



Traditional Medicines Along the BRI Countries

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Abstract

Traditional medicine is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental illness. All kinds of folk medicine and traditional medical systems all over the world are also within the scope of traditional medicine. Traditional Chinese medicine (TCM) is a complete system of healing that developed in China about 3000 years ago, and includes herbal medicine, acupuncture, moxibustion and massage, etc. Indian traditional medicine, named Ayurveda, is Sanskrit, which is translated into “Ayurveda” or “life Veda medicine”. Ayurvedic traditional medicine can be traced back to the Vedic era in 5000 BC. Mongolian traditional medicine and Arab traditional medicine are also an important part of traditional medicine in the world. Traditional medicines in history was also exchanged and spread along the BRI countries. It has made a great contribution to the development of modern medicine. To date, TCM in China have a high level of support from the government. The disciplinary development of TCM should embrace inheritance and innovation, and explore the scientific research and transformation of clinical experience. With the development of BRI, the traditional medical exchanges and cooperation will be more frequently, and make greater benefit to local people.

Keywords

Traditional Chinese medicine · Indian traditional medicine · Mongolian traditional medicine · Arab traditional medicine · Exchange, BRI

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In 2013, China proposed its Belt and Road Initiative (BRI) to promote trade, infrastructure, and commercial associations with 65 countries in Asia, Africa, and Europe, including East Asia (Mongolia), 18 countries in West Asia, 8 countries in South Asia, 5 countries in Central Asia, 7 countries in CIS, and 16 countries in central and Eastern Europe. This initiative contains important health components (Tang et al. 2017). Since ancient times, the Belt and Road has been a road for communication and exchange. The ancient Silk Road is not only a road of commerce and trade but also a road of cultural communication and integration. It promoted the exchange and integration of civilizations and became an important chapter in the history of human civilization's exchanges and mutual learning.

It is reported that 80% of the population in the developing world relies on traditional medicine, and 70–80% of the population in developed countries utilized complementary therapies. Traditional medicine of various countries in history was also exchanged and spread along the BRI. It has made a great contribution to the development of modern medicine, such as anti-malaria drug artemisinin (Zhang 2016; Chang 2016; Yang et al. 2020). The World Health Organization (2008) defines traditional medicine as “the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses.” Two examples of widely known traditional systems of medicine include traditional Chinese medicine (TCM) and Ayurvedic medicine. Traditional Chinese medicine (TCM) is recognized as a traditional medicine in the world. In addition to traditional Chinese medicine, traditional medicine also includes Indian medicine and Arab medicine. All kinds of folk medicine and traditional medical systems all over the world are also within the scope of traditional medicine (Raja Ikram et al. 2015; Othman and Farooqui 2015).

4.1 Traditional Chinese Medicine

Traditional Chinese medicine (TCM) is a complete system of healing that developed in China about 3000 years ago and includes herbal medicine, acupuncture, moxibustion, massage, etc. (Tang et al. 2008; Zhou 2010). There is a long history for current TCM. It is generally believed that the term of traditional Chinese medicine came into being after the introduction of Western medicine (Wang et al. 2008). TCM is used exclusively to refer to the original medicine or medical practitioner in China. “Zhongyi” first appeared in Hanshu Yiwenzhi. It refers to doctors with medium medical abilities. There are two kinds of usages: verb object phrases and nouns. When used as verb-object phrase, “Zhongyi” means according to the principles of Chinese medicine. As a noun, “Zhongyi” contains two kinds of meanings: ancient and modern. Ancient meaning refers to the middle level of doctors or medical techniques and extends to ordinary doctors or medical techniques. Modern meaning refers to the original Chinese medicine or people engaging in original Chinese medicine. TCM was earliest recorded in 1857 before the introduction of Western medicine. There are variant names of TCM, such as Qihuang, Hua medicine, Old

medicine, Guoyi, Han medicine, etc. Guoyi was first proposed by ZHANG Tai-yan in 1923 (Zhu 2017). After the founding of the People's Republic of China, ethnic medicine and "traditional Chinese medicine" went from coexisting to gradually being included in the category of "traditional Chinese medicine." "Traditional Chinese medicine" derives the two meanings of "Chinese traditional medicine" in the broad sense and "Han national medicine" in the narrow sense. With the promulgation and implementation of the of the People's Republic of China on Traditional Chinese Medicine Law, the term "traditional Chinese medicine" officially contains the collective meaning of the national medicine of all ethnic groups in the legal level (Bi and Zhang 2022).

TCM is one of the earliest medical/healing systems developed and matured more than 2000 years ago. TCM includes herbal medicine, acupuncture, moxibustion, etc., which is a fully institutionalized part of the Chinese healthcare system. It is known that the basic theories of TCM were formed more than 2000 years ago. Many distinguished classical books (e.g., Huangdi's Classic of 81 Medical Problems, Treatise on Cold-Induced and Miscellaneous Diseases, Shennong's Herbal, The Pulse Classic and Treatise on Cause and Symptoms of Diseases) in Chinese have been written to decipher the basic TCM theories and concepts. The basic TCM concepts and theories include qi, yinyang, five phases, the human body channel system, zang fu, organ and syndrome, etc. Qi is a very important concept in Chinese philosophy. In TCM, it is considered that the qi is the fundamental substance that constitutes the human body, and the regular movement of qi is essential to maintain human life. Thus, various pathological changes in the human body are attributed to abnormality in the qi. The essence of TCM diagnosis is to understand where the flow of qi has been disturbed and, once known, the aim of treatment is to re-balance the harmonious flow of qi. The theory of yin and yang holds that the world is a material wholeness and the result of the unity and opposition of yin qi and yang qi. The interaction between yin and yang is fundamental for the occurrence, development, and change of things. TCM believes that yin and yang always exist in the human body, and when yin and yang are out of balance, the human body will get sick. Therefore, the core treatment principle of TCM is to restore the proper balance of yin and yang. It has been said that all Chinese medical physiology, pathology, and treatment have been developed based on yin and yang. In TCM theories, five phases or five elements (Wu Xing in Chinese) refer to metal, wood, water, fire, and earth. According to the nature, motion, and interaction of things, the five-phase theory was used to explain the nature of things and the relationship between them. It is believed that there are two equilibrium cycles: a generating cycle and an overcoming cycle. The yin-yang and five phases theories are the fundamental theories in TCM, which lays a general foundation for the specific theories, including the theories related to diagnosis, such as zang fu theory, syndrome differentiation theories, pathology and pathogeny theories, and treatment-related theories like the therapeutical principle, herb prescription compatibility and herb nature, etc. (Li 2008; Oravec and Mészáros 2012; Xu et al. 2013; Liu et al. 2021).

TCM has many advantages in clinical practice, particularly the knowledge of the phenotypic regularities of the human body and the interaction between the human

body and the natural environment. The findings of the meta-analysis suggest that TCM can effectively relieve symptoms, boost patients' recovery, cut the rate of patients developing into severe conditions, and reduce the deterioration rate (Dai et al. 2020; Xu et al. 2022).

The development and inheritance of TCM have a long history in China. Ancient Chinese medicine classics, such as "Neijing," "Nanjing," "Compendium of Materia Medica," and "Treatise on Febrile Diseases and Miscellaneous Diseases" are listed as must-read classics by contemporary TCM scholars. The government pay attention to the construction of TCM institutions and talents, including establishing lots of TCM school and hospitals, vigorously training TCM doctors by combining medical school training, and actively promoting the integration of TCM and Western medicine. Now, TCM has become an important part of China's healthcare system. On October 11, 1958, Mao Zedong pointed out that "Chinese medicine is a great treasures, and should be explored and improved." The central government will give full play to the unique advantages of traditional Chinese Medicine, including improving the service capacity of TCM, developing TCM healthcare and preventive care services, and promoting inheritance and innovation of TCM. For example, China will implement the project of cultivating the clinical advantages of TCM, strengthen the research on the prevention and treatment of dominant diseases with TCM, strengthen the integration of TCM and Western medicine, and improve the clinical efficacy of major difficult and critical diseases (Outline of the Healthy China 2030 Plan).

TCM, as a traditional medicine, has a far-reaching impact on the countries in the Chinese character cultural circle as well as Western countries. It has spread to various countries and derived from it, such as Japanese Han Medicine, Korean medicine in South Korea, Korean medicine in North Korea, Vietnam traditional medicine, etc. The use of TCM has been widely embraced in many developed countries under the name of traditional, complementary, and alternative medicine (TCAM) and is now becoming the mainstream in the UK and the rest of Europe, as well as in North America and Australia (Dashtdar et al. 2016).

4.2 Traditional Indian Medicine

Traditional Indian medicine is one of the oldest medical systems and remains popular worldwide, which includes Ayurveda, Yoga and Naturopathy, Unani, Siddha, Sowa Rigpa, and Homoeopathy. Ayurvedic medicine has some similarities to TCM (Mohammad 2010). Ayurvedic medicine, also named Ayurveda, is Sanskrit, which is translated into "Ayurveda" or "life Veda medicine." Ayurvedic traditional medicine can be traced back to the Vedic era in 5000 BC. The earliest medical textbook, Atreya Samhita, is still used in real life. It is known for being the world's oldest documented comprehensive medical system. In history, Ayurveda was first recorded in Rig Veda, an ancient collection of Indian poetry in 6000 BC. Ayurvedic medicine holds that nature and human body are composed of earth, fire, water, and wind. The three major energies in the human body are also composed of

these five elements: ether and air combine to form vata, fire and water combine to form pita, and water and soil combine to form kapha. Once these three vital energy are too much or not enough, people will get sick (Mukherjee et al. 2017; Sen and Chakraborty 2016).

In the Ayurvedic system of medicine, it is considered that a living system is made of panch-mahabuta, in the form of vata, pitta, and kapha at the physical level and satwa, raja, and tama at the mental level. This covers the psychosomatic constitution and is commonly known as the Tridosh theory. The imbalance in these body humors is the basic cause of any type of disease manifestation. To date, several objective parameters have been proposed to monitor the level of these basic humors, but none of them is complete. In this exercise, it is now proposed to consider the free radical theory of diseases as one of the objective parameters. To be more specific, vata can be monitored in terms of membrane-bound signal transduction, pitta as the process of phosphorylation and de-phosphorylation of different proteins (signaling moieties and enzymes), and kapha can be viewed as the degree of gene expression as protein synthesis. This can be correlated with the ojas of the body or total body defense mechanism. Ayurvedic medicine is not only a medical system but also a healthy lifestyle. Ayurveda consists of two words: Ayur refers to life and Veda means knowledge and science. Therefore, Ayurveda means the science of life. According to Ayurveda, human beings should coexist harmoniously with nature, And the disease is because this harmony is broken. The main purpose of Ayurvedic medicine is to restore this basic balance through the use of nature and its products. This concept not only runs through the process of treating pain but also runs through the process of disease prevention (Vyas 1982; Tripathi 2000; Agrawal et al. 2017).

There is evidence that Ayurvedic medicine has enriched almost all medical systems in the world. Through maritime trade with India, Egyptians learned about Ayurvedic medicine. The invasion of Alexander the great brought the Greeks and Romans into contact with Ayurveda. Traditional Unani medicine is formed in this communication. In the early part of the first millennium, with the spread of Buddhism to the East, Ayurvedic medicine also spread to the East and had a great impact on traditional Chinese herbal medicine.

The Indian government is also encouraging evidence-based medicine research to play the more important role of traditional medicine in the healthcare system (Monika Pathania et al. 2020).

The Government of India through its Ministry of AYUSH is responsible for policy formulation, development, and implementation of programs for the growth, development, and propagation of Ayurveda. Different programs have been taken up toward increasing visibility, acceptability, and usage of Ayurveda vis-a vis its integration in the health system. Strategies to globalize and promote Ayurveda are being taken up through AYUSH clusters focusing on the safety-efficacy-quality aspects and rational use of Ayurveda (Katoch et al. 2017).

4.3 Arab-Islamic Traditional Medicine

Arab-Islamic medicine was born in the eighth century A.D. It was formed in the tenth century A.D. on the basis of inheriting the philosophical principles and medical theories of ancient Greek and Roman medicine and integrating the various nationalities around the Mediterranean and Persian and Indian medicine. From the seventh century A.D. to the next one or two hundred years, the Arabs initially established a worldwide empire, the Arab Empire, which stretches from the Spanish Pyrenees in the west to the western border of the Tang Dynasty and the Sindh region of India in the East. The civilization of this empire reached a very high level, and its scientific, technological, and cultural achievements, including medicine. Abu Bakr Muhammad ibn Zakariya Razi (AD 865–925) was not only an outstanding chemist and philosopher, but also a famous physician (Zarrintan et al. 2013, 2014). He has profound knowledge and extensive knowledge. He wrote more than 200 books in his life, especially in medicine (and chemistry). He is known as “the Arab Galen” and “the father of Muslim medicine.” In particular, he has rich clinical experience and theoretical knowledge in surgery (such as hernia, kidney and bladder stones, hemorrhoids, joint diseases, etc.), pediatrics (such as infantile dysentery), infectious diseases, and difficult and complicated diseases.

The book named *Chahar Maghaleh* (Four Discourses) is written by Nizami Aruzi Samarqandi, a Persian writer in the twelfth century. The book records 12 stories that can be regarded as medical records. Through the analysis of the 12 cases, we can get a lot of Arabia-Islamic medical information before and after the twelfth century, including basic concepts, medical academic origin, diagnostic methods, treatment methods, and other content. That reflects the medieval Arabia-Persian society’s medical level. Compared with traditional Chinese medicine, ancient Arabia-Persian society had distinct features in medicine, food therapy, external therapy, psychotherapy, and other fields; in the treatment of ideas and methods of diagnosis, they share some similarities with traditional Chinese medicine (Jin 2019). Recently, the term Traditional Arabic and Islamic Medicine (TAIM) was proposed. As a therapeutic system practiced in the Arab world under the influence of the Islamic religion since ancient times, TAIM consists of herbs, eating habits, physical and mental exercises, psychotherapy, and applied therapy, many elements of which reflect the lasting interrelationship between Islamic medicine and prophetic influences and regional therapeutic practices derived from specific geographical and cultural origins (Azaizeh et al. 2010).

The development of Arab medicine has gone through three stages. The first phase, in the eighth century, entailed the translation of the medical works of Hippocrates and Galen, philosophical works by Plato and Aristotle, and mathematical works of Euclid and Archimedes into Arabic. Hospitals and medical schools were booming in the Arab world, and several Muslim scholars reached a stature in medical sciences that exceeded that of their predecessors. Among these famous scholars, Rhazes (Al Razi, 846–930) and Avicenna (Ibn Sina, 980–1037), played an important role in commemorating this period as the Golden Age. The final stage of the development of Arab medicine began in the twelfth century when European

scholars studied Arab works and translated them into Latin. The most noteworthy example is the translation of Avicenna's Medical Classics, which dominated European medical teachings until the sixteenth century, except for Raz's book Synthesis (Saad et al. 2005; Alrawi and Fetters 2012).

Until recently, TAIM was used in many of the primary books in libraries throughout Europe. Many Arab countries, such as Syria, Morocco, Yemen, Egypt, and others, have studied the TAIM herbs. Ethnopharmacologists recently investigated the potential use of plant species in the Mediterranean, recording 250–290 plant species belonging to different families still in use. The remedies are administered by practitioners in forms of standard decoction prepared by boiling plant parts in hot water, infusion in water or oil, or inhale essential oils. It is also used as juice, syrup, roasted material, fresh salad or fruit, macerated plant parts, oil, milky sap, poultice, and paste. In recent years, remedies based on TAIM herbs have been tested in cooperation with physicians and have begun to prescribe routine prescriptions for patients in Europe and Mediterranean countries (Goldberg 1990; Azaizeh et al. 2010).

Arab traditional medicine has a great influence on the development of world medicine. Arab medicine has also had a great influence on Chinese traditional medicine. There is a dominant opinion in the Western sources of the history of medicine that the roots of modern clinical trials and methodology of experimental medicine first started in the Renaissance. Avicenna's medical canon has influenced Eurasian medicine in history. However, this opinion has been disputed with the thorough study of the rich medical literature of the medieval Islamic era. In the current review, the roots of clinical trial methodology have been traced back to the medieval Islamic tradition and the contribution of Islamic scholars in this field is discussed. The importance of experimental versus theoretical reasoning, the need for a control group, a statistical approach to interpreting trial results, appreciation of uncertainty in medical practice, and the difference between human and animal trials all can be traced back to the rich medieval Islamic medical literature. Despite their history and growing population, knowledge about Arab and Muslim traditional practices as it relates to health and wellness is limited. A better understanding of TAIM and its elements will enhance the ability of clinicians caring for Arab and Muslim patients to provide culturally sensitive care as it relates to their patients' perception of health and well-being, as well as rituals and customs pertaining to the view of healers and the value of traditional therapies (Zarvandi and Sadeghi 2019).

4.4 Exchange of TCM with Other Traditional Medicines

At the beginning of the ancient "Silk Road," traditional Chinese medicine resources (TCM resources) have long been integrated into it, and it was once the "important part" of the ancient "Silk Road" in Chinese history; benefited from this, the political connections were strengthened, the economic trade was developed, and Chinese medicine culture was spread. Before Qing Dynasty, people took out the "silk" and brought back "herbs" on the "Silk Road," which enriched China's medicinal

resources. In the later Qing Dynasty and the period of the Republic of China, more scientific and technological methods were brought back from abroad, and this in turn enriched medical research methods, with more than 2000 years' development (Zhang et al. 2018).

Traditional Indian medicine was introduced into China along with Buddhism along the Silk Road. Buddhist medicine is a medical and pharmaceutical system based on the ancient Indian "medical prescription" and guided by Buddhist theory. Early Buddhist medicine was mainly introduced into China through the ancient Silk Road. The introduction of Buddhist medicine through the ancient Silk Road had a great influence on traditional Chinese medicine at that time. Many ancient Chinese medical experts, such as Tao Hongjing in the southern and northern Dynasties, chaoyuanfang in the Sui Dynasty, Sun Simiao in the Tang Dynasty, and so on, have introduced the Buddhist medical theory in their works. After being introduced into China, Buddhist medicine gradually integrated with traditional Chinese medicine. For example, Sun Simiao's "preparation of a thousand gold prescriptions for emergency treatment" said: "where the great treatment of disease, we must be calm and determined, no desire, no demand, the first great compassion, vowing to save the suffering of spirit." This expression reflects the integration of Buddhism and traditional Chinese medicine. This integration promoted the formation of Chinese Buddhist medicine. Since the Tang Dynasty, traditional Chinese medicine has become a part of Chinese traditional medicine (Canton-Alvarez 2019; Li and Lin 2017; Sacamano and Paproski 2020; Wu et al. 2021).

The earliest medical exchanges between Arabia and China can be traced back to the Han Dynasty. The historical records once recorded the "floating Yicao" of Kang juguo and the "Mercury, tulip, Styra, green wood incense, Coriolis, benzoin" and other drugs of Persia. In the Han Dynasty, Zhang Qian sent envoys to the western regions and brought back walnuts, garlic, beans, pomegranates, safflower, and other medicinal plants. The Ming Dynasty was an era when traditional Chinese medicine absorbed a large amount of Islamic medicine. Islamic medicine also has an important influence on the medical classics of traditional Chinese medicine. In the early Ming Dynasty, both Puji Fang and Li Shizhen's Compendium of Materia Medica recorded back to the medical prescriptions. Islamic medicine also has a certain impact on the medicine of 10 ethnic groups who believe in Islam in China (Na Guangshun 2007); for example, borneol was widely used in Arabia in medieval times. In the Tang Dynasty, borneol has been officially included in the Chinese materia medica works (Xiong and Song 2020).

China advocates the construction of a human health community, and the utilization and development of traditional medicine will play an important role.

Artemisinin shows the contribution of traditional Chinese medicine to global health, and the role of traditional Chinese medicine in the prevention and treatment of infectious diseases has been affirmed. The Chinese government made the development plan for traditional Chinese medicine along "the Belt and Road," which plan proposes that during the "fourteenth five-year plan" period, it will cooperate with countries that jointly build the "the Belt and Road" to build 30 high-quality overseas centers of traditional Chinese medicine, issue 30 international standards for

traditional Chinese medicine, create 10 overseas brand projects for the dissemination of traditional Chinese medicine culture, build 50 international cooperation bases for traditional Chinese medicine and a number of national export bases for traditional Chinese medicine services, strengthen the construction of overseas registration service platforms for traditional Chinese medicine products, organize and send medical teams for foreign aid of traditional Chinese medicine, and encourage social forces to explore the construction of Sino foreign friendly traditional Chinese medicine hospitals in a market-oriented manner. These will deepen cooperation in global health governance and strive to build partnerships in traditional medicine (the development plan for promoting the high-quality integration of traditional Chinese medicine into the joint construction of the “the Belt and Road” (2021–2025)).

Understanding the knowledge of our ancestors: “knowledge of our ancestors and learning from nature” should be the paradigm for the coming years. Dr. Rob Verpoorte says, “the support from the medical field should stimulate all researchers in the field to start new collaborations and further improve our efforts in building cases for evidence-based use of traditional medicines. This could build a platform on which in the coming years a further Nobel Prize might be awarded to our field” (Rob Verpoorte 2017).

Today, the silk road has played an immeasurable role in promoting the integration of Eastern and Western cultures. Traditional medicine is an important part of human civilization. As China’s unique health resources, economic resources with great potential, scientific and technological resources with original advantages, excellent cultural resources, and important ecological resources, traditional Chinese medicine and medicine of countries along the “Belt and Road Initiative” have complementary and certain comparative advantages. Chinese medicine is going international. We should adhere to the principles of friendly cooperation and peaceful development, actively carry out exchanges and cooperation with countries and regions along the “Belt and Road Initiative” line in medical care, healthcare, medical education, medical research, medical culture, and the health industry, and promote the “two-way integration” of Chinese medicine culture with the international community.

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