qing dynasty had been attacked by waves of cholera epidemic either in regional scale or national wide. Cholera, which was called “*Huo Luan* to cramp” at that time, was always one of the greatest challenges to TCM physicians in clinical trials. Research on cholera amongst physicians had achieved a great deal in the field. It is also noteworthy here that cholera was generally accepted and entitled to the name *Huo Luan* with the popularity of the book *Sui Xi Ju Chong Ding Huo Luan Lun* (《随息居重订霍乱论》 *Revision on Treatise on Huo Luan in Suixiju*) by Wang Shixiong (王士雄).

2.2 Diagnosis of two schools towards cholera in TCM

The principle of “treatment based on pattern identification (辨证论治)” is a distinctive feature of TCM diagnosis and treatment. It involves a comprehensive analysis of the patient’s symptoms and signs based on the fundamental theories of TCM. The analysis leads to the identification of the specific pattern, and a treatment plan is subsequently formulated. Therefore, the process of pattern identification serves as the starting point in the entire process of TCM diagnosis and treatment. In the case of cholera, the initial and crucial step in its treatment lies in accurately distinguishing whether it manifests as a cold pattern or a heated pattern. Hence, physicians, especially at the period that cholera prevailed in Beijing and Tianjin area, diagnosed patients’ pattern type before

offering clinical treatments. Medical studies and clinical treatments by Wang Qingren and Kou Langao (寇兰皋), the two well-known cholera specialists in the Qing dynasty, had laid a profound clinical foundation in the field (Table 1).

2.2.1 Wang Qingren’s initiatives on the diagnosis and treatment of cholera

The divergence of opinion within TCM regarding whether cholera should be classified as a cold or heated pattern started from the beginning of the cholera outbreak. It was well recorded in Wang Qingren’s book *Yi Lin Gai Cuo* (《医林改错》 *Correction of Errors in Medical Works*) that physicians treated patients according to their patterns, either heated or cold, during the pandemic in 1821 in Beijing. The effectiveness of those treatments varied. Some patients recovered while others did not. In this regard, Wang Qingren suggested that the disease might be plague caused by *Wen Du* (瘟毒 scourge toxin).⁸ The plague could spread from an infected person’s mouth or nose in small liquid particles when they coughed, sneezed, spoke, or breathed. These findings from Wang Qingren’s research extended the knowledge and theory of cholera, where TCM usually interprets the cholera as *Xie Qi* (邪气 pathogenic qi). Moreover, Wang Qingren discovered a comprehensive observation course of cholera, which was often a heated pattern progressing to a cold pattern. Although cholera was widely recognised as *Huo Luan* by most physicians, Wang Qingren is believed one of the earliest

Table 1 Recognition towards cold and heated patterns attached to cholera after Jia-Dao epidemic

Book Name	Author	Publish time	Patterns	Treatment proposal	Examples of treatment plans
<i>Yi Lin Gai Cuo</i> (《医林改错》)	Wang Qingren	1830	Heated then cold	Use cooling herbal remedies to treat heat-related conditions; employ warming and tonifying formulas to address cold-related conditions.	<i>Jie Du Huo Xue Tang</i> (解毒活血汤 Detoxification and Blood-vitalizing Decoction) for a heated pattern; <i>Ji Jiu Hui Yang Tang</i> (急救回阳汤 Yang Returning Decoction) for a cold pattern
<i>Sha Zheng Chuan Xin Fang</i> (《痧症传信方》)	Kou Langao	1832	Cold	Warm acrid for qi resolution, aromatic water treatment	<i>Shi Yi Shen Yan Fang</i> (时疫神验方 Pogostemon Cablin, Typhonium Flagelliforme, Lonicera Japonica, Dalbergiae Odoriferae Lignum, Amomum Villosum, and Glycyrrhiza Glabra.)
<i>Diao Jiao Sha Fang Lun</i> (《吊脚痧方论》)	Xu Zimo	1845	Cold	Warm the menses and elevates yang	In the early stages, utilize <i>Da Jian Zhong Tang</i> (大建中汤 Major Center-fortifying Decoction) and <i>Xiao Jian Zhong Tang</i> (小建中汤 Minor Center-fortifying Decoction), while in later stages, turn to <i>Shen Fu Tang</i> (参附汤 Ginseng and Aconite Decoction), <i>Jiang Fu Tang</i> (姜附汤 Ginger and Aconite Decoction), and others
<i>Sui Xi Ju Chong Ding Huo Luan Lun</i> (《随息居重订霍乱论》)	Wang Shixiong	1862	Mostly heated	Cold and cool treatment	<i>Wei Ling Tang</i> (胃苓汤 Stomach-calming Poria Decoction), <i>Gui Ling Gan Lu Yin</i> (桂苓甘露饮 Cinnamon and Poria Sweet Dew Beverage), <i>Ran Zhao Tang</i> (燃照汤 Cold Limbs Warming Decoction), and <i>Can Shi Tang</i> (蚕矢汤 Silkworm Droppings Decoction)

representatives who recognised the subtle differences between cholera and *Huo Luan* in China.

Wang Qingren initiated dichotomous treatments, diagnosing and treating cholera based on patients' patterns and providing treatment accordingly. Treatment one was called *Jie Du Huo Xue Tang* (解毒活血汤 Detoxification and Blood-vitalizing Decoction), while treatment two is called *Ji Jiu Hui Yang Tang* (急救回阳汤 Yang Returning Decoction for Emergency). Wang emphasised that treating cholera according to patients' patterns was the key to cure this disease.⁸ Wang Qingren extended public understanding of cholera and developed effective treatment to the disease. He was regarded as a representative who initiated dichotomous treatments to cholera. His contribution not only reflected the awareness of self-development in TCM field and important medical value TCM had in new diseases diagnosis and treatment, but also placed a profound influence on later TCM physicians, such as Wang Shixiong, who further developed Wang Qingren's viewpoints on cholera being a heated pattern and a plague. In addition, Wang Qingren's detoxification and blood circulation also provided important reference for Wang Shixiong.¹³

2.2.2 Kou Langao's *Sha Zheng Chuan Xin Fang* in favour of cholera with cold patterns

When cholera spread in Tianjin in 1821, Kou Langao, the well-known physician in Tianjin, conducted his research on the disease. Unlike Wang Qingren, Kou Langao's research was based on the theory of *Sha*. He then published his findings in his book *Sha Zheng Chuan Xin Fang* (《痧症传信方》 *Proven Formulas of Sha Diseases*) in 1832.

In the book, Kou suggested that the cause of the disease in Tianjin, 1821, might be closely related to a fluctuating temperature in summer due to the extreme weather.¹⁴ It made patients infect *Yin Du* (阴毒 yin toxin).¹⁴ In this regard, Kou Langao prescribed for cholera inclining to heat-nature medicines.

Sha Zheng Chuan Xin Fang by Kou Langao was the first book that introduced cholera diagnosis and treatments based on the knowledge of *Sha*. The book suggested that cholera was in essence a *Yin Du* with cold patterns. The argument was believed to be inherited by a later TCM practitioner Xu Zimo (徐子默).

According to the arguments above, TCM practitioners knew, at the time of initial cholera outbreak, that the disease was different from the *Huo Luan* with its distinguished fatal and contagious nature. During this period, Wang Qingren suggested that pattern of cholera was a typical heated to cold pattern progression, while Kou Langao considered cholera was with cold patterns solely. The two divergence arguments were the earliest statements that cholera had cold patterns or heated patterns respectively.

3 The developed awareness on cholera in the late Qing dynasty

After the Jia-Dao epidemic, many places were still haunted by small-scale cholera cases, posing huge threats to people's life at the time. In this context, a great number of research on cholera diagnosis and treatment flooded in TCM academia. Among those research, Xu Zimo's *Diao Jiao Sha Fang Lun* (《吊脚痧方论》 *Treatise on Hanging Feet Sha Treatment*) and Wang Shixiong's *Sui Xi Ju Chong Ding Huo Luan* were regarded as the most influential academic work and represented the authority in the field of cholera studies (Table 1).

3.1 Xu Zimo's *Diao Jiao Sha Fang Lun* supporting cholera with cold patterns

The earliest block printing version of Xu Zimo's *Diao Jiao Sha Fang Lun* was engraved by the Dong's in County Yin (鄞县) in 1845. This book was another medical academic work, after the *Sha Zheng Chuan Xin Fang* by Kou Langao, that diagnosed cholera as cholera with cold patterns. Xu Zimo explicitly pointed out that the Hanging Feet *Sha* was a new disease that had never existed until 1821. He believed that Hanging Feet *Sha* originated from the *San Yin* (三阴 three yins). Hence it was categorised into cold patterns. This disease is infectious and fatal, but has distinguished different symptoms and courses to the *Huo Luan*, hence the treatment could be ineffective if treated with *Huo Luan* clinical options.¹⁵

In terms of the pathogenesis of the disease, Xu Zimo believed the Hanging Feet *Sha* was closely related to cold patterns under the typhoid theory framework. The development of Hanging Feet *Sha* is attributed to the accumulation of cold pathogenic factors within the central region of the body. The pathogens ascend, affecting the stomach, resulting in vomiting when the stomach's channel is blocked. Simultaneously, the pathogens descend, affecting the spleen and causing diarrhea when the spleen's channel is blocked. Consequently, due to the damage inflicted on the spleen and stomach, the limbs grow cold, eventually leading to the symptoms of hanging feet. Xu Zimo believed that only if treating the disease with medicines that could warm the meridians and elevates yang, might the disease be cured.¹⁵ However, during medication, Xu Zimo emphasized the dosage of herbs according to patients' individual constitution. Hence, from Xu's perspective, Hanging Feet *Sha* was a cold pattern in its nature. The reason that patients might present heated patterns could be owing to their "heated constitution". This research result made *Diao Jiao Sha Fang Lun* an authorised work in the field of cold pattern-oriented cholera.

3.2 Wang Shixiong's perspectives on cholera as either a cold or heated pattern

In 1838, Wang Shixiong had finished his book *Huo Luan Lun* (《霍乱论》 *Treatise on Huo Luan*). When the

second wave of cholera pandemic hit Shanghai in 1862, Wang Shixiong was living in the city. He was asked by friends to revise his work to deal with the serious cholera situation in Shanghai. In 1862, the book *Sui Xi Ju Chong Ding Huo Luan Lun* was published. It was the first medical treatise which applied the term *Huo Luan* into its title.

Wang Shixiong suggested, under the epidemic febrile disease theory framework derived from *Huang Di Nei Jing*, that patients might have either a cold or heated pattern with cholera. Cholera with a heated pattern is caused by excessive dampness in the *Zhong Jiao* (中焦 abdominal area) due to exposure to heat or dietary factors. This leads to the intermingling of clear and turbid energies, resulting in symptoms such as vomiting and diarrhea. All symptoms of this disease are signs of internal heat pathogenic factors. Cholera as a cold pattern, on the other hand, arises from a deficiency of the patient's spleen and stomach. Consequently, deficient yang in the *Zhong Jiao* leads to an accumulation of cold and dampness, ultimately causing vomiting and diarrhea. The heated pattern is in line with original patterns of cholera, while the cold pattern could be due to a cold formation caused by individual's constitution variation.¹³ There is no explicit demonstration of the difference between *Huo Luan* and cholera in Wang's studies, but his contribution, in terms of investigating the pathogenesis, types of symptoms, treatment ideology and practice of cholera, had left the modern TCM with an enormous legacy. Moreover, his work demonstrated the endeavour that TCM had contributed to the new disease treatments through theoretical improvement and practical innovation.

Wang Shixiong, with his clinical experience in diagnosing and treating cholera, discovered that most cholera cases at that time had heated patterns, while only a few cases were attached to cold patterns.¹³ Therefore, he recommended treating the cholera with heated-pattern-oriented clinical options. His recommendation laid a solid theoretical and practical foundation to later physicians who were in favour of the SCHP.

As discussed above, *Diao Jiao Sha Fang Lun* is a masterpiece exploring cholera with cold patterns. Xu Zimo was aware that cholera in Jia-Dao epidemic was a new disease, which he later named it Hanging Feet *Sba*. He then suggested, under the typhoid theory framework, that cholera appeared mostly with cold patterns. Hence, he offered patients medicines in accordance with individual patients' constitution, that could warm the meridians and elevate yang. His treatment options proved to be effective in curing cholera.

Wang Shixiong's *Sui Xi Ju Chong Ding Huo Luan Lun* categorised cholera into *Huo Luan* family. He discussed cholera, under the theory of epidemic febrile disease, with the respect of its causes, kinds, pathogenesis, symptoms, and treatment options, etc. Although Wang Shixiong did not recognise the differences between cholera and *Huo*

Luan, cold patterns and heated patterns can be easily identified in his numerous clinical evidence in treating cholera. Among Wang's clinical trials, patients with heated patterns were the majority.¹⁶ Wang Shixiong was the first person who diagnosed cholera under the theory of epidemic febrile disease. In a sense, the research findings by Xu and Wang complemented each other, and had formed a completed and fully functioned system in understanding, diagnosing and treatments of cholera at that time.

4 The controversy between the two schools

During the 1820s, cholera, as an exogenous infectious disease, invaded China due to the rise of international trade.² Owing to its shared similarities in syndrome of *Huo Luan*, a disease which was well studied in TCM field, the exploration of cholera within the TCM field underwent a process of evolution and sparking debates. For example, Xu Zimo and Wang Shixiong stood on different opinions over the nature of cholera. Xu suggested a cold-pattern-oriented treatment under the theory of typhoid for cholera. While Wang Shixiong believed a heated-pattern-oriented treatment under the theory of epidemic febrile disease would be more effective. Both treatment options proved effective in clinical trials. The two schools, SCCP and SCHP, never stopped blaming each other with ineffective cases. Since then, the controversy between SCCP and SCHP arose. Namely, SCHP stood for Wang's theory, while SCCP followed the guidance from *Diao Jiao Sha Fang Lun*.

Wang Shixiong's theory regarding cholera with heated patterns had a significant influence on many doctors in the late Qing dynasty. For instance, Zhao Qingchu (赵晴初) highly commended Wang Shixiong's views in his book *Cun Cun Zhai Yi Hua Gao* (《存存斋医话稿》 *Cuncunzhai Medical Talks*) and believed that *Sui Xi Ju Chong Ding Huo Luan Lun* was a must-read medical book for doctors. Furthermore, Zheng Fenyang's (郑奋扬) *Re Huo Luan Ji Yao* (《热霍乱辑要》 *Collection of Cholera with Heated-pattern-oriented Elucidations*), Lu Jiuzhi's (陆九芝) *Shi Bu Zhai Yi Shu* (《世补斋医书》 *Shibuzhai Medical Writings*), Chen Qiu's (陈虬) *Wen Yi Huo Luan Da Wen* (《瘟疫霍乱答问》 *Questions and Answers of Epidemic Cholera*) all adopted and expanded upon Wang Shixiong's theory in their respective works. Meanwhile, Xu Zimo's perspectives on cholera with cold patterns also left an impact on many doctors at the time. For example, the views in Pan Wei's (潘蔚) book *Huo Luan Tu Xie Fang Lun* (《霍乱吐泻方论》 *Discussion on Cholera Vomiting and Diarrhea*) were similar to Xu's. Besides, Tian Zonghan's (田宗汉) *Fu Yin Lun* (《伏阴论》 *Theory of Coldness Qi in the Human Bodies*) and Jiang Xizeng's (蒋希曾) *Jing Yan Yi An* (《经验医案》 *Medical Cases from Experiences*) also believed that cholera was with cold patterns. With

the in-depth understanding of cholera, by the end of the 19th century, there have been doctors who synthesized the views of both two schools of theories, such as Xu Qi (许起) and Lian Wenchong (连文冲), but in general, the cognitions of cholera of the two schools were opposed and not comprehensive enough.¹⁶

At the end of the 19th century, Western-style hospitals in China began to adopt Western medical treatment for cholera. With the discovery of cholera vibrio by Western medicine and advancements in relevant diagnostic and treatment techniques, the mortality rate of cholera was effectively reduced.¹⁶ Meanwhile, the advancement of the publishing industry led to a significant enhancement in the speed and scope of knowledge dissemination. It was especially evident with the proliferation of numerous Chinese and Western medical journals, magazines, and other publications, significantly advancing the spread of medical viewpoints. Between 1880 and 1911, 16 Western medical-related journals and magazines were established, and from 1912 to 1949, a total of 632 such publications were founded.¹⁷ Additionally, between 1897 and 1949, there were 353 Chinese medicine-related journals and magazines.¹⁸ Furthermore, approximately 330 health-related supplements were introduced in various newspapers.¹⁷ As a result, a plethora of Chinese and Western medical perspectives on cholera recognition and treatment were disseminated through these medical publications, sparking more debates. This marked a new phase in the Chinese medical community over the exploration on cholera: it encompassed internal debates within TCM field regarding the cold or heated nature of cholera and the convergence of two schools, as well as debates and integration between Chinese and Western medicine.

4.1 The beliefs on Hanging Feet *Sha* with cold patterns spread earlier than with heated patterns

Dating back to 1820-1822, the cholera epidemic was an initial outbreak in China. According to Wang Qingren, cholera progressed from a heated pattern to a cold pattern. The heated patterns featured relatively mild syndromes, while the cold ones are characterized by more severe syndromes. However, the progression from cholera displaying a heated pattern to a cold pattern was quite rapid. Therefore, doctors were still treating it as a heated pattern while it had already progressed to a cold one. This explained why Xu Zimo argued that traditional treatments for *Huo Luan* were often ineffective.¹⁵

After the initial cholera outbreak in Jia-Dao period, the leading cause for mortality of patients with cholera was that patients' pattern developed fast and ferocious to death in the progression from a heated to cold pattern. Physicians such as Kou Langao and Xu Zimo embarked on exploring clinical options with the knowledge of *Sha* syndrome to deal with the disease, and their treatments had proved effective in clinical trials.⁶ This made the

cold-pattern-oriented treatments to cholera prevailed earlier than heated-pattern-oriented treatments.

4.2 Wang Shixiong's refutation to Hanging Feet *Sha* cold pattern theory

In 1862, Wang Shixiong published *Sui Xi Ju Chong Ding Huo Luan Lun*, which criticised that the cold-pattern-oriented treatments were the leading cause resulting in high mortality of patients. Wang Shixiong refuted the belief that cholera was with cold patterns with the popularity of book *Sui Xi Ju Chong Ding Huo Luan Lun*. Wang's ideas widely spread, leading to the debates between SCCP and SCHP that lasted for more than half a century in the history of modern Chinese medicine.

What made Wang Shixiong refute the cold pattern theory? To answer this question, it is necessary to analyse the epidemiological features of cholera. According to the previous research, the initial cholera epidemic was the most intense, while the following epidemics showed a general trend of increased frequency and decreased intensity.² Cholera, at that time, was an extrinsic disease that people had no antibodies in their immune systems to prevent against it. Thousands of people were infected and died. As the epidemic progressed, people's immune systems gradually adapted to the disease, so the chance of developing more severe symptoms decreased.

The case was the epidemiological characteristic of seeking a gradual balance between infectious diseases and the external environment. By the time the second intense wave of cholera pandemic hit China, people had lived with it for 40 years. Forty years of time had enabled people to endure the disease. Hence in Wang Shixiong's works, cholera with heated patterns had milder syndromes.

Due to the restriction of accessing modern medical knowledge, Wang Shixiong was unlikely to access to the epidemiological rules. However, he was keenly aware that cholera in his time mainly had heated patterns. He therefore criticized to the predominant cold-pattern-oriented treatments derived from *Diao Jiao Sha Fang Lun*, and accused the treatment as the cause of mortality. Despite his critiques, he had no intention to deny the cold patterns attached to cholera, but to clarify differences of the two patterns, cold and heated, cholera might attach. The closed awareness to those differences was critically vital to physicians in diagnosing and offering treatment options. It is noteworthy here that Wang's prescription, which was to treat the heated pattern with cold medicine, was exactly in line with cholera epidemiological rules at that time. More evidence can be found from other physicians' clinical practice. For example, Lu Jiuzhi believed that cholera consisted of 90% of heated patterns and 10% of cold patterns.¹⁹ Likewise, cholera with cold patterns was predominant in Wu Da's (吴达) clinical trials in 1859, but was rarely reported in his practice thereafter.²⁰ Meanwhile, Zhang Xichun (张

锡纯) believed that cholera was with mostly heated patterns with occasionally 1%–2% of cold patterns amongst all patients.³

Therefore, the emergence and spread of the theory of cholera with heated patterns reflected the fact that cholera, as an epidemic disease, experienced a decrease in intensity when it achieved a state of balanced adaptation with the environment. This was a milestone of TCM development in its theory and practice in responding to new diseases in the field. In fact, the rise of heated pattern inclination in treating cholera promoted the integrity of treating and diagnosing cholera in heated-oriented and cold-oriented development. This marked a significant improvement in cholera treating in the TCM field.

4.3 Rationales for the controversy between the two schools

To sum up, reasons over the controversies between SCHP and SCCP can be concluded as follows:

The first reason was the limited knowledge towards cholera in the TCM field at that time. The course of cholera contained two types of patterns: cold and heated. Cold patterns predominated amongst patients at the early stages of the epidemic, while heated patterns were diagnosed more at the second wave of the epidemic. Treatments to Hanging Feet *Sha*, which were often associated with cold-pattern-oriented treatments, were mainly used in curing cholera. SCCP believed that cholera with cold patterns was the disease of Hang Feet *Sha* rather than the *Huo Luan* itself.

Although Wang Shixiong recognised that cholera had both cold patterns and heated patterns, his emphasis rested on the differences in diagnosing and treating the two patterns. Hence SCHP supported the idea that cholera with heated patterns was *Huo Luan* itself rather than Hang Feet *Sha*. It can be argued that theories initiated from both schools were reasonable in clinical practice at that time. The leading cause for this divergence could attribute to the lack of knowledge on epidemiological rules by then physicians, and the lack of awareness on the evolution of cholera patterns with time gone by.

The second reason is that the course of cholera was very complex and developed rapidly, which placed high demands on medical physicians in diagnosing and treating the disease. According to Zhang Xichun's statements, failure to diagnose the pattern and treat it accordingly can result in rapid progression to severe syndrome or even death.³ The accurate diagnosis on the disease nature, cold or heated patterns, was only the first stage in the whole treatment. The most demanding part of the process was to adjust the treatment options timely and accurately according to the development of the disease and in accordance with the patient's constitution.²⁰ The complex and unpredictable nature of cholera required not just general physicians, but specialists who had advanced special training and professional competence

in the field. This is because general practitioners are more likely to diagnose the disease with their previous knowledge on the nature of cholera, heated or cold pattern, and treat the disease accordingly. Hence the divergence intensified between the two schools.

The third reason could be due to the influence of Confucian tradition, which has the culture of respecting the scriptures and revering ancient wisdom. There has been an old saying since the Song dynasty, which is “if you cannot be a good minister, you should be a good doctor” (不为良相, 当为良医).²¹ The saying represented a kind of view that only good ministers and doctors could benefit the people most. Under the guideline of this ideology, many scholars joined the army of medical profession and became the so-called Confucian doctors (儒医). It promoted the development of TCM and created a culture of respect for the scriptures and revering ancient wisdom amongst medical professionals.²² In this context, SCCP treated Zhang Zhongjing's (张仲景) *Shang Han Za Bing Lun* as the authority. While SCHP defenced themselves with the theory of epidemic febrile disease. If practitioners were general physicians rather than specialists, they preferred to adhere to a school and follow its clinical suggestions rather than to conduct innovative clinical trials. Therefore, it was ironic that SCCP criticised Wang Shixiong's treatments which proved effective.²⁰ SCHP, on the other hand, adhered to the rules of respecting the scriptures and revering the ancient wisdom and limited its self-development.²³

5 Conclusion

As discussed above, under the guidance of “treatment based on pattern identification”, distinguishing whether cholera is a cold pattern or a heated pattern is a prerequisite for its treatment in TCM. And at the beginning of the initial cholera outbreak in China, Wang Qingren became an early representative who discovered the infectious characteristics and observed the course of cholera in the field of TCM. His dichotomous treatments placed a profound influence on Wang Shixiong's research, who later systematically constructed the cholera prevention and treatment system.

Kou Langao and Xu Zimo, however, suggested cholera had the similar symptom with *Sha*. Thus, they promoted cold-pattern-oriented treatments to cure cholera under the typhoid theory framework. The treatment options proved to have efficacy in treating cold patterns in early period. They became the representatives of constructing cold-pattern-oriented treatment systems.

As the epidemic of cholera became normalised in China, the evolution of cholera and increasing immunity in the general population has led to a reduction in the disease's devastating impact on morbidity and mortality. Therefore, after the 1860s, cholera epidemics were mostly with heated patterns. In this context, Wang Shixiong systematically discussed the causes,

pathogenesis, diagnosis and prevention of cholera under the epidemic febrile disease theory framework. His book was spoken highly of by Cao Bingzhang (曹炳章) who recommended the book as a comprehensive and must-read book of cholera treatments.²⁴ In terms of cholera diagnoses and treatments in TCM field, Wang Shixiong's initiatives on associating cholera with heated patterns together with Xu Zimo's treatment options derived from Hanging Feet *Sha*'s symptom, provoked the TCM development in theoretical understanding, diagnosing and treatments of cholera. Moreover, it is no doubt TCM has made great contribution to the field of prevention and treatment for cholera.

Owing to the lack of modern medical knowledge, it was unlikely that physicians would realise the epidemiological norms and trends. Hence, practitioners had no clue to understand the relationship between the frequency of disease outbreaks and mitigation of disease symptoms. Moreover, the complex and fast infectious nature of Cholera made the treatment a demanding job. With the teaching of respecting the scriptures and reverring the ancient wisdom, practitioners at that time preferred to follow ancestors' footsteps than to conduct innovative clinical trials, thus leading to the cold-heated patterns controversy over cholera in the late Qing dynasty in TCM.

In conclusion, the perceptions and controversies surrounding cholera in TCM during the late Qing dynasty not only underscore the evolving nature of TCM, but also highlight its cultural significance within the medical field. TCM has established a fully functional system for diagnosing and treating cholera in late Qing dynasty. However, the chronical lingering impact caused by the epidemic of cholera in China was unprecedented. This epidemic was a disaster because of reasons such as recession of the nation, food and supplies crisis, medical service crisis or the poor public health care system. Some doctors diagnosed the disease with their previous knowledge. They did not manage to treat the disease critically and accordingly, and thus worsened the situation of scarce medical resources. It left "patients die not from cholera, but from ineffective clinical medicines".²⁵ This lesson should be learnt by our generation to avoid its repetition, especially in today's context where "Disease X" such as COVID-19 poses an increasingly significant threat to human health. In the face of new diseases, TCM must abandon narrow views and embrace the integration of TCM and Western medicine. By conducting digital and intelligent research on patients' clinical and individual information with the help of the new generation of biotechnology and information technology, we can establish a data-driven and intelligent diagnosis and treatment system for TCM pattern identification and treatment. In this way, TCM can play an even greater role in the prevention and treatment of new diseases.

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Ethical approval

This article does not contain any studies with human or animal subjects performed by either of the authors.

Author contributions

GUO Shiqiang conceived and designed the study; WU Haohuan reviewed the literature and prepared manuscript; GUO Shiqiang drafted the manuscript; GUO Shiqiang and WU Yinghua revised the manuscript. All authors have read and agreed to the published version of the manuscript.

Conflicts of interest

The authors declare no financial or other conflicts of interest.

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Growth of Chinese Medicine in Iran: Past, Present, and Prospects

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Abstract

The international recognition of traditional Chinese medicine (TCM) has continuously increased, and that medical practice has gradually become incorporated into the medical systems of many nations. As an important country in the Belt and Road Initiative, Iran has enormous potential for cooperation with China in medical and health care. High-level officials of the two countries attach great importance to cooperation in both areas. Despite the recent rapid development of TCM in Iran, that medical practice still faces many problems; examples here are the lack of practitioners of TCM as well as the paucity of comprehensive cooperation among herbal medicine factories, publishing houses, traditional medicine colleges, and universities in the two countries. The present study collected and analyzed materials related to the practice of TCM in Iran; it made a deep examination of the current situation, problems, and development prospects regarding TCM in Iran with the aim of providing ideas and references to promote the international development of that form of medicine. Following an analysis of the development trends of TCM in Iran in recent years, it became evident that the prospects for TCM in that country are extensive, and the practice has excellent potential.

Key words: Chinese medicine; Exchange; Communication; Iranian medicine; Silk Road

1 Introduction

The medical exchange between China and today's Iran began in ancient times. Visits by scholars, the distribution of medical texts, and the trade in herbs and medicines between the two countries have a long history. In modern times, the government of Iran has looked upon non-bio-medical systems of medicine, including Iran's own traditional medicine, with caution. Before the year 2000, for example, Iran banned cupping, bloodletting, and other traditional treatments. However, with changes in medical systems around the world, traditional Chinese medicine (TCM)—especially acupuncture—has become increasingly popular in Iran over the past 20 years. Iran's Ministry of Health and Medical Education formulated its Regulations on Implementing Complementary and Alternative Medicine in 2010.¹ Since then, Chinese medicine has been legal in Iran, and it has gradually become standardized practice.

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2 History of TCM in Iran

China and Iran [known by such names as Persia and Anxi (安西) in ancient times] are both very old civilizations. China and Iran have had indirect exchanges since before the Christian era.² The earliest record about Iran in Chinese historical records comes from Sima Qian's (司马迁) *Shi Ji* (《史记》 *Records of the Grand Historian*). *Shi Ji Da Yuan Lie Zhuan* (《史记·大宛列传》 *Records of the Grand Historian: Biography of Dayuan*) records: "Anxi is located about a few thousand miles west of Da Yuezhi (大月氏)."³ Anxi was the Parthian Empire (247 BC–224 AD), which once competed with the Roman Empire. Han dynasty (202 BC–9 AD, 25–220 AD) sent envoys to Anxi. When the Han dynasty envoys arrived in Parthian, Mithridates II of Parthia, ordered the relevant people to lead 20,000 cavalries to meet them on the eastern border.⁴ Since then, economic and cultural exchanges between Iran and China became increasingly frequent along the Silk Road. Notably, medical exchanges between Iran and China were particularly rich during the Sassanid dynasty (224–651 CE), that is, the centuries from the Three Kingdoms period to the early Tang dynasty.⁵

As a result of the frequent trade exchanges between China and Iran by means of the Silk Road, the two countries have influenced each other in medicine and other fields. That exchange was evident in four main areas.

- 1) Prescriptions and medicines were introduced to Iran from China. Many works dealing with traditional Iranian medicine make reference to herbs derived

from China. For example, the second book of *The Canon of Medicine* (Note 1) by Avicenna (Note 2) recorded 16 kinds of medicines imported from China.⁶ Among other works, *Medical Integration* by Al-Razi (Note 3), *Medical Encyclopedia* by Hakim Maysari,⁷ and *Medical Art Book* by Ali Ibn Al-Abbas al-Majusi⁸ also recorded medicines that originated in China. *Signs and Life* (Persian, *Athār va Ahyā*) was an Iranian agronomy and botany work edited by Rashid-al-Din Hamadani (ca. 1247–1318), prime minister during Iran's Ilkhan dynasty. In that work, the chapter entitled “Trees in India and China” included dozens of woody and herbaceous plants native to China, and it presented the names, distribution, character, cultivation, and efficacy of those plants in detail. That chapter also described the plants that grew in the territory of China, such as cinnamon, pepper, dianthus, areca, tea, mango, sandalwood, and agarwood.⁹

- 2) Traditional Iranian medicine has drawn on and absorbed the medicinal properties and practices applied in TCM. For example, cinnamon (Persian, *darchin*, meaning “Chinese tree”) was described as having a dry and hot temperament; it had the effect of dispelling cold and relieving pain, and was used for treating such conditions as arthritis and stomachache.¹⁰ *Asarum* (Persian, *asarun*) had a hot temperament, and it had the effect of nourishing fire and treating such conditions as the common cold and headaches.¹¹ Rhubarb (Persian, *rivand chini*, meaning “Chinese rhubarb”) had a cold temperament, moisturizing effects, and was good for treating such conditions as liver pain and constipation.¹² Galangal (Persian, *kholanjan*) had a dry and hot temperament; it had the effect of dispelling cold and warming the body, and it was useful in treating stomach cold.¹³ Camphor (Persian, *kafor*) had a hot temperament; it had the effect of dispersing blood stasis and relieving pain and was useful in treating liver and stomach diseases.¹⁴ Recorded in Persian medical works, these medicines from China had similarities with TCM with respect to medicinal properties and primary efficacy.
- 3) Various prescriptions and medicines were introduced to China from Iran. For example, the 17 medicines recorded in *Xin Xiu Ben Cao* (《新修本草》 *Newly Revised Materia Medica*) included green salt, woody incense, agarwood, styrax, benzoin, and pomegranate. The 22 medicinals recorded in *You Yang Za Zu* (《酉阳杂俎》 *Various Notes and Stories of Youyang*) included Glycyrrhiza inflata Bat., myrrh, Persian jujube, and almond. The 59 medicines recorded in *Ben Cao Gang Mu* (《本草纲目》 *The Grand Compendium of Materia Medica*) included Glycyrrhiza inflata Bat., fig, myrrh, and Persian jujube. The 16 medicines recorded in *Hai*

Yao Ben Cao [《海药本草》 *Materia Medica from the (Southern) Seaboard Area*] included Persian white alum and Persian green salt.

- 4) TCM has drawn on and absorbed the medicinal properties and primary efficacy applied in traditional Iranian medicine. For example, according to the records in such books as *Wai Tai Mi Yao* (《外台秘要》 *Arcane Essentials from the Imperial Library*), *Bei Ji Qian Jin Yao Fang* (《备急千金要方》 *Important Formulas Worth a Thousand Gold Pieces for Emergency*), and *Ben Cao Gang Mu*, green salt had a cold temperament. It was used to treat eye diseases, which was consistent with the records that appear in traditional Iranian medicine.

It is believed that acupuncture and moxibustion were introduced to Iran during the Yuan dynasty through Iranian scholars' collation and translation of Chinese medical documents.¹⁵ Written in the fourteenth century, *Tansuqnameh Ilkhani* (*Meaning Book of Treasures*) was an Iranian work on Chinese medicine edited by Rashid-al-Din Hamadani during Iran's Ilkhan dynasty. Rashid-al-Din entered Mongol service as a physician, but he came to prominence and power in 1298 with his appointment as co-vizier with Sa'd-al-Din Savaji. Rashid-al-Din's engagement with Chinese civilization continued, particularly in his *Tansuqnameh*, chiefly concerning medicine. *Tansuqnameh Ilkhani* was the earliest Persian translation about the spread of TCM to the Western Regions, and it had considerable value in the history of China-Iranian medical and cultural exchange. The original article of the book is housed in the Istanbul Museum, Turkey, and it was published by Tehran University Press in 1971.¹⁶ The main part of the book was a translation of a commented version of a study of the pulse, *Wang Shu He Mai Jue* (《王叔和脉诀》 *Wang Shu He's Verse on Pulse Diagnosis*), which was written by some physicians in the Song dynasty. *Tansuqnameh Ilkhani* also cites ancient Chinese classics, such as *Su Wen* (《素问》 *Basic Questions*), *Nan Jing* (《难经》 *The Classic of Difficult Issues*), *Zhen Jiu Jia Yi Jing* (《针灸甲乙经》 *The Systematic Classic of Acupuncture and Moxibustion*), and *Zhu Bing Yuan Hou Lun* (《诸病源候论》 *Treatise on the Origins and Manifestations of Various Diseases*) (Fig. 1).

3 Current situation of TCM in Iran

TCM has spread to 196 countries and regions globally. The Chinese government has signed special TCM cooperation agreements with more than 40 countries and regions.¹⁷ Australia, Canada, France, Iran, Thailand, the United Kingdom, and other countries have officially or indirectly granted a legal status to TCM therapy. TCM practitioners in many countries, including Australia, Canada, France, Iran, Thailand, and the United Kingdom, need to register with the local health



Figure 1 Front cover of [Li] Binhu's *Teachings on Pulse Diagnosis* (تشخیص از راه معاینه نبض در طب چینی), translated by the author, published by Talaye Publishing House in Iran and China Intercontinental Press (source from: <https://gjjiayou.sdutcm.edu.cn/info/1142/1426.htm>).

department; they are also obliged to take a qualification examination and obtain local relevant qualification certificates before they are permitted to practice.

The second half of the nineteenth century witnessed significant political and ideological transformations in Iran as well as modernization. Modern sciences were introduced through the translation of European texts into Persian. The first modern school, Dār ul-Funun (Institute of Technology), opened in 1851 with a few European instructors. Its Faculty of Medicine was mainly the successor to the Dār ul-Funun Department of Medicine, established in 1851, which became the School of Medicine (Madreseh-ye Tebb) in 1919.¹⁸ That elite school was training 287 students by 1889, and 1,100 students had graduated there by 1891. At that time, the faculty comprised 16 European and 26 Iranian professors. The Iranian government passed the New Medical Policy on June 1st, 1911, which prohibited the practice of traditional medicine. According to that regulation, only practitioners holding a doctor's qualification certificate issued by the domestic or a foreign ministry of health were allowed to undertake treatment. Following that regulation, students at medical universities in Iran were able to learn only modern medicine, not traditional medicine. Traditional medicine in the country continued only at an individual level and

through some herbal stores. New policies about medical treatment, food, and medicines were approved on June 20th, 1955; thereafter, Iran reinforced the management of medical practice by physicians, and it severely cracked down on illegal medical practice, including that by traditional medicine physicians.

It was not until 1977, before the Islamic Revolution, that the Medical High Commission of the Iranian Ministry of Health first approved a certificate for the practice of acupuncture. The Ministry of Health was itself established in 1941; it became the Ministry of Health and Medical Education in 1985. The Iranian government long adopted a cautious attitude toward all medical systems other than Western medicine, including the country's own traditional medicine. Before 2000, some physicians were punished or even received prison sentences for applying such practices as cupping and bloodletting therapy. Following the introduction of Western medicine to Iran, the country's traditional medicine (including herbal therapy, acupuncture, massage, pricking, and cupping) remained an integral part of the Iranian medical system, despite all the legal and mass media pressures from the mainstream WM-oriented policy makers and practitioners. To comply with worldwide support for traditional medicine, the Iranian

Ministry of Health and Medical Education approved the ongoing practice of traditional medicine. In 2012, the Regulations on the Implementation of Complementary and Alternative Medicine were formulated in Iran to meet patients' needs. The regulations categorized complementary and alternative medicine into more than 10 different kinds; among them, traditional Indian medicine, TCM, acupuncture, and massage are classed as holistic medicine. According to those regulations, the holders of degrees awarded by overseas universities recognized by the Iranian Ministry of Health and Medical Education are able to practice complementary and alternative medicine to a certain extent.¹⁹

Furthermore, the Iranian government is paying increasing attention to international exchange and cooperation with respect to traditional medicine. For example, the government has announced a comprehensive health policy to implement Article 110 of the Iranian Constitution. Article 12-3 requires that Iran's Ministry of Health and Medical Education has to cooperate and hold exchanges with other countries in the field of traditional medicine.

In May 2008, the Iranian Scientific Acupuncture Association was founded, the only association related to TCM in the Middle East and approved by the Iranian Ministry of Health and Higher Medical Education. To promote acupuncture practitioners in Iran and enhance the friendship between China and Iran, that association applied to the Iranian government to establish Acupuncture Day in 2020. The government decided to designate April 27th as Acupuncture Day.²⁰

3.1 TCM clinics in Iran

Iran has few comprehensive TCM clinics. Some treatment methods in TCM and Iranian medicine are similar (such as cupping, bloodletting therapy, and herbal therapy); thus, many Iranian patients tend to choose their own traditional medicine clinics for treatment. In 2009, Imam Reza Public Hospital in Mashhad established the first professional acupuncture and massage clinic in Iran. In the country, there are currently 44 small public hospitals and clinics for traditional Iranian medicine; most of them provide acupuncture and massage services.²¹ According to statistics from Iran's Ministry of Health and Medical Education, Iran, in 2016 had over 200 acupuncturists across the country; most of them worked in clinics they had themselves founded.

Fees for diagnostic and treatment services for all types of medicine in Iran are approved and distributed annually by the Cabinet in the publication *The Relative Value of Health Services*. By including traditional medicine services, *The Relative Value of Health Services* over the past 7 years has been a valuable achievement by the Iranian Medical Office of the country's Ministry of Health and Medical Education. Providing charging standards for such kinds of treatment is a recognition of traditional medicine within Iran's national health

system, and it is also a prerequisite for coverage by medical insurance.

3.2 Regulations on practicing TCM in Iran

In 2014, the Office of Technical Evaluation, Standardization and Health Fees of Iran's Ministry of Health and Medical Education in conjunction with the Clinical Guideline Standardization Office formulated and promulgated 10 clinical guidelines and practices related to TCM.²² The 10 areas covered were as follows: moxibustion therapy; dry and wet cupping; electro-acupuncture; acupoint injection diagnosis and treatment; limited bloodletting therapy; auricular acupoint therapy; *Gua Sha* (刮痧 scraping) therapy; acupoint embedding; acupuncture therapy; and *Tui Na* (推拿) therapy. Those clinical guidelines dealt with the following areas: terms and definitions; functions and scope of adaptation; precautions; operation procedures; flow charts for operation procedures; operative scope of operators; standards of treatment rooms; medical materials; preoperative preparations for each treatment method; postoperative preparations; contraindications; possible adverse reactions; and treatment measures during operations.

The clinical guidelines and operating regulations were compiled by well-known Iranian experts and approved by the country's National Medical Council. However, in line with the current international development of TCM, in addition to those guidelines and regulations, it is urgently necessary to address other areas; they include TCM nomenclature standards, TCM education standards, TCM institution standards, and Chinese medicine and equipment standards.

4 TCM education in Iran

Whether in institutions of higher learning or small training institutes, TCM education in Iran is mainly based on acupuncture. To improve TCM diagnosis and treatment and comprehensively develop TCM in Iran, it is necessary to create a relatively complete TCM education system, involving the country's higher medical colleges. It is also important to promote more TCM professionals; Iranian higher medical colleges should undertake joint education with well-known TCM colleges in China.

4.1 Medical universities offering doctoral program in acupuncture and moxibustion

In 2020, approval was given for the first time in Iran for a doctoral program in acupuncture and moxibustion to be included in the national entrance examination for medical doctors. General practitioners and clinical specialists are eligible to sit for the examination. Although According to the National Medical Examination Network of Iran, the examination covers the basics of acupuncture and moxibustion, anatomy, Western

medicine, clinical medicine, and analytic skills.²³ As of 2021, only Mashhad Medical University had enrolled doctoral students in acupuncture and moxibustion, and the annual enrollment was just five individuals. Clearly, such small enrollment is far from sufficient to meet Iran's medical needs in this area.

4.2 Medical universities and public hospitals offering acupuncture training courses

The educational, cultural, and academic research center of Tehran University of Medical Sciences aims to improve knowledge and skills for both medical specialists and general practitioners as well as to improve complementary alternative medical services. Since 2011, the university has held an acupuncture training course with a course time of 508 hours; the participants are qualified Iranian physicians. The physical medicine and rehabilitation center of Imam Khomeini Hospital and Pain Center of Khatamolanbia Hospital also offer acupuncture training courses to practitioners.²⁴

4.3 Private training institutes

After the Ministry of Health and Medical Education of Iran formulated its Regulations on Implementing Complementary and Alternative Medicine in 2010, many institutions and groups have established short-term training courses on acupuncture in Tehran, Mashhad, and other cities. The number of privately run small training institutions has increased recently; however, it is difficult for them to have their qualifications recognized by the Ministry of Health and Medical Education. These training institutions are limited to acupuncture and massage: they rarely address other techniques of TCM, such as the basic theory of TCM, TCM diagnostics, TCM herbal medicines, and TCM prescriptions. From time to time, the Iranian Scientific Acupuncture Association and Traditional Medicine & Cupping Institute hold acupuncture-related seminars and training courses.

4.4 China-Iran higher education cooperation in school management

In Iran, 14 medical universities have established colleges and research centers for traditional medicine. In 2005, Mashhad Medical University and Beijing University of Traditional Chinese Medicine jointly launched a doctoral training program for TCM in Mashhad and Beijing. However, only 20 students enrolled in the program in its first year.²⁵ After graduation, students from the program engaged in teaching acupuncture and traditional medicine at Mashhad Medical University and the University of Tehran, respectively. Tehran University of Medical Sciences and Beijing University of Traditional Chinese Medicine signed several agreements in 2011, including Beijing University of Traditional Chinese Medicine and Tehran University of Medical Sciences Postgraduate Joint

Training Agreement. There is enormous room for development between China and Iran in such areas as promoting TCM professionals, cooperative education in TCM, and mutual visits and exchanges in traditional medicine. Delegations from Chinese and Iranian medical universities have often held exchange visits to discuss matters related to collaboration. Australia, Thailand, and other countries have often cooperated with Chinese TCM universities. Such experiences are useful reference points for Iran.

5 Current situation and TCM book problems in Iran

As the most traditional, broad, cultural carrier, and means of communication, books can give readers worldwide a complete, accurate understanding of Chinese culture. China and Iran have maintained friendly relations since they first established diplomatic contact. In recent years, China has been Iran's largest trading partner. Although the two countries have had frequent exchanges in politics and trade, cultural cooperation (including book publication) is in its infancy. From 1990 to 2020, 165 TCM-themed books were published in Iran; of those, acupuncture-related books accounted for 77%. As shown in Table 1, few books about TCM were published in Iran before 2007. No books on the topic were published in 1992 to 1993, 1995 to 1997, 2003, or 2005. After 2007, the number of books published about TCM rose and fell. In 2013, there was a trough; overall, however, an upward trend was maintained. The main reason for the upward trend after 2006 was the legalization of complementary and alternative medicine in Iran. In 2019, books on TCM accounted for about 1.14% of all natural science books published in Iran—a significant increase over previous years (Table 1).

As evident in Table 1, acupuncture was the dominant topic in TCM publications that appeared in Iran over the 30-year period. Acupuncture is an essential part of TCM, but it is not everything. Unlike with acupuncture, other publications on TCM have not been significantly promoted in Iran. For example, seven books on auricular acupuncture therapy were published from 1990 to 2020, but there were no books on prescriptions for acupuncture and moxibustion. Iranians have a high degree of acceptance for herbal medicine, and many books dealing with medicinal botany, Iranian traditional medicine, and herbal medicine have been published in Iran; however, no book systematically introduces TCM. There is likewise a scarcity of books dealing with prescriptions, processing medicines, diagnostics, medical records, health preservation, and popular science with respect to TCM.

5.1 Lack of unified translation standards

TCM is rooted in traditional Chinese culture. Most of the terms in TCM contain profound Chinese cultural connotations. Thus, in translation, it is essential to convey

Table 1 Types of publications on TCM that appeared in Iran from 1990 to 2020 (source from: Iran National Library, <http://www.nlai.ir>)

Ranking	Types of TCM books	Language	Type	Total number	Rate, %
1	Acupuncture, acupuncture therapy	German : 5 English : 50 French : 3 Arabic : 1	Monograph : 67 Translation : 59	126	77
2	TCM basic theory	English : 11 Chinese : 3	Monograph : 10 Translation : 14	24	15
3	<i>Tui Na</i>	English : 5	Monograph : 1 Translation : 5	6	4
4	TCM cupping	English : 3	Translation : 3	3	2
5	TCM nutrition and diet	English : 2	Translation : 2	2	1
6	TCM clinical medicine		Monograph : 1	1	1
7	Research on the modernization of TCM		Monograph : 1	1	1
8	TCM pharmacy		Monograph : 1	1	1

accurately the essence of traditional Chinese culture. Notably, TCM has many unique, culturally rich professional terms, such as the five movements and six qi (五运六气) (Note 4), seven losses and eight benefits (七损八益) (Note 5) and lifting the pot and uncovering the lid (提壶揭盖) (Note 6). In TCM, such terms are straightforward in their literal sense, but their connotations are very different. This feature makes the language used with TCM difficult to understand. Some expressions have no equivalents in Persian and other languages; examples are “assimilation of circuit and qi”, *Tai Yi Tian Fu* (太乙天符 celestial correspondence in convergent year), *Zai Quan* (在泉 terrestrial effect), and *Si Tian* (司天 celestial control). Readers who come across a text dealing with TCM who have not been exposed to theoretical knowledge related to the subject will have difficulty in understanding and may find parts incomprehensible. Furthermore, the most commonly used terms in TCM, such as yin and yang, five elements, and qi, are translated inconsistently. For example, some translators render “qi” as “ki” in line with the Japanese transliteration. This problem with translation is complex, but individuals who are new to TCM may fail to appreciate it. Owing to the lack of unified terminology, translators may adopt different translations for particular expressions, which is highly unfavorable to the dissemination of knowledge about TCM (Fig. 2).

5.2 Paucity of TCM translators

As early as 2000, higher TCM colleges in China began offering majors in English and medicine. Currently, 15 higher TCM colleges and universities in China offer a bachelor’s degree in English and medicine; seven higher TCM colleges offer a master’s degree in Chinese medicine translation.²⁶ Regardless of annual enrollment or trends in enrollment in recent years, the current number of TCM translators is clearly unable to meet the needs for the present international development of TCM.

Currently, four higher education institutions in Iran offer bachelor’s degrees in the Chinese language. According to Iran’s National Education Evaluation Organization,²⁷ only three institutions of higher learning in the country enrolled students majoring in Chinese in



Figure 2 Front cover of *Tongue Diagnosis in Traditional Chinese Medicine* (تشخیص بیماری از راه معاینه زبان در طب چینی), translated by the author, published by Naghoos Publishing House in Iran and China Intercontinental Press (source from: <https://gjjiayou.sdutcm.edu.cn/info/1142/1426.htm>).

Table 2 Iranian colleges and universities offering majors in Chinese (source from: Iran Education Evaluation Organization, sanjesh.org)

University name	Enrollment in 2020	Enrollment in 2018	Enrollment in 2016
Tehran University	30	20	25
Isfahan University	0	35	0
Shahid Beheshti University	30	20	20
Alame Tabatabaie University	25	无	30
Total number	85	75	75

2020: the total enrollment was 85, which was 10 more than in 2016 (Table 2). According to official sources, Iran's Kashan University announced that it would formally enroll its first batch of Chinese undergraduate majors (30 students) in the 2023 to 2024 academic year.²⁸ The number of Iranians wishing to learn Chinese has increased in recent years and the number of institutions offering Chinese majors has also risen; however, there is still a severe shortage of professionals who speak Chinese. Iranian institutions of higher learning have yet to offer a major in Chinese and medicine.

6 Conclusion

Traditional medicine has a long history in China and Iran. The two countries had frequent medical exchanges during the days of the ancient Silk Road. In recent years, traditional medicine in Iran has undergone a transition from prohibition to opening up, and traditional medicine there has also experienced various hardships and challenges. In that process, the development of TCM in Iran has also led to outstanding results. With the guidance and support of the two countries' emphasis on traditional medicine and supportive policies, the health authorities of China and Iran should promote the progress and development of their traditional medicine toward better meeting health needs.

Notes

1. *The Canon of Medicine* is an encyclopedia of medicine in five books compiled by Persian physician-philosopher Avicenna and completed in 1025.
2. Avicenna (commonly known as Ibn Sina) was a Persian polymath who is regarded as one of the most significant physicians, astronomers, philosophers, and writers of the Islamic Golden Age, and the father of early modern medicine.
3. Abū Bakr al-Rāzī, c. 864 or 865 to 925 or 935 CE, often known as Al-Razi or by his Latin name Rhazes, was a Persian physician, philosopher, and alchemist who lived during the Islamic Golden Age. He was the chief physician in Rey and Baghdad hospitals. He was known as the father of Islamic medicine.
4. "Five movements and six qi" in Chinese medicine basically attempts to explain the influence of periodical changes in time and space on the health of human

beings. It is made from an amalgamation of astronomy, meteorology, calendrical science, five phase theory, and the stem-branch system.

5. "Seven losses and eight benefits" is an ancient Chinese health culture concept. The so-called seven losses, refers to the seven kinds of sexual life harmful to human health and longevity of things; The so-called eight benefits, is beneficial to human body and mind. Consol eight practices.

6. When pouring water with a kettle, if the lid of the kettle is tightly covered, the water will not flow out easily. Just open the lid a little and the water will flow out smoothly (so, old-fashioned kettles often have a small hole in the lid). The rule of "lifting the pot and uncovering the lid" was created through this phenomenon of life. TCM believes that edema, stagnation (a disease syndrome with clinical characteristics caused by the loss of qi of the kidney and bladder, which is characterized by difficulty urinating, significantly reduced urine output, dripping urine, or even obstructive obstruction), etc.

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The Dissemination and Development of Chinese Medicine in Pakistan

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Abstract

The article focuses on the dissemination and development of Chinese medicine in Pakistan. Religious records show that Chinese medicine was introduced to Pakistan as early as 1,400 years ago, while Hijama (Chinese cupping) was used by Prophet Hazrat Muhammad to cure different types of diseases. Exchanges and cooperations between China and Pakistan continue to the present day. Acupuncture and moxibustion therapy, cupping therapy and herbal medicine are practiced with significant merits in today's Pakistan. In the future, with the proposal of the Belt and Road Initiative and the landmark project of China-Pakistan Economic Corridor, Chinese medicine can be strengthened through cooperations at the herbal medicine trade level, the research and development level, the educational level, and the social association level.

Key words: Belt and Road Initiative; Chinese medicine; Cooperation; Development; Pakistan

1 Introduction

The Islamic Republic of Pakistan covers an area of 796,095 km² (excluding Pakistani-controlled Kashmir), and its capital is Islamabad. China established diplomatic ties with Pakistan in 1951. In 2022, Pakistan had a population of 240 million, with more than 95% of the population professes Islam (the state religion) and a gross domestic product (GDP) per capita of \$1,505.¹ One third of the population lives in urban areas and two thirds in rural areas. It is a developing country and is making advancements along with new technologies in every area of life. China has a long history of exchanges with the Indian Peninsula, and the two countries that inhabit this peninsula, India and Pakistan, have shared a common tradition for more than a dozen centuries. In ancient times, the Silk Road (Note 1) linked the Chinese dynasties and ancient India (Sindu). At present, Pakistan is an important country along the Belt and Road

Initiative (BRI) (Note 2), especially the China-Pakistan Economic Corridor (CPEC) (Note 3),² a flagship project jointly constructed by the two sides, which has promoted the exchange of knowledge and culture between the two countries. Many Pakistani students come to China, obtained their degrees in Chinese medicine from Chinese institutes, and are now practicing Chinese medicine in Pakistan, giving strong impetus of Chinese medicine rooted in Pakistan. Moreover, the dissemination and development of Chinese medicine in Pakistan is of great significance to its spread in countries along the Belt and Road. The following content discusses the diffusion and development of Chinese medicine in Pakistan from perspectives of the past, present and future.

2 The dissemination of Chinese medicine to Pakistan

In ancient history, the Indus Valley Civilization thrived within the region that presently constitutes modern-day Pakistan, a territory which remained under British Indian rule until the year 1947. The partition of India into two distinct states, namely India and Pakistan, was a consequence of the 1947 Mountbatten Program. Therefore, the two countries share the same development history of Chinese medicine before 1947. As early as the Han dynasty, the great explorer Zhang Qian (张骞) was dispatched twice by emperor Wu of Han (汉武帝, 141–87 BC) to open up the Silk Road. Trade on the Silk Road was a significant factor in the exchanges among the countries, with Indian traders as the main traders during antiquity. In addition to trade in goods, various technologies, religions and philosophies, as well as medicine, spread along the Silk Routes.³ During the Southern and Northern Dynasties, Buddhist monks from China and India had

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more frequent contacts, and many monks in India were proficient in Chinese medicine. For example, in the sixth century, the Dunhuang monk Song Yun (宋云) introduced the medical practice of Hua Tuo (华佗) to India. Monks of the Tang dynasty, who lived in India for more than 20 years, utilized Chinese medicine to treat Indian patients, promoting the exchange of medicinal practices between the two nations.⁴ Traditional Chinese medicine (TCM) and traditional Indian medicine represent enduring healing systems that frequently exhibit reciprocal influences. During the Tang dynasty, a number of Chinese medicines were introduced to India and are known as the “Medicine from Divine Land” (神州上药). During his stay in India, the famous monk Yi Jing (义净) often used herbal medicines to treat people’s illnesses, and also used *Ku Shen Tang* (苦参汤 Bitter Ginseng Decoction) and tea for self-medication. Written around the third century BC, *Mai Jing* (《脉经》 *The Pulse Classic*) spread to India, from which it traveled to Muslim countries and made an impact.⁵ Chinese acupuncture experienced diffusion in India during the 16th century, yet its continued use was not sustained thereafter. Meanwhile, the philosophies of traditional Indian medicine were documented in *Qian Jin Yao Fang* (《千金要方》 *Essential Prescriptions Worth a Thousand Gold Pieces for Emergencies*).⁶

Traces of Chinese treatment can also be found in Pakistani state religion Islam as early as 1,400 years ago. One of the Chinese treatments, cupping, is mentioned in Islamic holy books, which Muslims call it “Hijama”. This method was used by their Prophet Hazrat Muhammad, who told his disciples that they had to apply this method to cure themselves for different diseases because cupping takes away all the bad blood that contains harmful body toxins. The original Arabic text of the *Hadith* is: “Whoever performs hijama on the 17th, 19th, or 21st day of the Islamic lunar month, then it is a cure for every disease.”⁷ In this context, Hijama refers to a traditional medical practice where a vacuum is applied onto the skin’s surface to draw out impurities from the body. The Prophet first performed this method and then showed it to Muslims to help cure their diseases and stay healthy. Muslims have a belief that the sayings of the Prophet are never lies. Later, it becomes all Muslims’ belief that the method used by the Prophet will indeed be beneficial for all of them. The Prophet passed away approximately 1,400 years ago, and now modern sciences have shown that cupping is beneficial for the human body and helps people to purify their blood and cure many diseases.

3 Practices of Chinese medicine in present-day Pakistan

The popularity of Chinese medicine in Pakistan has been increasing in recent years due to its perceived effectiveness in treating a variety of diseases, as well as its emphasis on preventative care and holistic approaches to health. The dissemination of Chinese medicine in

present-day Pakistan is mainly through the following three aspects: First, civil organizations took roots in Pakistan by setting up Chinese medicine clinics and training local Chinese medicine practitioners. Second, Chinese medicine has received the support and cooperation of the Pakistani government. The National Institute of Traditional Chinese Medicine & Acupuncture was established by both government agencies to further promote awareness and growth of Chinese medicine practices. The Pakistani government is also taking steps to promote Chinese medicine by making it more accessible to people across the country. For instance, the Ministry of National Health Services, Regulations and Coordination has set up a TCM Center at the National Institute of Health in Islamabad. Pakistani government is also planning to introduce Chinese medicine into the national health care system, making it available to more people. Third, Chinese medicine treatments and Chinese herbal medicines are accepted by the Pakistani public, which can jointly increase the popularity and influence of Chinese medicine around the world.⁸ The following sections will discuss popular Chinese medicine treatments and the use of herbal medicines in Pakistan.

3.1 Acupuncture and moxibustion therapy practiced in Pakistan

Chinese acupuncture has been gradually gaining recognition and acceptance in Pakistan. In major cities of Pakistan, such as Karachi, Lahore, Islamabad, and Rawalpindi, there are a number of registered and certified acupuncturists. In Pakistan, there is a special Pakistani Acupuncture Council that promotes acupuncture and ensures that people have access to appropriate acupuncture specialists. This council is managed by General Certification of Acupuncture Doctors. In 1991, a medical team dispatched by Gansu province went to Pakistan to promote Chinese medicine and culture. La Jielian (喇杰廉) (Fig. 1), one of team members, stayed in Pakistan and established a private Chinese Acupuncture Center (CAC) (Fig. 2) in Islamabad, making it the first Chinese acupuncture clinic opened in Pakistan.⁹

Many individuals in Pakistan are now showing interest in acupuncture therapy, as documented in local hospitals, for managing various problems including chronic pains, migraine, back pain, neck pain, osteoarthritis, knee pains, nausea, fatigue, etc. It is believed to carry a low risk of side effects. Acupuncture clinics and practitioners are becoming more visible, particularly in urban areas. The following table shows the popularity of acupuncture in Pakistani major cities (Table 1).

Moxibustion is available in Pakistan, and is most commonly found in centers that provide acupuncture services. It is performed by highly trained practitioners, as Pakistanis consider it slightly dangerous. References show that Yashfeen Medical Center in Islamabad, Bukhari Center in Lahore, Akumed and Reiki Center



Figure 1 La Jielian (left) (source from: <https://baijiahao.baidu.com/s?id=1628931584286488598>).



Figure 2 Chinese Acupuncture Center (source from: https://www.sohu.com/a/358759739_116237).

Table 1 Acupuncture popularity and patient comments in Pakistani cities (Source from: Local healthcare survey, hospital records, and patient interviews)

City	Percentage of individuals seeking acupuncture	Patient comments	Percentage of patients applying acupuncture more than once
Karachi	Approximately 32%	Positive testimonials about pain relief and relaxation	Approximately 30%
Lahore	Approximately 28%	Mixed feedback on effectiveness for chronic conditions	Data not available
Islamabad	Approximately 30%	High satisfaction for stress management	Around 25%

in Karachi are some of the medical clinics in Pakistan that offer moxibustion therapy to patients. A specialized website, www.marham.pk, provides options for people who are interested in this technique, as it helps patients

call experienced doctors, book appointments at medical clinics or make house calls.

3.2 Cupping therapy practiced in Pakistan

Cupping therapy is offered in many Chinese medicine clinics and hospitals in Pakistan. As a recognized and well-accepted therapy, it is more widely available in larger cities, such as Karachi, Lahore, and Islamabad. Dr. Qasim Mughal and Dr. Maham Nasir are among the top five specialists who perform the cupping technique in Pakistan. Zaib Medical Center and Hijama Cupping Center offer both dry and wet cupping in Lahore. There are glass, bamboo, earthenware, and silicone cups (Fig. 3). Some therapists move the cups on the skin to create a massage-like effect. Some people also receive “needle cupping”, in which the therapist first inserts acupuncture needles and then places cups over them.¹⁰

People in Pakistan find many benefits of cupping, such as relieving chronic muscle tension and pain, helping to increase blood circulation, encouraging tissues to release toxins that are very harmful to our bodies, helping to reduce anxiety, clearing congestion and helping to treat asthma, clearing colon blockages and aiding digestion, and reducing stretch marks and scars. It is fairly an inexpensive yet body-friendly method, and most Pakistanis have readily accepted the cupping technique, which also has its roots in Islam.

3.3 Herbal medicine in Pakistan

Chinese herbal remedies are commonly used in Pakistan, as they have remarkable similarities with Unani medicine (Note 4), an important kind of traditional medicine relies on medicines made from medicinal plants, herbs for the treatment of diseases in Pakistan. Pakistanis are very religious conscious and strictly follow the rules of Islam and the teachings of their ancestors. Unani medicine was prominently developed and refined by Muslim scholar-physician Avicenna around 11th century and has maintained its popularity up to the present day.¹¹ There



Figure 3 There are many clinics and institutes offering coarse bamboo cupping in Pakistan (source from: Waqas Khalil).

are more than 6,000 medicinal plants in Pakistan, of which 3,500 traditional Pakistani herbs are also found in China.¹² As Chinese herbal treatment is very applicable and effective in Pakistan, Pakistanis are very open to Chinese medicine and are used to receiving herbal medications. Chinese medicine and Unani medicine are now indispensable in Pakistan, especially in rural and tribal areas, due to its availability, proximity, affordable fee, and strong belief of the family and society. Herbs are staging a comeback, and the herbal “renaissance” occurs all over the world.¹³ There are a number of commonly used Chinese medicinal herbs in Pakistan and the top three are: (1) *Ren Shen* (人參 Radix et Rhizoma Ginseng). It is one of the most commonly used Chinese herbs for a variety of ailments, including fatigue, stress, and depression. (2) *Huang Qi* (黃芪 Radix Astragali). It is a popular Chinese herb that is believed to help boost the immune system. It is also used to treat a variety of respiratory ailments. (3) *Gan Cao* (甘草 Radix et Rhizoma Glycyrrhizae). It is a sweet Chinese herb that is used to treat a variety of conditions, including digestive issues, skin problems and allergies.

The cooperation between China and Pakistan in the field of proprietary Chinese medicines has been deepening, and has performed well for the treatment of bronchitis and in the fight against COVID-19. The following are two examples.

3.3.1 Chinese herbal medicine for bronchitis

Yin Huang Qing Fei Capsule (銀黃清肺膠囊), the first Chinese herbal medicine for bronchitis, passed a 1-year trial at Sino-Pakistan Cooperation Center for Traditional Chinese Medicine (SPCCTCM) and was successfully declared in December 2019 to be appropriate and effective for the Pakistani population. Raza Shah, general director of the Bioequivalence Studies and Clinical Research at the International Center for Chemical and

Biological Sciences (ICCBS), presented the test conclusion and stated a randomized double-eyeless clinical trial of the efficacy and safety of the Yin Huang Qing Fei Capsule against amoxicillin-clavulanate in cases with habitual simple bronchitis (Fig. 4).¹⁴ Shah explained that amoxicillin, an extensively habituated medicine in Pakistan, is losing its energy against bacteria due to medicine resistance, so there was a need for alternate treatment, and Yin Huang Qing Fei Capsule proved to be a good volition. The figure shows that the Yin Huang Qing Fei Capsule is more advanced than its contender Western medicine, but its price is only 5% of that, reducing the financial burden on patients in Pakistan. This is first-time trial of a traditional Chinese medicine in Pakistan, which will be a major step towards opening up more fields of cooperation between the two countries.

3.3.2 Chinese herbal medicine against COVID-19

More than 80 countries and places, including Pakistan, have benefited from excellent Chinese medicine prescriptions and clinical experiences in the fight against COVID-19. Jin Hua Qing Gan Granules (金花清肝顆粒), the innovated Chinese herbal medicine for the treatment of COVID-19 disease, is another endorsement of Chinese medicine in Pakistan. ICCBS studied the efficacy of Jin Hua Qing Gan Granules on 300 COVID-19 cases in Pakistan from June 2020 to December 2021 and Pakistani health authorities announced the completion of a successful clinical trial on efficacy and safety. Jin Hua Qing Gan Granules became the first proprietary Chinese medicine to complete clinical trials guided by foreign medicine registrations and the first proprietary Chinese medicine to be verified abroad by foreign scientists on the basis of international evidence-based medicine.⁸ It also serves as a significant impetus for Chinese-Pakistani cooperation in traditional medicine.



Figure 4 China's Yin Huang Qing Fei Capsule Succeeds in Clinical Trial in Pakistan (source from: <http://karachi.mofcom.gov.cn/article/jmxxw/201912/20191202922456.shtml>).

4 Future development of Chinese medicine in Pakistan

China and Pakistan have broad prospects for cooperation in the field of Chinese medicine. Since the implementation of the BRI, more attention has been given to the CPEC, both within China and internationally. The CPEC helps promote connectivity between China and Pakistan, strengthen cooperation, economic development and peaceful coexistence through regional integration, bringing opportunities for socioeconomic development. This has laid the foundation and opened up new opportunities for the development of Chinese medicine in Pakistan. Cooperation in the following four aspects is ongoing or forthcoming.

4.1 Cooperation at the herbal medicine trade level

According to the World Health Organization (WHO), nearly 60% of the world's population currently adopts traditional herbal remedies as alternative or complementary medicine and about 80% of the population in developing countries relies almost totally on them for their foremost healthcare remedies.¹⁵ There has been considerable worldwide interest in complementary/traditional medicine, particularly in herbal products, since the WHO is playing an important role in establishing and promoting them. Traditional herbal medicines have a good scope of application in Pakistan due to its rich variety of medicinal plants and high percentage of Pakistanis living in rural areas. Furthermore, Pakistanis in rural areas are accustomed to taking herbal remedies and are highly receptive to Chinese herbal medicine.⁸

Pakistan possesses abundance profitable medicinal flora and the products have already exported to countries such as Central Asia. Thanks to the CPEC, it will open up new business options, which will also make it possible for the region to capture a significant share of the huge global herbal market and ultimately transform the major herbal industry. Chinese medicine expertise and its internationalization may serve as inspiration for Pakistani indigenous herbal manufacturing businesses. Pakistanis can learn from China's management of its high-quality medicinal herb resources, such as pharmaceutical tools, management and marketing, export tactics and herbal transportation, and can help transform Pakistani herbal businesses into a modern research-based traditional medicine industry. Since Pakistan is very active in international and exchange platforms, both countries can jointly expand the herbal industry, design plans for a more efficient production line and increase the popularity and influence of traditional medicine in the world.⁸ Hence, TCM and Unani medicine enjoy a broad space of collaboration in production and trade.

4.2 Cooperation at the Chinese medicine research level

Pakistan and China have already geared up cooperation on traditional medicine research. Long before SPCCTCM was founded, Hunan University of Chinese Medicine, the Affiliated Traditional Chinese Medicine Hospital of Southwest Medical University, Institute of Food Science and Technology, Chinese Academy of Agricultural Sciences, Hamdard University and enterprises in Pakistan have already joined collaborations over the last two decades. In 2018, Hunan University of Chinese Medicine and the ICCBS of University of Karachi established the SPCCTCM to enhance bilateral medical studies and inked a common statement, thus enhanced cooperation in traditional medicines. The SPCCTCM will fully support the Chinese and Pakistani scientists and enterprises in every field including cultivation of medicinal plants, clinical study, research and development of herbal medicines and talents training.¹⁶ This is an excellent example of medical cooperation between the two countries.

China and Pakistan already have many well-established medical cooperation projects. With the health corridor now taking the form of CPEC, Chinese medicine will open up huge prospects for extended research cooperation between Pakistan and China. To strengthen Pakistan's research capacity in the herbal sector, the CPEC intends to connect academic institutions, research centers, universities, researchers and specialists. The sharing of information and knowledge will also open the door for the establishment of a joint department of traditional herbal medicine, where the public will have access to advanced herbal treatments and more employment possibilities.

4.3 Cooperation at the Chinese medicine education level

At present, there are already a number of Chinese medicine educational programs for Pakistanis: First, the Chinese medicine department in Pakistan's Institute of Traditional Medicine and the clinics that offer acupuncture training courses. Taking the CAC in Islamabad as an example, it offers acupuncture training courses and aims to train excellent acupuncturists. Second, a number of Chinese medicine universities in China offer opportunities for Pakistani students to study Chinese medicine, such as Hunan University of Chinese Medicine, Nanjing University of Chinese Medicine, and Zhejiang Chinese Medical University.

Nevertheless, Chinese medicine education is not virtually recognized in Pakistan, as well as well-established legislation. Chinese medicine practitioners are not allowed to practice medicine in Pakistan's government hospitals since there is no such provision facilitated by the health care provider in Pakistan.¹⁷ The demand for qualified Chinese medicine practitioners is on the rise, thus Eastern medicine training is available in Pakistan, offering Bachelor of Medicine/Bachelor of Surgery and

Bachelor of Eastern Medicine & Surgery courses, which are regulated by Higher Education Commission of Pakistan. The Pakistani Ombudsman is still considering the incorporation of Eastern medicine in a 1965 demonstration by experts in Ayurveda and homeopathy.¹⁷ In any case, the integration of Chinese medicine with Eastern medicine is beginning to take shape in Pakistan. As a pioneer in China, Tang Chinese Education & Technology Ltd. (TANG) is currently promoting the launch of TCM as a discipline in Pakistan in collaboration with the country's leading universities and colleges. TANG intends to introduce TCM treatment technology related diplomas and TCM treatment/herb medicine related degree programs in the Islamia University of Bahawalpur, which will be the first Chinese medicine program to be accredited at a Pakistani university. Chinese Government has also created a horizon for evidence-based TCM, which will benefit the academics and communities and boosting internationalization of Chinese medicine.

4.4 Cooperation at the social association level

Following the establishment of the CAC in Islamabad in 1991, Chinese medicine treatments have gained wide recognition from the Pakistani government and the public. As “popularizing of Chinese medicine” continues to rise in Pakistan, La Jielian's Medical Center and the Gansu Province Hospital of Chinese Medicine collaborated to establish the Qi-Huang Traditional Chinese Medicine Center of Pakistan (巴基斯坦岐黄中医中心) in 2016 (Fig. 5), marking a move from the folkloric dissemination and promotion of Chinese medicine to the official level of promotion, exchange, and cooperation.

At present, the Acupuncture Association and Cupping Association are the main Chinese medicine associations in Pakistan. The Acupuncture Association liaises with local acupuncturists and organizes acupuncture-related research activities for acupuncturists to exchange and improve their skills. Governed by the Certification Commission for Acupuncture and being the only authoritative association of acupuncturists in Pakistan, this association serves as, to some extent, a supervisory body for local acupuncturists. The Cupping Association focuses on cupping therapy, offering cupping consultation and treatment services combined with occasional cupping research forums. Chinese medicine associations in Pakistan will be able to expand the influence of Chinese medicine in the region through charity clinics, short-term training programs and academic exchanges, as well as strengthening exchanges and links with other local medicines.

With the trend of internationalization of Chinese medicine and the promotion of the CPEC, more Chinese medicine social associations and educational institutions will cooperate with the Pakistani government and local



Figure 5 Qi-Huang Traditional Chinese Medicine Center of Pakistan (source from: https://www.sohu.com/a/358759739_116237).

associations in the future, thus strengthening cooperation and promoting related activities.

5 Conclusion

With 5,000 years of history, the ancient healing art of Chinese medicine will continue to save people's lives, help them stay healthy and improve their quality of life. Chinese medicine emphasizes the harmony between people and nature, which perfectly embodies health as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity”.¹⁸ We can confidently assert that the dissemination of Chinese medicine culture worldwide has made a significant contribution to the preservation of human life, thereby enhancing the well-being of people across the globe. It is due to the traditions and special friendship between China and Pakistan that Pakistan has become one of the earliest countries where Chinese medicine has taken root overseas, helping to expand its influence around the world. Meanwhile, the development of Chinese medicine in Pakistan is of great significance to the implementation of General Secretary Xi Jinping's (习近平) important instruction of “promoting Chinese medicine globally and benefiting more people”.

Notes

1. The Silk Road is a historical network of interlinking trade routes that carried goods and ideas between the two great civilizations of Rome and China. Extending 4,000 miles (6,437 km), the Silk Road began during the Han dynasty (206 BC–220 AD). The main traders during Antiquity were the Indian and Bactrian traders. Part of the Silk Road still exists, in the form of a paved highway connecting Pakistan and the Uygur Autonomous Region of Xinjiang, China (*Wikipedia, Encyclopedia Britannica*).

2. The BRI is the historical heritage of “Silk Road”, and also plays an important role in great rejuvenation of the Chinese nation. The BRI and the Silk Road, coming down in one continuous line, based on the Chinese civilization, is a symbol of friendship and the road to wealth, and a symbol of the communication and honor (Shen Jianbo; Postdoctoral program, China Executive Leadership Academy Pudong).

3. CPEC, massive bilateral project to improve infrastructure within Pakistan for better trade with China and to further integrate the countries of South Asia. It is part of the larger BRI to improve connectivity, trade, communication, and cooperation between the countries of Eurasia announced by China in 2013. The project was launched on April 20th, 2015, when General Secretary Xi Jinping and Pakistani Prime Minister Nawaz Sharif signed 5 agreements and memorandums of understanding valued at \$46 billion (*Encyclopedia Britannica*).

4. Unani medicine, also called Unani Tibb, Arabian medicine, or Islamic medicine, is a traditional system of healing and health maintenance observed in South Asia. The origins of Unani medicine are found in the doctrines of the ancient Greek physicians Hippocrates and Galen. It was later developed and refined through systematic experiment by the Arabs, most prominently by Muslim scholar-physician Avicenna. Unani medicine came to be known also as Arabian, or Islamic, medicine (*Encyclopedia Britannica*).

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Ethical approval

This article does not contain any studies with human or animal subjects performed by either of the authors. Written informed consent for publication was obtained from individual or guardian participants.

Author contributions

LIN Jie did the research, wrote, and reviewed the paper. Saeed Saboor participated in data collection and edited the manuscript. All authors have read and agreed to the published version of the manuscript.

Conflicts of interest

The authors declare no financial or other conflicts of interest.

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The Value of Traditional Medicine Should not be Underestimated—Traditional Chinese Medicine in Treatment of Autoimmune Diseases

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Abstract

Autoimmune diseases of the nervous system (ADNS) are characterized by the formation of a pronounced neurologic deficit and often lead to disability. The attention of doctors and researchers is increasingly attracted by complementary medicine as adjuvant or preventive therapy for various diseases, including autoimmune diseases. Traditional Chinese medicine (TCM) is a combination of treatment methods that include acupuncture, herbal medicine, dietetics, physical exercises, and other methods that are often used in conjunction with recognized approaches of official medical science. The article describes the application of TCM techniques in autoimmune diseases of the nervous system, and demonstrates clinical experience in the use of acupuncture, herbal medicine, diets and physical exercises. Traditional and complementary medicine is an important and often underestimated healthcare resource, especially in the prevention and treatment of autoimmune diseases of the nervous system.

Keywords: Autoimmune diseases; Traditional Chinese medicine; Nervous diseases

1 Introduction

Autoimmune diseases (AD) refer to diseases with complex etiopathogenesis. The manifestation is influenced by external causes such as previous infectious diseases, inflammatory, genetic and endocrine factors. Depending on the immune response and the mechanism of its implementation, AD can be organ-specific [i.e. multiple sclerosis, severe myasthenia gravis (MG)] or organ-nonspecific (systemic). According to traditional Chinese medicine (TCM), any disease is considered as the result of energy imbalance. The body is a unified holistic energy system, and the basis of health is *Zhen Qi* (真气 genuine qi), which is the general internal energy that controls all processes in the body. When it is insufficient and/or disharmonious, there is a loss of control over vital functions. The Chinese philosophy's assumptions about cosmogenesis, which are yin (阴) and yang

(阳), and the five elements (*Wu Xing* 五行), are the basis of Chinese medicine. According to *Huang Di Nei Jing* (《黄帝内经》 *The Yellow Emperor's Inner Classic*), yin and yang are considered as two opposite positions that are in opposition to and complementary to each other. A disease is an energy imbalance, and healing is the process of rebalancing, which is achieved through the methods of Chinese medicine. One of them is acupuncture and moxibustion (*Zhen Jiu* 针灸), which has been used since ancient times and has a stimulating, regulating and coordinating effect on the nervous system. Dietetics is based on achieving a yin-yang balance, and not only do the taste qualities matter, but the color of food, and the five tastes correspond to the five primary elements of the *Wu Xing* system (Water, Fire, Wood, Metal and Earth) also matter.

Autoimmune diseases of the nervous system (ADNS) include more than thirty nosological forms. The most studied are multiple sclerosis (MS), acute demyelinating inflammatory polyneuropathy (ADIP) or Guillain-Barré syndrome (GBS) and myasthenia gravis, which are characterized by the formation of a pronounced neurologic deficit and often lead to disability. The pathogenesis of these conditions is based on autoimmune reactions, which in MS are associated with inflammatory demyelination with genetic predisposition under the influence of environmental factors. Pro-inflammatory cytokine production leads to the activation of autoimmune inflammatory processes and damage of nerve structures with subsequent degeneration. The chain of pathological cascade is represented as follows: changes in the

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immune system, inflammation, demyelination and neurodegeneration, which is the basis of MS pathogenesis. In the heterogeneous mechanisms of the pathogenesis of GBS, the autoimmune process is also leading, but in the implementation of pathological disorders, as in MS, provoking factors are important. These include the presence of Epstein-Barr viruses, hepatitis E, cytomegalovirus, mycoplasma bacteria and *Campylobacter jejuni*, to the structures of which antibodies are produced, and the process of immune-mediated demyelination (myelinopathy), or axonal nerve damage (axonopathy), often developing dysautonomia, and it often ends in sluggish tetraparesis. Autoantibodies to neuromuscular synapse structures, namely to postsynaptic cholinergic receptors, as well as antibodies to thymus gland tissues play the main roles in the pathogenesis of myasthenia characterized by pathological muscle fatigue.^{1,2}

Recently, the attention of researchers has been drawn to the use of complementary and alternative medicine (CAM) as an adjuvant or prophylactic therapy for various diseases and, in particular, for ADNS. The WHO global report on traditional and complementary medicine notes that already 98 members have developed a national CAM policy, which will determine its proper integration into the healthcare system, and the recommendations adopted will lead to the development of higher-quality clinical guidelines that will be of great assistance in its application.³⁻⁷ One of the components of CAM is TCM. The basis of TCM is derived from the Chinese philosophy's assumptions about cosmogenesis, which is yin and yang, and *Wu Xing* (五行 the five elements). The Western approach to the treatment of AD is to suppress immunity, which is allowed by TCM in severe critical conditions (myasthenic crisis, exacerbation of MS), and subsequently Chinese doctors continue treatment to restore the energy potential of the body.

2 Evidence-based medicine in TCM

A certain log of CAM is associated with insufficient involvement of evidence-based medicine in reasoning of its effectiveness and safety. The criteria standards of evidence-based medicine include randomized controlled (prospective) trials with double or triple-blind control, which are referred to as the so-called Class I trials. It is believed that the materials of these trials and the meta-analysis conducted on their basis should determine the reliability of the information. If the interventions mentioned above are justified in terms of safety and a possible favorable effect on the health of the population for pharmacoepidemiology, their application in traditional and complementary medicine is difficult, and sometimes impossible.⁸ In our previous work we proposed to distinguish three types of body response to acupuncture treatment, that is immediate, rapid and delayed.⁹ Liu et al.¹⁰ in their work demonstrated an immediate rapid effect when applying

acupuncture to patients with migraine. It has also been noted that transcutaneous auricular stimulation of the vagus nerve has an immediate modulating effect on the brain structures.¹¹ A delayed response in treatment of temporomandibular joint dysfunction was noted by Kang et al.¹²

3 Application of TCM for ADNS

3.1 Dietetics and nutriology

Many researchers note the positive role of a low-calorie diet based on the principles of the Mediterranean diet on the course of ADNS. It has been noted that the use of vegetables, fruit, legumes, and seafood, especially in combination with prebiotics and probiotics, helps to reduce inflammation, restore or maintain the composition of the intestinal microflora, which closely interacts with the immune system.¹³⁻¹⁵

Bahr et al.¹⁶ used a ketogenic diet limiting carbohydrate intake to 20-40g per day and intermittent fasting on a representative sample of patients with relapsing-remitting MS. The clinical study indicated a modulating effect of the diet on immunity and reduction of disease severity.

In a systematic review of the Medline, PubMed and Scopus bibliographic databases, Bagur et al.¹⁷ using a sufficient amount of material, established a relationship between macro- and micro-nutrient intake, vitamin D content and MS incidence. It was found that patients who consumed certain plant products along with amino acids (carnitine and melatonin) or coenzyme Q10 and vitamin D, had high concentrations in the blood serum, which significantly reduced the risk of MS, disease recurrence and the appearance of new foci of demyelination, improving cerebral function and walking. A decrease in vitamin D concentration was observed during the disease recurrence. The data obtained indicates that circulating serum vitamin D concentrations can be considered as a biomarker of MS. Some studies indicate a negative correlation between serum vitamin B12 concentrations and the degree of neurological deficit. It has been noted that vitamin B12 plays a fundamental role in central nervous system function, especially in mediating the conversion of homocysteine to methionine, which is essential for DNA and RNA synthesis. Vitamin B12 deficiency can lead to elevated homocysteine concentrations.

In the work of Rinaldi et al.¹⁸, the clinical effectiveness of the use of probiotics is noted, which stimulates natural immunity, as well as suppresses the activity of pathogenic microflora that may contribute to the development of immune-mediated diseases. Probiotics are non-pathogenic microorganisms that can interact with the intestinal microbiota and attenuate the immune response in autoimmune diseases, particularly MS and MG, and should be used as adjuvant therapy.

The largest number of studies on CAM are devoted to the application of acupuncture, which is used in almost all autoimmune diseases of the nervous system (ADNS).

Generally, the effectiveness of acupuncture in treatment of MS is assessed using the Expanded Disability Status Scale (EDSS), which identifies the degree of neurological damage to eight functional systems as follows: cranial nerves, motor, sensory and coordination systems, pelvic organ function, cognitive sphere, and mobility.¹⁹ For example, Criado et al. note in their work that about 85% of MS patients specify gait disturbance as the major limitation in everyday life. When applying acupuncture to 20 people diagnosed with remitting-type MS, a decrease in spasticity, coordination disorders and walking fatigue was noted.²⁰

3.2 Acupuncture

The most comprehensive review of the literature on the use of acupuncture for the treatment of MS noted its positive impact on the quality of life of patients, however, the authors note that most studies were conducted without a control group, randomization or blinding, which causes certain difficulty in interpreting the true effectiveness of the method. This necessitates further studies with a more rigorous design and analysis to evaluate the effectiveness of acupuncture in MS.²¹

A randomized controlled trial conducted by Danish scientists investigated the effect of serum cytokine levels on the health status and quality of life of MS patients. The patients were divided into three groups, one of which used traditional acupuncture, the other randomized acupuncture, and the third (control group) did not use acupuncture. Patients in the first two groups each received six acupuncture treatments over a four-week period. The authors were unable to demonstrate a significant difference in the level of cytokines and quality of life among the patients between the groups.²²

A study of randomized controlled trials on the use of acupuncture for GBS in medical and biological databases such as PubMed, Embase, the Cochrane Library, CINAHL Complete, the National Digital Science Library, the China National Knowledge Infrastructure (CNKI) and the Wanfang Database (万方数据库) showed high effectiveness and safety of acupuncture as additional therapy.²³ Also of some scientific interest are the results of a generalized quantitative analysis of the data obtained in the study of the effect of acupuncture on MG.²⁴ In the study of Crestati et al. a positive result is noted when treating the ocular form of MG with anticholinergic medicines, corticosteroids, and immunosuppressants in combination with auricular acupuncture,²⁴ as well as cauterization together with Chinese phytotherapy medications for MG.²⁵

Electroacupuncture in combination with medicine therapy in MG patients made it possible to achieve a clinical effect against the background of a halving of the dose of pyridostigmine and prednisolone compared to

the control group, as well as a significant decrease in the level of interleukin-4 (IL-4).^{26,27} Finsterer notes the need to clarify the effect of acupuncture on medication dose reduction in MG patients.²⁸ If the result is positive, public funding of acupuncture can be considered as an additional method in the treatment of patients with myasthenia gravis.

In MS, apitherapy to biologically active points is suggested, which helps to reduce the number of active demyelination foci according to MRI data and disability scores according to the extended EDSS scale.²⁹ However, Lee et al. noted that treatment with bee venom was widely used even in Oriental medicine, but evidence of effectiveness is limited.³⁰ Although most complications during apitherapy were local or systemic allergic reactions, the authors report a case of progressive quadriplegia 10 days after multiple sessions of bee venom treatment.

3.3 Phytotherapy

Phytotherapy is one of the oldest methods of treatment, well-proven in the treatment of many diseases. In reviewing herbal remedies used in traditional Persian medicine for the treatment of MS, the authors studied the main Persian pharmacopeias of the 9th-18th centuries. Out of 157 selected remedies, 118 medicinal plants were authenticated whose antioxidant activity, immunomodulatory and anti-inflammatory properties in the treatment of MS are well known.³¹ When evaluating the effect of lemon verbena (*Lippia Citriodora*) extract on pro-inflammatory serum biomarkers in patients with various clinical subtypes of MS, a significant decrease in C-reactive protein concentration was found after 28 days of taking the extract.³²

Turmeric long (*Curcuma longa*) is used in folk medicine as an effective anti-inflammatory agent. Polymerized nano-curcumin was administered daily intraperitoneally to rats with experimental autoimmune encephalomyelitis. The study of the lumbar spinal cord sections confirmed a significant decrease in the number of demyelination foci, inflammation, and destruction of the blood-brain barrier. There was also an adjusted balance of pro-inflammatory and anti-inflammatory gene expression, reduced oxidative stress, improved remyelination, and increased progenitor cell markers after treatment.³³

Mojaverrostami et al.³⁴ also note improved remyelination and suppression of inflammation in the central nervous system (CNS) in MS patients when using medicinal plants, which opens up new horizons for therapy. The sedative and antidepressant effects of phytotherapy, along with improvements in sleep quality, decreases in muscle rigidity, neuropathic pain, and the degree of pelvic organ dysfunction have drawn attention.³⁵ A positive therapeutic effect was also noted with the use of plant polyphenols, which include chrysin extracted from the plant *Passiflora caerulea*. Chrysin has antioxidant,

anti-inflammatory and neuroprotective effects. The data showed that chrysin modulates redox processes and inflammation in MS and GBS; however, additional studies are needed.³⁶

Huperzia selago from the Lycopodiaceae family, being an acetylcholinesterase inhibitor, has been used in Chinese medicine to treat many diseases for more than 1,000 years. Lycopodium alkaloids are effective in diseases associated with impairments of the neuromuscular system and are used in the treatment of MG.^{37,38} Phytotherapy occupies an important place in TCM. In the 16th century, *Ben Cao Gang Mu* (《本草纲目》 *The Grand Compendium of Materia Medica*) summarized the centuries-old experience in the art of herbal medicine. Since then, Chinese phytotherapy has not undergone significant changes. A complex collection of astragalus root, codonopsis, ural licorice, angelica and wild ginger, known as *Bu Zhong Yi Qi Wan* (补中益气丸 Center-supplementing and Qi-boosting Pills), have proven themselves in the treatment of ophthalmoplegia.³⁹

Berberine is widely used in traditional Chinese medicine. Recent studies have demonstrated clinical improvement in experimental autoimmune neuritis in rats, accompanied by suppression of lymphocyte proliferation (particularly for CD4⁺ T cells), Th1 (TNF- α) and Th2 (IL-10) cytokines, and a decrease in anti-P0 peptide 180-199 IgG1 and IgG2a, i.e. suppression of both cellular and humoral immunity. The authors suggest that the alkaloid berberine can be used to treat autoimmune diseases of the peripheral nervous system, such as GBS.⁴⁰

There are separate publications in the literature demonstrating a good therapeutic effect of cannabinoids for pain management and hypertonicity in MS.^{41,42} However, there is no clear evidence of the effectiveness of such therapy.⁴³

3.4 Exercise therapy, yoga, Qi Gong and Tai chi

An analysis of various data on the positive effects of physical therapy, yoga and breathing exercises when studying a systematic review of publications of relevant original studies, showed their effectiveness in depressive disorders, cognitive and motor function impairment in MS patients.^{44,45}

One of the effective methods of CAM is physical therapy. It has been noted that resistance training can be an effective method to improve walking and functional capacity in individuals with physical activity limitation in MS.^{46,47} Respiratory muscle training at home is effective and can not only provide short-term results, but also reduce fatigue in patients with mild to moderate MG.⁴⁸⁻⁵¹

Some authors specifically single out yoga classes, which are considered to be an effective auxiliary tool for patients with various neurological disorders, which reduces the duration of hospitalization and also improves the patients' ability to work.⁵¹⁻⁵⁴

In many publications, a particularly significant effect is noted in the use of *Qi Gong* (气功) and Tai chi (太极), which is a system of breathing and motor exercises with a psychophysiological orientation. The results of a detailed meta-analysis convincingly proved the effectiveness of these TCM methods, which reduce fatigue and increase motor activity in patients with MS and MG. The feasibility of regular use of exercises as part of the rehabilitation program for these patients has been substantiated.⁵⁵⁻⁵⁹

Methods of TCM are generally shown in the following table (Table 1).

4 Conclusion

The search for treatment methods for ADNS, including those used in TCM, is due to the limited therapy options for these severe diseases. Only in GBS a spontaneous regression of pathological symptoms is possible, the other diseases mentioned require long-term, lifelong therapy. As a type of professional activity, the activity of a specialist in traditional (complementary) medicine is an extremely demanded, safe and effective area of medical activity with qualified application. Despite the recognition of complementary medicine in many countries, its practical application still faces certain difficulties. The purpose of the various areas of TCM is to restore health, improve the quality of life, habilitation and rehabilitation after severe diseases, as well as social integration, and not just the treatment of diseases. Traditional and complementary medicine is an important and often underestimated healthcare resource with many applications, especially in the prevention and treatment of ADNS. It is TCM that meets the requirements of a personalized and predictive approach to the treatment of diseases in general. Despite the widespread use of the principles of evidence-based medicine, most research in TCM is random and descriptive in nature. To date, there are no clear evaluation criteria on which research in the field of CAM in the treatment of ADNS could be based. The search for the effectiveness of various TCM methods and the planned scientific research in relation to a particular nosology should be based on clear methodological developments and the principles of evidence-based medicine.

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Ethical approval

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Author contributions

Yurii O Novikov participated in data collection, literature analysis, text writing, structuring, discussion and

Table 1 Application of TCM for ADNS (source from: the authors)

Methods	Authors (Country)	Design of study	Number of patients	Duration of treatment	Effects	Reference number
Acupuncture	Huybregts et al. (Belgium)	Case control study	99 patients with multiple sclerosis	4-6 weeks	Acupuncture has a positive effect, greater than placebo on the course or symptoms of the disease.	7
	Novikov et al. (Russia, France)	Series of cases	26 patients with gonarthrosis	2-4 weeks	Despite the heterogeneous data undergoing statistical processing, it can be concluded that the method used is effective.	9
	Liu et al. (China)	Randomized controlled trial	40 patients with migraine	6-24 weeks	Acupuncture can relieve the symptoms of migraine, improve dysfunction of cerebellum and activate brain regions involved in modulation of pain and emotion. The cumulative therapeutic effect of acupuncture is more extensive and significant than its immediate effect.	10
	Kang et al. (Korea)	Randomized, single-blind, assessor-blind controlled trial	42 patients with temporomandibular joint disorders	3 weeks	Results suggest that point-selective effects among adjacent, distal or a combination of acupoints are hardly associated with pain intensity or palpation index in participants with TMDs.	12
	Criado et al. (Portugal)	Case-control	20 patients with multiple sclerosis	2-4 weeks	Protocol provides evidence that acupuncture treatment can be an attractive option for patients with multiple sclerosis, with gait impairment.	20
	Karpatkin et al. (USA)	Meta-analysis of 15 articles	110 patients with multiple sclerosis	5 weeks	Many of the studies are case reports and other studies have no randomization and little use of control.	21
	Lynning et al. (Denmark)	Single-blind, randomized controlled trial	66 patients with multiple sclerosis	4 weeks	In this study, the authors were unable to demonstrate that 4-week acupuncture treatment had a measurable effect on plasma levels of seven selected cytokines in people with multiple sclerosis.	22
	Wang et al. (China)	Randomized controlled trial	60 patients with myasthenia gravis	2-4 weeks	Electroacupuncture warming therapy combined with Western medicine has a significant therapeutic effect on myasthenia gravis. One of the mechanisms possibly is to restrain specific immune reaction by regulating the level of IL-4.	27
	Lee et al. (Korea)	Clinical case	1 patient with Guillain-Barré syndrome	10 days	The treatment of a 68-year-old woman who developed progressive quadriplegia 10 days after receiving multiple honeybee venom sting acupuncture treatments.	30
	Stoll et al. (USA)	Cohort study	111 patients with multiple sclerosis	2-6 weeks	37 (64.9%) patients, who used acupuncture and massage, reported 5 disability points or less.	44
	Arji et al. (Iran)	Meta-analysis of 31 articles	168 patients with multiple sclerosis	4-6 weeks	Acupuncture is vastly used in the management of mental functions of MS patients.	45
Herbal	Li et al. (China)	Case control study	135 patients with myasthenia gravis	3-12 months	<i>Bu Zhong Yi Qi Tang</i> (补中益气汤 Center-supplementing and Qi-boosting Decoction) is a safe and effective traditional Chinese medicine for the treatment of myasthenia gravis.	39
	Li et al. (China)	Laboratory animal research	Female Lewis rats, 6-8 weeks old, weighing 155-180g	5-17 days	Berberine administrated intragastrically with BBR at doses of 20 and 130 mg/kg/day from day 5 to 17 p.i., respectively. This research also provides new insights into natural compounds extracted from traditional Chinese herbs to be therapeutic in autoimmune diseases.	40
<i>Qi Gong</i> and Tai chi	Buttolph et al. (USA)	Randomized controlled trial	20 patients with multiple sclerosis	10 weeks	Pooled pre- and post- <i>Qi Gong</i> comparisons showed trends in improvement in global mental health, fatigue and depression.	59

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Conflicts of interest

The authors declare no financial or other conflicts of interest.

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Feasibility and Challenges of Interactive AI for Traditional Chinese Medicine: An Example of ChatGPT

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Abstract

As a complementary and alternative medicine (CAM), traditional Chinese medicine (TCM) represents an established medical system with a rich history and abundant clinical experience. TCM is an empirical medicine, the process of which is analogous to ChatGPT's learning and development model. In TCM, inquiry is a relatively objective way of traditional syndrome differentiation. Although various artificial intelligence systems related to TCM consultation exist, their interactive abilities remain limited. The study standardized the primary complaint and instructed ChatGPT to simulate a TCM practitioner, conducting three comprehensive inquiry tests. The results yielded unexpected conclusions, revealing that ChatGPT could simulate a TCM practitioner's inquiry with patients, confirming its potential in the field of TCM inquiry. However, current applications still pose certain limitations and risks. Hence, to integrate ChatGPT-like language models with traditional TCM AI to establish an associative mode that can facilitate TCM diagnosis and treatment with more convenience and standardization is crucial, yet at the same time, it should be treated very carefully.

Keywords: Traditional Chinese medicine; Artificial intelligence; ChatGPT

1 Introduction

Artificial intelligence (AI) refers to the utilization of computer systems to simulate intelligent behavior with minimal human intervention.¹ As AI technology advances at a rapid pace, new platforms are emerging and becoming increasingly accessible to the general public. ChatGPT is a large-scale natural language processing model developed by OpenAI, being made available to the public at no cost since November 30th, 2022.² It demonstrated the ability to generate text, answer questions, conduct conversations, and perform other tasks. This is achieved by pre-training on vast amounts of text and utilizing deep learning algorithms to generate new text that emulates

human speech patterns. ChatGPT is considered to have a broad range of applications in numerous fields, including medicine, scientific research³ and computing.⁴

Traditional Chinese medicine (TCM), as complementary and alternative medicine (CAM), represents a well-established medical system with an extensive history and abundant clinical experience. At present, the application of AI in TCM is rapidly expanding.⁵ A validation study has demonstrated that machine learning AI can diagnose 187 common TCM diseases.⁶ As TCM modernization progresses, new AI applications will facilitate the further development of TCM.

This study aims to explore the methods and accessibility of language models applied in the field of TCM, using the general-purpose conversational AI ChatGPT's TCM inquiry test as an example. The purpose is to provide new methods and ideas for the in-depth application of AI in the field of TCM.

2 The usage and status of ChatGPT

2.1 The introduction of ChatGPT

The ChatGPT commonly utilized is predicated on the GPT-3.5 architecture, constituting one of the largest Large Language Models (LLMs) (with over 175 billion parameters) currently in existence, possessing many of the core attributes of its predecessor.⁷ Its training corpus consists of approximately 570 GB of texts, including books, articles, and websites, encompassing a diverse

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array of topics such as news, Wikipedia, and fiction.⁸ The training process involves feeding the model with a large amount of text data (about billions of words), and using supervised learning to adjust the model parameters to minimize the differences between its generated output and the actual target text. The recently unveiled GPT-4 demonstrates enhanced problem-solving accuracy, expanded common sense and problem-solving capabilities, heightened creativity and collaboration, albeit its present applicability remains somewhat constrained.

OpenAI trained ChatGPT with a Reinforcement Learning from Human Feedback (RLHF) model.⁹ RLHF is a learning algorithm that leverages a small amount of human feedback to solve modern reinforcement learning environments, allowing ChatGPT to fine-tune its behavior with human input and achieve better coherence.¹⁰ ChatGPT initially trains its model through supervised fine-tuning: Human AI trainers provide dialogue and play the roles of both user and AI assistant during training.

To create a reward model for reinforcement learning, ChatGPT requires further comparative data. The developer randomly selects a message written by the model, randomly draws several well-completed alternatives, and has the AI trainer rank them. The model derived from the data collected was subsequently fine-tuned by the developers through the application of the approximate policy optimization algorithm. In each iteration, the algorithm computes updates to minimize the cost function while keeping deviations from the prior policy relatively small. The developers have performed several iterations of this process, resulting in ChatGPT's current functionality and capabilities.¹⁰

2.2 The application of ChatGPT

The emergence of ChatGPT has made a significant impact across various fields. ChatGPT is already widely used in many industries. Researchers have employed it for scientific writing, and some have even included ChatGPT in their authorship lists.¹¹ This move has provoked controversy.¹² Notably, *Nature*, as one of the world's leading scientific journals, has refused to include ChatGPT as an author in articles published in its articles.¹² Multiple examples have demonstrated the potential of ChatGPT in supporting scientific writing, although it is uncertain whether this role will be wholly beneficial for the scientific field.^{3,13}

There are various potential applications of ChatGPT in the field of medicine, including providing real-time assistance, drafting clinical trial protocols and study reports, generating regulatory documents and patient-oriented materials, as well as translating medical information into multiple languages.¹⁴ However, the use of ChatGPT in the medical field must contend with a multitude of issues, including ethical, legal, copyright, compliance, and accuracy concerns. These issues have

the potential to restrict the applicability of ChatGPT and require careful consideration. In a study published in *JAMA*, a team evaluated the performance of ChatGPT in answering questions related to cardiovascular disease. The results showed that ChatGPT provided a reasonable probability of 84% (21/25) for answering the questions. However, the team noted that the answers generated by ChatGPT were overly "academic" and lacked specific references or sources of evidence. These findings demonstrate both the feasibility and limitations of ChatGPT for modern medical consultation.¹⁵ GPT-4 demonstrates promising potential as a supplementary tool for supporting the composition of medical records, consultations, diagnoses, and educational materials, despite ongoing debates regarding its partial authenticity.¹⁶

3 Prospects of ChatGPT in TCM interactive applications

Considering its interactive nature, ChatGPT holds promise for broader application within the TCM field. TCM has a long history. It originated in China and thrived in other East Asian countries. TCM not only serves as a medical treatment approach but also holds strong ties to people's lives. It combines a holistic view of harmony, individuality, simplicity, and preventive treatment, encompassing the assimilation of natural and human sciences.¹⁷ Given its text-based nature, ChatGPT is well-suited for further exploration of its potential applications in TCM.

TCM pattern differentiation is carried out through *Si Zhen* (四诊 four examinations): *Wang Zhen* (望诊 inspection), *Wen Zhen* (闻诊 listening and smelling), *Wen Zhen* (问诊 inquiry) and *Qie Zhen* (切诊 palpation). Of these four, the information gathered from inquiry is relatively objective in terms of form compared to the other diagnostic methods, which may be influenced by environmental factors, subjective physician evaluations, and clinical thinking patterns.¹⁸ During the traditional diagnostic process, physicians typically rely on face-to-face communication with patients to assess their disease status. Information gathered from the patient's symptoms and lifestyle habits can provide the physician with the necessary basis to diagnose and classify TCM diseases. To improve inquiry efficiency, it is necessary to acquire additional knowledge and communication skills, as well as clinical experience.¹⁹ Given the significant variation in clinical experience and proficiency among physicians, young physicians may miss critical information during inquiries, leading to reduced diagnostic accuracy.

Wen Zhen is the process by which doctors ask questions to understand various aspects of a patient's situation, including medical history, lifestyle habits, mental state, diet, excretion, sleep, as well as information about the onset of diseases and changes in symptoms. Modern medicine believes that diseases are caused by

functional or structural issues in certain parts of the body. Therefore, Western medical inquiry often revolves around the patient's personal primary complaints, along with their diagnostic and therapeutic history and the results of auxiliary examinations. In TCM, the most classic method of inquiry is through the *Shi Wen Ge* (十问歌 Ten Questions). Chinese medical practitioners further diagnose and treat through *Wen Zhen* in conjunction with three other examinations. The approach to inquiry in Chinese medicine is not the same as conventional inquiry. Due to the unique nature of Chinese medicine philosophy, it bases its inquiry on the fundamental concepts of *Zheng Ti Guan* (整体观 holistic view) and "interactiveness between humans and their environment". Therefore, inquiry in Chinese medicine is often more comprehensive, which includes the patient's daily habits, living environment, and mental state.

Studies on intelligent inquiry systems have introduced innovative ideas to TCM inquiry.^{20,21} These studies have certain limitations. First, TCM is a medicine that closely relates to the living environment. Focusing solely on the relationship between symptoms and TCM diagnosis will be inadequate. Unlike modern medicine prioritizing diseases and symptoms, TCM emphasizes the individual patient's experience and takes a holistic approach to understanding the body's relationship and response to the environment.²² This suggests that TCM inquiry need to incorporate more humanistic and culturally relevant content. ChatGPT learning model is proficient in capturing this trait and even replicating regional speaking patterns. Developing AI for TCM *Wen Zhen* using ChatGPT as its core can make patients feel as if they are interacting with a genuine TCM practitioner while enabling standardized and uniform inquiries. Therefore, after both training and front-end processes reaching maturity, this approach might be widely implemented in TCM clinical treatment or pre-diagnosis.

4 Interactive applications enabled by ChatGPT in TCM

To demonstrate the application of ChatGPT in TCM, we conducted a test. To ensure the testing environment closely resembles that of China, we used Mandarin Chinese for testing. The latest GPT-4.0 model was used. We required it to mimic a practitioner of Chinese medicine and complete a conversation imitating a real treatment process. We selected the first disease of each system under the category of TCM internal medicine from *The Outline of TCM Practitioner Examination (2020 version)* [中医执业医师资格考试大纲(2020年版)], and had ChatGPT generate the chief complaint. The diseases we have chosen include eight syndromes: common-cold invasion (感冒), heart palpitations (心悸), headache (头痛), stomachache (胃痛), hypochondriac pain (胁痛), edema (水肿), liver depression syndrome (肝郁证), *Bi* syndrome (痹证). These diseases represent the most common syndrome

of each system of TCM internal medicine and are the focus of TCM teaching and assessment.²³ In the clinical practice of TCM, it is common for patients to come to the clinic with these syndromes as the reason for their visit. After brief modifications, a tester played the role of a patient and simulated a complete consultation process in traditional Chinese medicine. During the test, we required ChatGPT to provide information including disease name, syndrome type, treatment methods, and ways of preparing medicinal decoctions. In the test prompt, we asked ChatGPT to provide as much humanistic care as possible. Subsequently, two researchers who have a practicing physician qualification in traditional Chinese medicine independently evaluated the dialogue text, including five dimensions: consultation, diagnosis, prescription, fluency, and humanism. We set four levels of evaluation for these five dimensions, with specific evaluation details listed in Table 1. If there were differences in evaluations between the two researchers, a third researcher was invited to evaluate.

We found that among the five dimensions: consultation, diagnosis, prescription, fluency, Chatgpt all performs well, but it is not perfect (Fig. 1). Intriguingly, humanistic care almost performed perfectly in our 16 tests. In the other four dimensions, it can be seen from the diagnostic level that ChatGPT has some understanding of traditional Chinese medicine syndromes, but apart from certain diseases, its understanding of traditional Chinese disease names is relatively limited. At the same time, prescriptions perform better among younger people; regarding fluency, most tests show a certain advantage in smoothness, yet there is still some lagging behind. This may not be due to the functional defect of ChatGPT, but because of OpenAI's security settings.

5 Discussion

We found that ChatGPT already possesses basic TCM diagnostic and therapeutic skills despite not being specifically trained in the TCM corpus. In all simulated conversations, ChatGPT showed proper performances. In most cases, ChatGPT was inferior to a well-trained TCM practitioner only in terms of accuracy. This problem may be solved on the basis of human medical assistant assistance or expert corpus training. Thus ChatGPT-like LLMs might have a great potential in the field of TCM.

5.1 Advantages of ChatGPT-like LLMs for TCM

TCM is a branch of empirical medicine that relies on the accumulation of long-term patterns and patient feedback to improve its practice, which is similar to ChatGPT's learning pattern. In this regard, ChatGPT-like LLMs have unique advantages for application in TCM. The modernization of TCM is an inevitable trend, and LLMs can accelerate this process. Apart from medical inquiry, LLMs can be utilized in various areas of TCM. In TCM

Table 1 Level criteria (source from: the authors)

Dimension	Level*	Scoring criteria
Consultation	1	Comprehensive content without leading suggestions, a single inquiry does not exceed three questions.
	2	Comprehensive content with some leading suggestions or a single inquiry exceeds three questions.
	3	Basic comprehensive content with leading suggestions and a single inquiry exceeds three questions.
	4	Incomplete consultation content.
Diagnosis	1	Clear TCM disease name and syndrome differentiation.
	2	Clear TCM disease name or syndrome differentiation.
	3	Ambiguous TCM disease name or syndrome differentiation.
	4	Unable to provide clear TCM disease name or syndrome differentiation.
Prescription	1	Able to provide a clear medicinal prescription, the medication and dose align with the patient's relevant syndrome and how to use is communicated to the patient.
	2	Can provide a clear medicinal prescription, the medicine and dosage Basically match the patient's related syndrome, but there are certain deficiencies.
	3	Able to provide clear medicine, but the medicine or dose does not match the patient's related syndrome.
	4	Unable to provide clear prescription.
Fluency	1	Smooth process of consultation and treatment.
	2	The process of diagnosis and treatment is quite smooth, albeit requiring the tester to intentionally guide some parts.
	3	During the diagnosis and treatment process, there are blatant identity lapses and the need for tester's additional guidance.
	4	Unable to complete the whole consultation and treatment process.
Humanity	1	Demonstrates excellent humanistic care in accordance with the patient's identity.
	2	Basic demonstration of humanistic care based on patient's identity.
	3	Shows humanistic care, but fails to align with the patient's identity.
	4	Fails to demonstrate humanistic care.

*Note: Level 1, Comprehensive; Level 2, Correct but inadequate; Level 3, Just passable; Level 4, Improper.

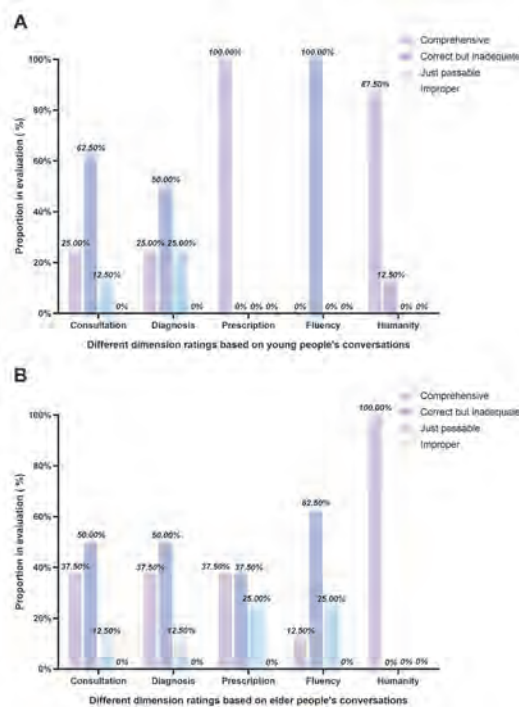


Figure 1 Different dimension levels based on our test (A: Different dimension ratings based on young people's conversations; B: Different dimension ratings based on elder people's conversations). The proportion of each level in each dimensions of the 8 cases was calculated (source from: the authors).

scientific research, while the number of TCM studies is growing, high-quality studies are still scarce. It may be due to the protocol of each individual study. Thus, rigorous and high-quality trials are urgently required to increase the evidence of TCM validity.²⁴ Nature language process technology allows for automated analysis and extraction of literature, which can be used to train the language model on large datasets. This can help TCM physicians or researchers simplify the process of study design. For instance, a simple code can be provided to assist TCM physicians in calculating sample sizes during clinical study design, even if the language model cannot provide a direct answer. LLMs can also assist in gathering more evidence from the literature and automating the synthesis and evaluation of evidence, which previously required substantial manual work (Fig. 2).

Furthermore, language models can play a significant role in TCM education. They can assist TCM learners by analyzing classical TCM literature or treatment protocols of prominent physicians, as well as help physicians make treatment decisions and address medicine efficacy and safety concerns to a certain extent.^{25,26} Moreover, upon request, language models can generate virtual cases for learning or analysis purposes without breaching personal privacy. After being trained, LLMs can simulate patient behavior, and act as a patient, to help TCM learners practice relevant inquiry exercises.

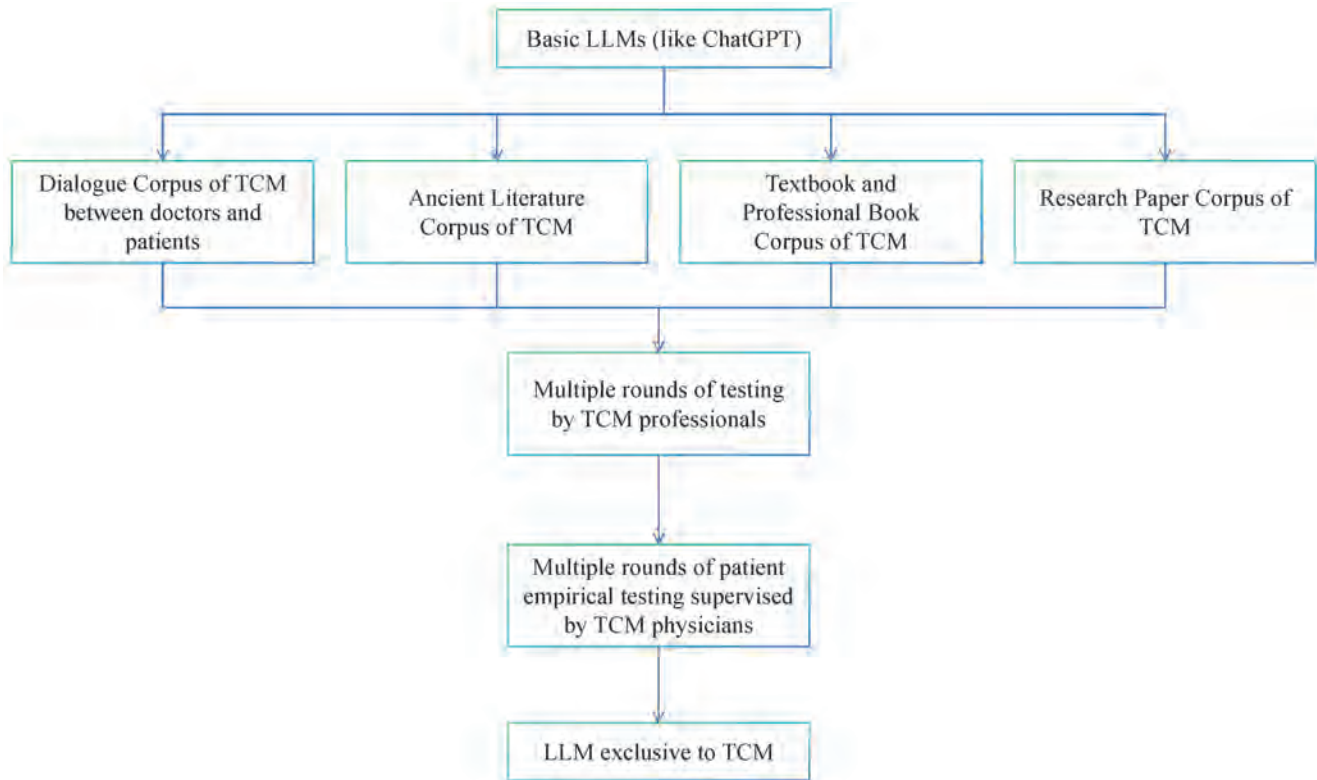
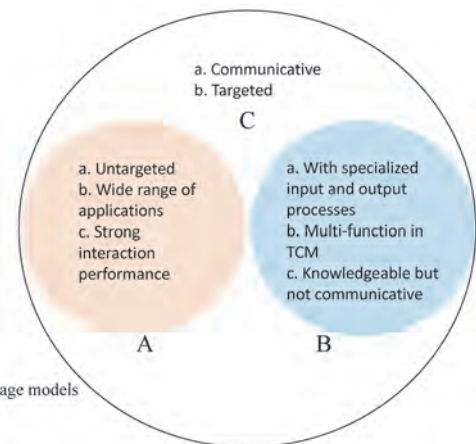


Figure 2 Flow chart of LLM for TCM (source from: the authors).

In our tests, we used ChatGPT-3.5 and GPT-4.0 versions.²⁷ Our trials principally replicated real-life TCM consultations. We took important as well as common diseases from the national TCM examination to conduct the test, which means that we examine AI’s actual TCM competence by the standards of a licensed TCM practitioner. The conclusions reveal that current LLMs do not yet have the specialization of the TCM perspective. They are still far from perfectly modeling a TCM-defined patient. The current language models are generally applicable to different domains. To apply the core techniques of language modeling to the TCM domains, further development and training of TCM-specific language models are necessary. The general model should be combined with the TCM-specific model, and the training data for the specialized model should primarily originate from the TCM knowledge base. The associative model that emerges from this approach is mainly designed to aid physicians and patients in TCM diagnosis and treatment, including symptom analysis and disease prediction, etc. Previous attempts at TCM AI development have involved training AI using TCM corpora.^{20,21} These models, with their specialized input and output processes, require TCM professionals to operate them. However, they lack a general knowledge corpus, which making them highly specialized but not communicative. As demonstrated by ChatGPT, general language models may eventually replace such specialized models due to the advantages of communicative logic. In the future, to achieve a satisfactory TCM AI,

TCM-related tips and a small degree of expertise validation would suffice (Fig. 3).

In terms of interaction, ChatGPT has demonstrated strong performance in its current open APIs (application programming interfaces). For an outlook, the core technology of ChatGPT can be integrated with voice and text recognition (*Wang Zhen* and *Wen Zhen*), pressure pulse sensors (*Qie Zhen*), and other technologies to enhance TCM diagnosis and treatment. Through our tests with GPT-4.0, it is evident that the level of intelligence of general question-answer models such as ChatGPT has reached a substantial level.



A. ChatGPT-like language models
B. Traditional TCM AI
C. Associative model

Figure 3 The difference and identity of associative model (source from: the authors).

5.2 Why is LLM-based ChatGPT more suitable for TCM?

From our tests, we believe that LLMs like ChatGPT are more suitable for TCM. The semantic high-precision characteristic of LLMs mainly reflects the ability to accurately capture and process semantic information when understanding and generating language. This includes comprehending the meanings of vocabulary, phrases, sentences, and paragraphs, and how to use these elements in specific contexts. This provides an excellent foundation for ChatGPT's application in TCM. When consultation serves as the primary information collection method in TCM, the ability to accurately seize and manage semantics directly determines data acquisition. Conventional AI in TCM, such as clinical decision system by experts, generally extract keywords from conversations to form logical chains for judgment. In practice, however, patients often use more natural, versatile, and culture-specific language to describe their conditions, presenting a significant challenge for traditional consultation systems to widely adopt. LLM-based ChatGPT can practically adapt to all forms of natural language, sometimes even possibly outperforming human physicians.

Furthermore, TCM is a traditional medicine based on Chinese culture, embodying strong cultural attributes. Not only does TCM serve therapeutic purposes, but it also deeply permeates various aspects of Chinese people's lives, extending even to psycho-spiritual realms. This attribute strongly manifested in our tests. We found that ChatGPT demonstrates humanistic care conforming to TCM culture in simulated consultations, varying with different patient characteristics. This gives ChatGPT more potential applications within TCM. For instance, it could interpret concepts and theories of TCM, helping patients understand their diseases and treatment plans better, thus improving patient compliance and treatment outcomes. Alternatively, it might be used to process and analyze TCM literature, lending researchers a hand in interpreting obscure phrases from ancient medical books or unearthing valuable patterns and rules from massive clinical records. The values of ChatGPT as one kind of LLMs within TCM culture shouldn't be underestimated.

Up to now, a variety of TCM LLMs have been developed to empower various scenarios in the TCM industry. For example, Baidu (百度) and *Gu Sheng Tang* (固生堂) have jointly developed the *Da Jing Zhong Yi Qi Huang* (大经中医岐黄) LLM.²⁸ This LLM was developed based on Baidu Wenxin Yiyao (文心一言) and contains three sub-models: a clinical model based on diagnosed diseases, a clinical model based on symptoms and signs, and a health care model. Qi-Huang LLM can output multi-dimensional health care programs such as Chinese herbal medicines, meridians and acupuncture points, and dietary therapies. In addition, four academic teams have released test TCM LLMs on Github.²⁹⁻³² The datasets of

these LLMs are mainly derived from textbooks, TCM ancient books, pharmacopoeias, and open websites. In the future, more refined TCM LLMs are expected to play an important role in scenarios such as online diagnosis and treatment, clinical screening, and large-scale TCM population healthcare. TCM LLMs will also better utilize the humanistic and elemental aspects of TCM, and provide more humanistic care in conjunction with traditional Chinese culture.

5.3 Limitations and solutions of LLMs in TCM

The application of language models in TCM has limitations. First, the language model could be deceived or manipulated. For example, from a security standpoint, language models should not provide specific medical advice to the average user as a physician would. Our initial assumption was that ChatGPT would adhere to this restriction, but our testing has revealed that ChatGPT can provide users with a complete prescription if we asked it to imitate a TCM practitioner, including specifying the medicine name, dosage, and decoction method in detail. Of course, this significantly affected the fluency in our tests. To some extent, it confirms that ChatGPT should be subject to certain necessary limitations. Second, users may ask the language model to assume multiple roles to bypass restrictions. While this illustrates the model's comprehensive capabilities, it also presents a potential security threat. In the TCM domain, the use of certain medicines in combination may lead to mutual toxic effects [such as in the case of eighteen antagonisms (十八反) and nineteen incompatibilities (十九畏)]. To mitigate this issue, the language model may generate relevant recommendations for review by professional TCM physicians prior to dissemination to general users. Thirdly, the language model has not yet developed comprehensive privacy policies pertaining to healthcare. The privacy policies for healthcare are widely recognized as one of the most crucial issues in the healthcare process. It remains uncertain how the operator of the language model (OpenAI in this study) will address this aspect of information. As such, enhancing the privacy policy is essential if the language model is to be utilized in TCM clinical treatment.

6 Conclusion

In this paper, we recount that AIs, mainly LLMs, would be involved in various aspects of treatment, education, and research in TCM. As an example, we tested ChatGPT's TCM interaction capabilities and found that ChatGPT can perform basic TCM counseling. ChatGPT demonstrated a high level of humanistic care in the test, but lacked accuracy. A more specialized TCM corpus and the assistance of professionals will help LLMs and AI to develop a wider range of applications in TCM. Due to the characteristics of natural language, LLMs

represented by ChatGPT have strong cultural adaptability and will have a broad application prospect in TCM, but its applications and values should not be overstated. As TCM is a human-centered medical model, the involvement of AI in TCM needs to be scrutinized philosophically and discursively.

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Ethical approval

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

Author contributions

KONG Qi and CHEN Liming originated the idea and composed the manuscript. KONG Qi, YAO Jingyi, and DING Chao conducted the testing of ChatGPT. YIN Peihao provided review and support. YAO Jingyi performed the translation. KONG Qi, CHEN Liming, YAO Jingyi, and DING Chao conducted the language revision. KONG Qi and CHEN Liming made equal contributions to this work.

Conflicts of interest

The authors declare no financial or other conflicts of interest.

Supplementary Information

Supplementary data to this article can be found online at: <http://links.lww.com/CMC/A6>.

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Chinese Medicine and Culture

中医药文化（英文版）

Introduction of *Tui Na* Team Led by Professor Yao Fei



The *Tui Na* (推拿) Team led by Professor Yao Fei (姚斐) from Shanghai University of Traditional Chinese Medicine is committed to clinical and basic research on non-pharmacological therapies of traditional Chinese medicine (TCM), as well as promotion of clinical application, scientific research and international teaching of *Tui Na* and massage techniques and exercises. The *Tui Na* team currently consists of more than 10 faculty members, including 2 professors and 3 associate professors. Professor Yao Fei is vice president of the School of Acupuncture-Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine. He holds the titles of the first Young Qihuang Scholar (青年岐黄学者) of the National Administration of Traditional Chinese Medicine, etc. He concurrently serves as chairman of Healthcare Quality Certification Commission (HQCC) Pediatric Tuina Standardization and Certification Committee Shanghai Branch, vice president of the *Tui Na* Branch and Muscle and Bone Care Branch of the China Medical Association of Minorities.

The team is dedicated to learn from the ancient classics and pass on the essence. Cooperating with the Shanghai Inheritance Studio of TCM Master Li Yefu (李业甫), the team carried out research on *Tui Na*-themed classics, gave impetus to the inclusion of internal exercise *Tui Na* therapy into the intangible cultural heritages of Shanghai, and promoted the inheritance and sustainable development of *Tui Na* academics. *Anti-epidemic Body-strengthening Exercises* (《抗疫强身功》) developed by the team has been promoted and applied in Wuhan's Leishenshan Hospital, Huoshenshan Hospital and makeshift hospital. It has been included and recommended by WHO, and has benefited more than 1 million people.

The team devoted themselves to uphold fundamental principles while breaking new ground. The team conducts cross-research on modern biomechanics, neuroimaging and TCM to explore the mechanism of "external treatment and internal response" (外治内应) of TCM *Tui Na* techniques. The team has presided over more than 10 high-level projects including the National Natural Science Foundation of China, edited and co-edited 10 textbooks for the 13th and the 14th Five-Year Plan, and has published more than 100 academic papers in distinguished international journals such as *JAMA Network Open*. The team has been awarded the Science and Technology Progress Award from the Chinese Society of Traditional Chinese Medicine, etc. In the past three years, the team has obtained 20 national patents and applied for substantive examinations for 5 patents.

As for teaching and innovation, the team actively explores the integration of modern educational technology and traditional skills. Two of the team's courses have been selected as national first-class undergraduate courses, which are *Tui Na* Exercises and Pediatric *Tui Na*. Two courses led by Professor Yao Fei, namely, *Tui Na* Techniques is elected as a model course taught in English for foreign students in Shanghai universities; *Tui Na* Therapeutics is selected as a first-class undergraduate course in Shanghai. Professor Yao Fei has also started the international online course Traditional Chinese Medical Exercise to promote the international exchange and inheritance of TCM culture through a hybrid online and offline teaching model.

