

Brief Review of Two Medical Vanguard of the Chinese Tang Dynasty (618-907): The Imperial Medical Academy and Sun Simiao

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ABSTRACT

During the Tang Dynasty, China experienced a period of socio-cultural and educational-medical growth. His main legacies in medical education were the founding of the Imperial Medical Academy and the sharing of medical knowledge with other cultures. An organized educational curriculum, rigorous examinations at students and teachers, and medical specializations were carried out at the Imperial Medical Academy. Sun Simiao, a contemporary doctor of the Tang Dynasty, promoted ethical practices. He wrote medical texts with treatments based on Traditional Chinese Medicine (TCM) with a focus on disease prevention and maintenance of *qi*, the vital energy.

Keywords: *Traditional chinese medicine; imperial medical academy; medical education; tang dynasty; sun simiao.*

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INTRODUCTION

Ancient China began with civilizations that gave rise to dynasties (families of kings) from 2205 BC. The teachings of the philosopher Confucius, born in 551 BC, influenced the construction of an ethical medical model based on traditions [1], and were also the basis of the Chinese bureaucracy until the beginning of the 20th century.

The Chinese imperial Tang dynasty, founded by the Li family, took place between the years 618 and 907. Its government achieved political, military and cultural hegemony in Asia, with great influence over Japan and Korea. Under this dynasty important advances were made, such as printing on wood, the development of the first medical pharmacopoeia and the establishment of public health rules to prevent epidemics.

The importance of the Tang dynasty in medicine lies in the formalization of medical education and the exchange of knowledge with other civilizations [2].

Traditional Chinese Medicine (TCM)

The philosophy of traditional Chinese medicine (TCM) derives from empirical observations and adopts as a belief the fact that individual experiences express material or mystical causes, related to the natural order of the universe. According to TCM, the human body is built on two opposites: yin and yang, which are interdependent and interrelated. Its main text, the *Huangdi neijing* or “Canon of Internal Medicine of the Yellow Emperor”, was written between the 5th and 3rd centuries BC. It is based on therapies with acupuncture¹, herbs, moxibustion² and massage. The goal is to strengthen the *qi* (vital energy).

Illnesses are treated with herbs, acupuncture, moxibustion, diet, *chi kung* (a coordinated system of posture, movement, breathing, and meditation), and *tai chi chuan* (a Chinese martial art coordinated with meditation) [2,3].

Imperial Medical Academy

The imperial administration regulated the centers of medical education. They had a centralized educational system, with systematic education, validation of texts and periodic examinations. Therefore, there were curriculums.

During the Tang dynasty, the first medical school in the world was inaugurated: the Imperial Medical Academy, in the year 624, under the authority of the *Tai Yi Shu* or Imperial Medical Office, founded approximately 200 years before the famous Salerno Medical School.

¹Acupuncture involves the use of metallic needles on special points on the skin in order to stimulate meridians or channels that regulate physiology.

²Moxibustion refers to the heating of acupuncture points with the herb mugwort.

The school was located near the central government and about 300 medical teachers worked there. It taught medicine, acupuncture, herbalism, and massage.

His organization was rigorous. Students received basic courses and then chose between five specialties, which had different durations:

- 7 years for internal medicine.
- 5 years for pediatrics.
- 5 years for surgery.
- 4 years for ophthalmology and hearing.
- 3 years for physiotherapy.

The qualifications of the competent doctor were not only a knowledge of the main traditions of acupuncture, herbalism and pulse diagnosis, but also the ability to respond to diseases related to different seasons of the year.

A strict entrance exam and official exams were carried out once the studies were finished. The data allow us to assume a curricular and evaluation system with certification. It is interesting to note that not only students were examined, but teaching doctors also required to take examinations to ensure the quality of teaching. In 629, Emperor Tai Zong established local medical schools in other provinces. Since then, medical education has expanded [3,4,5].

Medical students took classes based on classic texts, such as “The Yellow Emperor's Canon of Internal Medicine”, “Manual of the Pulses”, “The ABCs of Acupuncture and Moxibustion”, and “Classic of Herbal Medicine” or *Shennong ben caojing*. The latter was written during the year 200 BC. It is considered the oldest pharmacopoeia.

Chinese herbal medicine has been transmitted orally for more than 3,000 years [6], which precedes by more than 1,700 years the classic European Pharmacopoeia of Nuremberg, called *Dispensatorium*, published in the year 1546. At the Imperial Medical Academy, classes were divided into internal medicine, pediatrics, surgery, otorhinolaryngology, moxibustion, acupuncture, massage, and recited magic formulas. The songs came from the spiritual influence of Taoism and Buddhism, under the belief of a holistic healing process.

Pharmacy students learned about herbs and maintained the imperial garden. The examinations were periodic and annual. If a student failed his graduation exam, he was expelled from the academy.

Through the exams, the student was authorized to practice medicine. The practice of evaluation began later among Arab medical students, in the year 931, with the caliph of Baghdad Al-Muqtadir (895-932), who required passing an exam to obtain a qualifying license (*icaza*) that would allow them to practice medicine in its different specialties. This included apothecaries [7,8].

Later, examinations for medical students began in Italy with the edict of Roger II of Sicily in the year 1140. Although there were imperial medical academies and local medical academies that authorized medical practice, the imperial administration had no authority over the practice of medicine in society [3].

For patients who had to choose from a variety of doctors, the most important criterion was reputation. This emphasis on the efficacy of treatments remained a relevant criterion of judgment in TCM. There were also true family clans of doctors who passed down treatment formulas from generation to generation. Physicians were promoted based on their treatment success rate [3].

Due to territorial expansion and improved transportation, Chinese medicine influenced other cultures and gained knowledge from them as well. For example, Chinese doctors were sent to Korea, Japan, India, and Vietnam; and medicinal herbs were imported from Korea and Vietnam.

Thanks to the popularity of Buddhism and the pilgrimage of its monks between India and China, there was an exchange of medical knowledge. Many of the Chinese ophthalmic advances occurred due to the experience already gained by Indian doctors. For its part, Chinese medicine also influenced and was enriched by Arab, Persian and Tibetan medicine [1].

Sun Simiao

Sun Simiao (581-682) was one of the most influential Chinese physicians, with expertise in internal medicine, moxibustion, acupuncture, and herbalism. He practiced medicine under an ethical code and the influence of Taoism, Confucianism and Buddhism.

He was called to practice as an imperial doctor, but preferred to continue practicing medicine among the townspeople. He believed that the best way to deal with a disease was to prevent it.

Among his achievements is the writing of more than 8,000 prescriptions. He was against the mistreatment of animals, identified that the cause of cholera was in the water, established tuberculosis as a lung disease, was an expert in the management of leprosy and effectively treated iodine deficiency disorders and vitamin deficiency. For example, he treated nyctalopia (night blindness) due to vitamin A deficiency by eating pork, calf, and sheep liver.

He believed that health could be maintained and prolonged throughout a person's life with breathing exercises or qi gong, physical exercises and massage. He was against excessive alcohol intake, spitting in public and eating raw meat [9].

He wrote his medical knowledge in 30 printed volumes in the year 652. It is called "Prescriptions for emergencies worth a thousand gold coins" or *Beiji qianjinyaofang*. It was followed by a text called the *Qianjin yifang*, which complemented the first [10].

CONCLUSIONS

Chinese culture, from its beginnings, was the cradle of great inventions, such as paper, the magnetic compass, the printing press and intellectual systematization, among many others. It was for centuries a more sophisticated and advanced society than Europe. Testimony of this are the stories of the Italian explorer and merchant Marco Polo (1256-1323), who described the meticulous hygiene, the postal system and paper money, unknown until then in Europe.

The purpose of this article is to present two key events in medical education and ethics during ancient China: the operation of the Imperial Medical Academy and the medical practice, under strong ethical precepts, by Sun Simiao.

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