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A walk down memory lane on JAPANESE Medical revolution & history of ancient Japan in the late Edo & early Meiji period.

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Abstract

Abstract

The late Edo and early Meiji periods were a time of significant transformation for Japan's medical landscape, characterized by the blending of traditional practices and Western medical innovations. This paper examines the profound shifts in Japanese medicine during this era, and on introduction of Western style medical knowledge during Japan's opening to the West in the 19th century reshaped existing paradigms of health and disease. Traditional Japanese medicine, including Kampo (herbal medicine) and acupuncture, coexisted with Western medical practices, particularly through the influence of Rangaku (Dutch studies), which began in the mid-Edo period. As Western medicine made its way from foreign missionaries and scholars, it initially gained traction among urban elites but gradually expanded across Japan, influencing both medical education and public health policies.

The paper explores key historical figures, such as Ogata Koan, Hanaoka, Seishu, and Nagayo Sensai & etc, who played pivotal roles in developing medical theories into Japan's healthcare system. Through their efforts, Japanese medicine underwent transformation, with advancements in surgery, smallpox vaccination, and public health reforms. The Meiji Restoration of 1868 accelerated the integration of Western medical practices, leading to the establishment of modern medical institutions and the eventual creation of a national healthcare system.

The medical revolution in Japan also set the foundation for the country's contemporary healthcare system, which emphasizes universal healthcare, preventative care, and technological innovation. With the introduction of mandatory health insurance in 1961 and subsequent advancements in medical technology, including AI-powered diagnostics and robotic surgery, Japan's medical system has become a global model. This paper provides a historical perspective on Japan's journey toward medical modernization, highlighting the intersection of cultural identity, innovation, and social change that shaped the healthcare system Japan enjoys today.

Keywords: Edo Meiji, Medical Revolution, Japan History

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Introduction

The late Edo and early Meiji periods mark a transformative era in Japan's medical landscape, characterized by a remarkable confluence of traditional practices along Western medical innovations. This paper seeks to explore the profound shifts that occurred within Japanese medicine during this pivotal time, highlighting the interplay between cultural heritage and the influx of new innovations. As Japan opened its doors to the West in the mid-19th century, the response to foreign medical knowledge sparked a revolution that not only redefined healthcare practices but also challenged existing paradigms of health and diseases (1).

During the Edo period, traditional Japanese medicine, rooted in ancient practices such as Kampo, flourished alongside emerging Western influences (Rangaku). Western medicine spread into major cities and countryside in Japan through Rangaku doctors, starting point in Dejima Nagasaki (1). However, it was in the transitional period of the Meiji Restoration (1868) that the integration of Western medicine began to reshape the foundations of Japanese healthcare (2). This journal will delve into key historical figures, including influential physicians, and examine critical turning points that facilitated the shift of acceptance and adaptation to Western medical theories and practices (2).

History

During the 1500s, power was decentralized in Japan, which was torn apart by warfare between competing feudal lords (daimyo) for nearly a century. Following his victory in the Battle of Sekigahara in 1600, however, Tokugawa Ieyasu swiftly consolidated power from his heavily fortified castle at Edo (ancient Tokyo) as shogun (military dictatorship) in 1603, beginning a Shogunate dynasty that had rule Japan for the 200 years focussing on reestablishing order in social, political and international affairs after a century of warfare (3). The political structure, established by Ieyasu and solidified under his two immediate successors, his son Hidetada (who ruled from 1616-1623) and grandson Iemitsu (1623-1651) (3).



Figure 1: Original Yoshitora (active circa 1840 - 1880) Japanese Woodblock Print
The Tokugawa Shoguns, 1875. <https://www.fujiarts.com/meiji-era-japanese-prints/yoshitora/915619-the-tokugawa-shoguns-1875>

Suspicious of foreign intervention and colonialism, the Tokugawa regime excluded missionaries and eventually issued a complete ban on foreign influence in Japan. Christianity was forced underground (4).

The dominant faith of the period was Confucianism or Buddhism, a relatively conservative religion with a strong emphasis on loyalty and duty. In its efforts to close Japan off from damaging foreign influence, the Tokugawa shogunate prohibited trade with western nations and prevented Japanese merchants from trading abroad for 200 years, with the exception of a small Dutch outpost Dejima in Nagasaki (4). The Neo-Confucian theory that dominated Japan during the Tokugawa Period (Edo period) recognized only four social classes - Samurai, artisans, farmers and merchants—and mobility between the four classes was prohibited. With peace restored, many samurai became bureaucrats or took up an extra trade as they are “warless soldiers” but were expected to maintain their warrior pride and military preparedness, which led to much frustration in their ranks (3). The Japanese economy grew significantly during the Tokugawa period. In addition to an emphasis on agricultural, commerce and manufacturing industries also expanded, leading to the rise of an increasing wealth in Japan. Hence, a vibrant urban culture emerged centered in Kyoto, Osaka and Edo (Tokyo) leading to the rise of entertainment & literature practices (5).

Despite efforts at fiscal reform, mounting opposition seriously weakened the Tokugawa shogunate from the mid-18th to the mid-19th century, when years of famine led to increased peasant uprisings (4). A series of “unequal treaties” in which stronger nations imposed their will on smaller ones in East Asia, created further chaos, particularly the Treaty of Kanazawa, which opened Japanese ports to American ships, guaranteed them safe harbour and allowed the U.S. to set up a permanent consulate in exchange for withholding war, through tactics of “gunboat diplomacy” by menacingly sending his American battle fleet into Japanese waters as threats (6).

Meiji Restoration 1867, two powerful anti-Tokugawa clans, the Choshu and Satsuma, combined forces to topple the shogunate, and the following year declared an “imperial restoration” in the name of the young Emperor Meiji, who was just 14 years old at the time of rule. The peace and stability of the Tokugawa period, and the economic development it fostered, set the stage for the rapid modernization that took place after the Meiji Restoration (5). During the Meiji Period, which ended with the emperor’s death in 1912, the country experienced significant social, political and economic change—including the abolition of the feudal system and the adoption of a cabinet system of government. In addition, the new regime opened the country once again to Western trade and influence and oversaw a buildup of military strength after the Meiji period ended, a newly modernized Japan was recognized (6).



Figure 2: Promulgation of the new Japanese constitution by Emperor Meiji in 1889. https://en.wikipedia.org/wiki/Meiji_Restoration

Medicine in a paradigm shift

From the middle of the Edo Period, Rangaku (Dutch studies in Western medicine), grew increasingly popular. Even some traditional Kampo (Chinese herbalists) actively enlisted the cooperation of Dutch scholars in studying human anatomy as medical practitioners attempted to integratory blend traditional Chinese and Western medical traditions (3). Japanese medicine drew from Chinese origin whereby "Qi" (life energy), and the structure of the body is expressed by "Internal organs", and its state is interpreted in coherence with the Chinese "Yin & Yang" (2). Acupuncture and moxibustion were introduced from China long ago, dating as far back as 700s, but it was not familiar to the people as a form of remedy until the Edo period. Moxibustion was at first used in combination with acupuncture, but it began to be used as a health fitness tool and later spread in the Edo period placed directly on the pressure points on the body (6). A keiraku (meridian) doll used for training in acupuncture (2). The doll is marked with 14 energy paths and pressure points. The keiraku doll originates from a Chinese doll but Japan began making their own keiraku dolls with the spread of acupuncture therapy in the beginning of the Edo period (2).



Figure 3: The Keiraku doll (2).

In the early Edo period, internal medicine, surgery and acupuncture emerged. Internal medicine was based on medical study during Chinese medieval period. Ancient surgeons conducted human dissections using translations of Western medicine books, leading the emergence of the Rangaku (Dutch) study in the late Edo period (6). The main branch of Edo medicine was known as Oriental medicine, and continues as Japan's unique style of medicine till today. In the middle of Edo period, Western anatomy and surgical books became visible to people, the difference between Western and Oriental medicine became obvious with the start of human body dissection. Hence the revolution of modern medical and surgical practice in Japan.



Figure 4: A page from a book about the lectures of Rangaku scholar Udagawa Genshin. It featured the first anatomical charts using copper plate etching on paper. <https://www.oldphotosjapan.com/photos/904/dejima-island-nagasaki-19th-century-vintage-albumen-print>

Medical Revolution in Japan

The "Medical Revolution" of Tokugawa Japan begins at this period, medical care by physicians was largely an urban privilege, but over the course of time, medicine became an integral part of everyday life in smaller towns and villages throughout Japan (4). The political authorities had nearly no involvement in the expansion of the medical network 7 system, which instead was driven by business intend (4). The development of print culture made medical knowledge more widely available over time, both to physicians and the larger public, while the division of the class & ranking system made the medical profession desirable to many, from low-ranking members of the warrior status group to the ambitious sons of villager lay families. Medical academies established by prominent doctors in major cities such as Kyoto, Edo, Osaka, and Nagasaki made it possible for would-be doctors to acquire training in a variety of new medical fields, from obstetrics to so-called Dutch medicine (4).

However, by the early nineteenth century, the proliferation of doctors with varying degrees of training and skill and the increasingly intense competition among them led some localities to adopt new licensing measures designed to weed out "quacks" and ensure the livelihood of established doctors. As Japan move with time and several wars and development in economy and technology had trusted Japan forward as a member of the world's superpower after several shift in demographics concerns from infectious diseases – plagues, to chronic diseases to lifestyle related diseases to a high old age population with geriatric issues (7). The real "medical revolution" in Japan primarily refers to the implementation of universal health insurance in 1961- about a century after the Meiji restoration, which granted all citizens access to medical services, leading to a significant improvement in public health and framework for the country's current focus on preventative care and advanced surgical technology, particularly in areas like AI-assisted diagnostics and virtual or augmented reality surgery, to address the challenges of the current aging population (7).

Key aspects of the Japanese medical revolution to date:

- **Universal healthcare access:**

The introduction of mandatory health insurance in 1961 ensured all citizens could access medical treatment regardless of income, contributing to a significant increase in life expectancy (7).

- **Emphasis on preventative care:**

Japan prioritizes preventive measures like regular checkups, vaccinations, and health education, which is integrated into the healthcare system (7).

- **Technological advancements:**

Japan is actively developing innovative medical technologies like AI-powered diagnostics, robotic surgery, and wearable devices to address the needs of an aging population (7).

- **Focus on elderly care:**



With a large elderly population, Japan is investing heavily in technologies and services specifically designed for senior citizens, including nursing care robots and smart home systems (7).




- **Data-driven healthcare:**

Japan is aiming to create a robust data-driven healthcare system by utilizing digital platforms to collect and analyze patient information, enabling more personalized treatment plans (7).

Prominent practitioners in the Edo and Meiji period

Some famous Japanese doctors from the Edo and Meiji periods include:

	<p>Ogata Koan</p> <p>A physician and scholar who established an academy that became Osaka University. His students played important roles in the Meiji Restoration. Dr. Ogata Koan established the Rangaku school named Tekijuku and educated many people with western medicine. When smallpox vaccination was introduced in Japan in 1849, Rangaku doctors played an important role in practicing the vaccination in cities and in countryside (8).</p>
	<p>Hakaru Hashimoto</p> <p>A doctor and medical scientist who described the disease that became known as Hashimoto's thyroiditis. He examined the surgical specimens of four middle-aged women who had undergone thyroidectomy because of compressive symptoms, and summarized the pathological findings in an article written in German containing two Latin words in the title (struma lymphomatosa) and five microphotographs (9).</p>

	<p>Hanaoka Seishu</p> <p>A doctor who mastered Dutch-style surgery and Chinese herbal medicine. He performed the world's first general anesthesia operation in 1804. It was about 40 years after Seishu's successful operation that the first general anesthesia was performed in Europe and the U.S. In 1846, a general anesthesia operation using ether was successfully performed in the United States (10).</p>
	<p>Nagayo Sensai</p> <p>A doctor who designed systems to modernize medicine and hygiene in Japan. He also worked on infectious disease countermeasures. The next turning point in his career came when he was chosen as a member of the group that travelled to the United States and Europe. After his return to Japan in 1873, Sensai was appointed head of the ministry's Medical Affairs Bureau (11). When this bureau was transferred to the jurisdiction of the Ministry of Home Affairs in 1875, Sensai express health and hygiene as a whole, changing the agency's name to Eiseikyoku (Hygiene Bureau), of which he became the first director. In 1876, he established the Smallpox Prevention Regulation and later inaugurated the Vaccination Proclamation, requiring that all people be vaccinated against smallpox (11).</p>
	<p>Ginko Ogino</p> <p>Japan's first licensed female doctor in 1885. Defying custom, she amazed her first teacher, the local Confucianist. Girls were not supposed to be inclined that way, but he encouraged her. Indifferent to farm work, indifferent to everything plodding and workaday, she read and read. and obtained her medical license (12).</p>

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