Juntendo at Its Dawn: How Did the Facility of Western Medical Therapies and Educational Survive the Era of Reform between the Edo and Meiji Period?

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Juntendo University has the longest history as a medical education institution in Japan. Juntendo started out in the Edo period (1603–1868) as an institution for medical treatment and education, especially in the field of surgery, and has survived and continued to develop through the period of change from the early modern era to the modern era. The purpose of this research paper is to examine the activity of Juntendo in its early times focusing on the first two directors of Juntendo, Taizen Sato and Takanaka Sato. This literature analysis shows that Juntendo continued to practice Western medicine at the highest level in Japan at the time, and was committed to increasing access to health care for the masses. During the Edo period, when traditional Chinese medicine was the mainstream, Taizen practiced the treatments described in Dutch medical books and trained physicians who understood the Dutch language and could implement advanced treatments. Takanaka was involved in the administration of medical care and medical education at the national level during the early Meiji period, when Western medicine was becoming mainstream, and laid the groundwork for Western medicine to take root. He also realized that public medical institutions alone could not provide sufficient opportunities for medical services and decided to create private medical institutions. Inheriting the will of both directors, Juntendo has continued to grow to the present day.

Key words: history of Juntendo, Taizen Sato, Takanaka Sato, history of medicine

Introduction

Juntendo University is the oldest institution of medical education in Japan. It developed the world’s first ultrasonogram in the latter half of the 20th century, and it is internationally acclaimed for its research in Parkinson’s disease and other illnesses1. Further, it proposed and advocates “sportology”, a new research area that integrates multiple fields, centering around medicine and sports science2. In addition to the six hospitals affiliated with the Faculty of Medicine, Juntendo University includes six faculties, making it one of the largest universities in Japan.

However, Juntendo was a small organization at the beginning. It began as a private school established in 1838 at the era physicians focused on Eastern medicine originating from China. Juntendo exceptionally implemented Western surgery brought to Japan through Dutch and achieved a high degree of success. Since then, it has contributed toward the treatment of patients and the education of medicine.

The fact that it has endured for more than 180 years demonstrates that Juntendo persisted through the turmoil of 1850–1870 during the early modern period. Few institutions of medicine and medical education survived this period of extensive reform, and only Juntendo emerged with its governing structure intact.

What type of treatment and education were undertaken at Juntendo during the early days?
How was it able to survive the period of extensive reform that characterized the Meiji Restoration?

This paper is a historical study examining the activity of Juntendo until the 1870s, focusing on two people who directed Juntendo’s operation, the founder Taizen Sato and his successor Takanaka Sato. In this study, we emphasized the changes in the system of medicine and medical training and the state of society during the period.

The significance of this study is not limited to examining the vicissitudes of an organization. We believe that it will provide a representative perspective of the state of medical education and the reception of Western medicine in Japan during the era. Furthermore, when looking at the recent researches on global history, early modern Japan is often treated as an actual example of global Westernization; Western medicine at Juntendo may provide further insight into this history.

Materials and methods

In this study, we examined the changes in Juntendo from the Edo period to the early Meiji period using a literature method dependent on previous research. Sources listed below may be used to learn about the state of affairs at Juntendo during these periods.

History of Juntendo

There are only partial records of early Juntendo. Many educational institutions kept student records or journals dating from the establishment; however, there are few such records from Juntendo. Therefore, prior research relies on public records or the autobiographies of those with personal connections to Juntendo during the time of its establishment. “Juntendoshi Volume 1” (1980) was based on Teizo Ogawa’s research, the founding professor of Juntendo University’s Department of Medical History. It covers Juntendo’s history from the Edo period to the middle of the Showa Era. The volume includes reprints of materials such as correspondence of directors and student records and has become a fundamental work on the history of Juntendo.

The history of Juntendo following the middle of the Showa period are covered in a follow-up to this work, led by the second professor of the Department of Medical History, Shizu Sakai, published in 1996. Sakai also discovered many historical records related to Juntendo, the results of which are presented in “Juntendo University in photographs” (2014).

Correspondence and autobiographies relating to early Juntendo

“Juntendo no keifu” (2016) and “Takawa no yukari” (2017) include collections of correspondence, primarily from the first three heads of Juntendo, and record information related to early Juntendo.

Results

[Education and Medicine in the Edo period]

The Edo period (1603–1868) was a feudal society with the shogun in Edo (now Tokyo) positioned at the top and daimyos appointed by the shogun-controlled territories called han. While the Tokugawa
shogunate had substantial power, each han had a significant level of autonomy. Therefore, education and medical care during the Edo period widely differed among each han; nevertheless, there were some common characteristics as shown below.

Edo period educational facilities included the Shouheikou, run by the Tokugawa shogunate, schools run by the han, and private elementary schools and private schools. Private schools taught students who had completed elementary education; the curriculum widely varied in terms of subjects and levels. Confucianism, Japanese literature and culture, Dutch studies, or specialist fields such as military science and medicine were taught, with some private schools covering more material and at a higher level than public schools. Each region had private schools; however, some private schools at the Edo, Osaka, and Kyoto, the governmental, economic, and cultural centers, attracted many of their students from across the entire country.

The Edo shogunate markedly restricted the international travel and trade of the Japanese people. Among the European countries, only the Netherlands was a trading partner. Dutch East India Company ships were only allowed to stop at the port of Dejima in Nagasaki, and only a few Japanese people were allowed to come in contact with these ships. Despite these strict limitations, the field of Dutch studies and the study of European writings and scholarship in the Dutch language were born. Initially, Dutch language interpreters in Nagasaki was the responsibility of research and education of the Dutch studies; however, after the latter half of the 18th century, those who had learned Dutch engaged in Dutch studies in Edo and other regions. Dutch studies were primarily taught in private, rather than public schools, with Western society, medicine, and science taught in addition to Dutch reading and writing.

Japanese medicine during the Edo period was based on medicine originating in China. Japanese physicians made some refinements; however, China was the origin for treatments such as plant-based medicines, acupuncture, moxibustion, bloodletting, and the theories underlying these treatments.

Ordinary people who fell ill sought treatment from physicians; however, "experience-based remedies were widespread in rural communities, and medical treatments were often based on magic. Nevertheless, books written on health regimens were widely available, and people were highly health-conscious.

The shogunate had almost no governmental policies or official measures regarding medical treatments at the state level. An exception during the first half of the 18th century was that facilities were established for the relief medical aid for the poor; nevertheless, medical treatment was typically delivered at the han or village level.

In terms of physician's training, there was no unified national certification system, and medical training differed among the han. Throughout the entire Edo period, of the 272 han schools, 44 had courses that taught medicine; further, 83 had some sort of established medical training organization, and occasionally the han was responsible for medical training. While this type of public training for physicians existed, many physicians first learned the basics of medicine as apprentices to a local physician before learning higher-level techniques at combined private schools/clinics run by physicians in the cities. In some cases, they would travel to Edo, Osaka, Kyoto, or Nagasaki for training. Skilled and practiced physicians would simultaneously provide treatment at their medical facilities while also working as a han’i (han physician) hired by the han.

The number of physicians studying Western medicine increased after the latter half of the 18th century. Japanese physicians were keenly interested in the Western study of anatomy, one of the oldest scientific inquiry fields in Western medicine. The “Kaitai shinsho,” anatomical text translated from Dutch into Japanese, was evaluated as the representative of accomplishment of Dutch studies, even in fields outside of medicine. Until the first half of the 18th century, there were a small number of physicians in Nagasaki practicing Western medicine who had learned surgery from the physicians on the Dutch ships; however, by the latter half of the 18th century, physicians could be found throughout the country using techniques written in Dutch medical texts.

Philipp Franz Balthasar von Siebold, who came to Nagasaki during the first half of the 19th century, was given special permission to teach Japanese physicians who were not interpreters. Siebold examined patients and gave lectures at a private
school, Narutakijuku, which he had opened.

[Taizen Sato]
Medical training

Taizen Sato was born in 1804 in a samurai family in Edo and began his medical studies in 1830. His medical training from the latter half of his twenties was considerably prolonged compared to that of typical physicians. He wished to obtain training in Western medicine. After studying in Edo for some time, he moved from Edo to Nagasaki to learn to read Dutch medical texts and improve his medical knowledge in 1835.

There were no Western physicians in Nagasaki as a result of the incident in 1828 in which Siebold attempted to take a map of Japan abroad. So Taizen learned from Ryohei Oishi and Eiken Narabayashi, two Japanese physicians who had studied under Siebold. Both were physicians of Western medicine, and Taizen acquired the skills and knowledge he desired.

Medical treatment and education at Juntendo

In 1838, Taizen returned to Edo from Nagasaki, opened a private school, and began practicing and educating his apprentices. The name of the school was “Wadajuku” from Taizen Wada, the name he was using at the time. Several private schools teaching Dutch and Dutch studies already existed and there were also private schools of Western medicine featuring famous physicians; nevertheless, Taizen was unique because he implemented Western surgical practices.

In 1843, Taizen moved to the Sakura han, which lay at approximately 50 km to the east of Edo, and began practicing and teaching at the newly established Juntendo. “Junten” is a phrase from the Chinese classical literature meaning “to follow the will of Heaven” or “to conform to nature.”

In Juntendo as well Taizen practiced Western surgery. Taizen differed from his contemporary Japanese physicians because he implemented Western surgical practices; however, it is not that there were no surgeries performed before he began to practice. To a certain extent, it was possible to acquire information from Western surgical texts in Japanese. Furthermore, Seishu Hanaoka performed a successful removal of a breast cancer tissue using full-body anesthesia in 1804, combining traditional Chinese medicine and Western medicine. However, Taizen believed that the implementation of surgery by previous physicians was insufficient and that the anesthetic used by Hanaoka was a poison, which physicians should not use. Taizen completely focused on the use of Western surgical practices.

Taizen dedicated himself to administering medical treatments described in Western medical texts. He translated and summarized the sections dealing with fractures and dislocations from the Dutch translation of the surgical text by the German surgeon Maximilian Joseph von Chelius. He also replicated the diagrams of surgical equipment and bandaging.

We can learn about the treatments that Taizen performed from the records of his apprentices. In “Juntendo Surgical Experiments,” Kansai Seki, a student, recorded 33 examples of treatments by Taizen Sato and his people from 1850 to 1856 (Figure 1). According to Seki, Taizen performed the first bladder puncture in a patient suffering from anuresis in Japan. He also performed inguinal hernia surgery, surgical removal of cancerous breast tissue, and surgery for polydactyly. All procedures, including the breast cancer surgery, were performed without anesthesia, using a surgical method that differed from that of Seishu Hanaoka. For repositioning a hip dislocation, Taizen made instruments based on information from the Western books. The example reinforces the notion of Taizen’s dedication to treatments based on Western medical texts. Additionally, when treat-

Figure 1 Juntendo Surgical Experiments. This report describes the bladder puncture on an anuresis patient in 1851. (Image courtesy of Juntendo)
ments failed, and patients passed away, it was written that Taizen would wonder if there had not been a better treatment and would consider how to improve his techniques.

There are separate records of Taizen directing the first orchiectomy in Japan. The patient was the samurai Toyoki Yamauchi; he was Taizen’s close friend and the husband of Taizen’s younger sister. Toyoki’s operation was performed in 1849 by Seikai Totsuka, Dokai Hayashi, and Gonsai Miyake. Totsuka was a pupil of Siebold and, like Taizen, an Edo physician who had made a name by performing Western surgeries. Dokai Hayashi was Taizen’s brother-in-law and the physician who had taken up Wadajuku. Gonsai Miyake was Taizen’s apprentice. The surgery was performed without anesthesia following the protocol of the Dutch text. In the same year, Dokai Hayashi had translated the section of Chelius’ surgical text on orchiectomies into Japanese. This surgery is also an example of treatments based on Western medical texts. Toyoki Yamauchi himself left preoperative and postoperative records of the surgery. It is recorded that he received an explanation before the operation about the surgery, which he could understand and agree with. Although it had never been performed in Japan before, the patient accepted the treatment to ensure that the treatment would benefit others like him.

Taizen’s surgeries were not ones performed autocratically; surgery was only performed after the patients provided their consent. There are a few examples of written consent for surgery that had been addressed and sent to relatives or local friends by patients before undergoing surgery by Taizen. There are no records of such consent in surgery other than Juntendo during the Edo period, and it is considered to be a pioneering example of a modern contractual relationship between physicians and patients. In addition, there is a table listing the surgical fees for Juntendo. During the Edo period, it was typical for physicians to not charge for treatment; they would only charge for the medication and adjust the cost as per the patient’s financial situation. Taizen placed a monetary value on treatment and charged everyone an equal amount that was made publicly available. This demonstrates a modern way of thinking about medical fees that continues to date.

The immunization of smallpox by cowpox vaccine brought by Dutch ships was successful for the first time in Japan in Nagasaki in 1849, and then smallpox vaccination rapidly spread throughout Japan. The Sakura han conducted smallpox vaccination for all residents, and Taizen contributed to this effort. He had previously collected information about cowpox vaccines, translated sections on cowpox vaccines from Dutch texts, and passed on the information to Sakura han physicians. In this way, Taizen contributed toward the public health administration of Sakura han. In 1853, he became a Sakura han physician and taught Western medicine at a medical school established by the Sakura han.

In addition to working as a physician, Taizen was deeply involved in the education of students. He taught Dutch and medicine using Dutch texts. Students would gain experience by assisting surgeries and examining patients in place of the instructing physician. Many medical students who came to Edo from across Japan visited Juntendo.

[Medical treatment at the end of the Tokugawa shogunate and early Meiji period]

In 1854, the Tokugawa shogunate entered into a treaty with the USA, UK, France, the Netherlands, and Russia, to end the long-standing national isolation policy. Subsequently, travel between Japan and Western countries considerably increased.

The Tokugawa shogunate requested the Dutch government to send personnel to learn coastal defense and military medicine for the Japanese people’s education. Johannes Lijdus Catharinus Pompe van Meerdervoort arrived in Japan in 1857 and taught Western medicine to the Japanese physicians in Nagasaki. Pompe van Meerdervoort conducted the first systematic education in science and basic and clinical medicine as well as leading dissections and bedside education in Japan, with the help of the shogunate physician Ryojun Matsumoto (son of Taizen Sato, adopted into the Matsumoto family who served a hereditary position of shogunate physician), who mediated communication between Pompe and the Japanese physicians. Further, Pompe van Meerdervoort built a Western-style hospital in Nagasaki (Nagasaki Hospital, 1861) to treat patients and provide on-the-job practical training. Pompe van Meerdervoort also
worked hard during the 1858 cholera outbreak, thereby improving the public perception of Western medicine.

In light of the success of the cowpox vaccine and the reputation of Pompe van Meerdervoort, Japanese medicine proceeded to retreat from Eastern medicine and introduce standardized Western medicine. In 1858, the shogunate publicly recognized the cowpox vaccine introduced by the Western physicians. In 1860, the Otamagaike Institution for Vaccination, established by interested physicians, came under the direct management of the government. In 1861, it was renamed the School of Western Medicine, and the shogunate government directly ran facilities for treatment and education in Western medicine.

As Western medicine was publicly recognized, plans for the introduction of Western medicine were prepared throughout Japan. In Sakura and other locations, Western-style hospitals were built. In Saga han, all physicians were retrained in Western medicine, and a measure was introduced outlawing traditional Chinese medicine. In terms of education, some hans, including Satsuma han, taught Western medicine at educational institutions, and Western medical education spread across Japan.

The end of isolationism and the establishment of formal diplomatic relations with foreign countries stimulated domestic discussion regarding how Japan should approach relationships with Western countries. Among physicians who had studied Dutch and Western medicine in private medical schools, some quickly noticed the need to respond to changes in international relations and became active in fields other than medicine. In 1868, 14 years after the end of isolationism, the Edo shogunate was defeated during the Meiji Restoration. The new governing body aimed for a centralized government based around the emperor, and the administrative, legislative, and judicial systems considerably changed. In terms of medical treatment and education, in contrast to the Edo period in which the system differed among each han, the new government set its sights on a unified, country-wide approach.

It was decided to modernize practices, particularly by incorporating Western medicine from Germany. However, many physicians at the time were practitioners of Japan’s traditional medicine, meaning there was an urgent need for educating physicians who learned Western medicine, while previous physicians were also continuing to practice. The “Medical Code,” published in 1874, served as the guiding principle regarding medical treatment, and several laws and regulations were regulated based on it. To train Japanese physicians in Western medicine, plans were made for instructors to be invited from Germany and for the Japanese physicians trained under their tutelage to become instructors and train other Japanese physicians. Further, there were many Japanese physicians studying abroad in Western countries, particularly in Germany.

[Takanaka Sato]
Medical training

The second head of Juntendo, Takanaka Sato (1827–1882), was the son of a physician of Omigawa han, which lay about 90 km east of Tokyo, and raised in Edo. First named Jo Shunkai, he studied under a Western medicine-practicing physician. Already skilled for treating wounds at the age of 16, by his mentor’s advice he entered Wadajuku, the school of the prominent surgeon Taizen Sato. Immediately after entering the school, Shunkai moved in response to Taizen’s move to Sakura. Shunkai studied Western medicine at Juntendo and gained considerable surgical skills. Taizen recognized his potential and skill, and in 1853, Taizen adopted Shunkai and selected him as his successor for the management of Juntendo. In the Edo period, many professions were hereditary, and an inheritor was often the eldest son, but a talented child also would be welcomed from another family as an heir. One of Taizen’s children, Ryojun Matsumoto, was a physician, but he had been adopted by another family, and Taizen affiliated Shunkai as his successor. Subsequently, Shunkai took the name, Takanaka Sato.

We can get a glimpse of Takanaka’s undertaking from “Juntendo Surgical Experiments.” In that book, other than records of Taizen’s treatments, five cases relating to Takanaka were recorded. Although it was difficult in Japan at the time, Takanaka performed a successful inguinal hernia surgery, ligation for an arterial injury, etc. with Taizen by followed the procedure described in a Dutch medical journal. Furthermore, similar to
Taizen, Takanaka dedicated himself to translating Dutch medical texts into Japanese and constantly improving his knowledge and skills.

To further improve his skills and knowledge, Takanaka traveled to study under Pompe van Meerdervoort in Nagasaki. It was not easy to travel to Nagasaki while following Taizen’s tracks and managing Juntendo; however, Takanaka was advised by his brother-in-law Ryojun Matsumoto to go, and in 1860, Takanaka left for Nagasaki (Figure 2).

Physicians from different areas had come to study under Pompe van Meerdervoort; however, many were graduates of private schools of medicine and Dutch studies. Each of these individuals would assume essential roles in the medical field of the shogunate and early Meiji era; however, Pompe van Meerdervoort’s evaluation of the skills and knowledge of these Japanese physicians was harsh.

Pompe van Meerdervoort taught medicine that comprised basic and clinical medicine that was recently introduced in Europe. In comparison, Western medicine taught in Japan was not systematic, and even excellent students who had studied Dutch had to re-learn from basic medicine. It was under these circumstances that Pompe van Meerdervoort recorded uncharacteristically high approval of Takanaka’s surgical skill in his memoirs.

Medical activities at Sakura

Takanaka returned to Sakura from Nagasaki in 1862 and worked as both the head of Juntendo and a Sakura han physician. As a han physician, he revolutionized the Sakura han medical system. In 1866, he abolished education in traditional Chinese medicine in han’s medical school, and while allowing local physicians to continue practicing traditional Chinese medicine, he forbade its implementation by han physicians. He also proposed the establishment of a han–managed, Western–style hospital: Sakura Youjousho that was founded in 1867. In terms of medical education and hospital treatments, he emulated the actions of Pompe van Meerdervoort in Nagasaki. He planned to modernize and Westernize medicine and medical education of the Sakura han.

Takanaka’s duty as a han physician was not a full-time responsibility, and he was able to continue examining and teaching at Juntendo. He standardized a Pompe van Meerdervoort-style of medical education in Juntendo. A time-table of 1865 lectures tells us that Takanaka and the other instructors used records of Pompe van Meerdervoort’s lectures and taught basic and clinical medicine from Dutch texts. Many students gathered at Juntendo, and an 1865 register of names has records of 110 people not only from Sakura han but from across Japan.

The shogunate became aware of Takanaka’s successes and requested that the Sakura han transfer him to the shogunate. The Sakura han refused, stating that he was a pivotal figure in the revolution of the medical system currently underway in the han. In this way, Takanaka became known throughout the country during the end of the shogunate as an exceptional figure in medical treatment, education, and administration.

Activities in Tokyo

The Meiji government, founded in 1868, also noticed Takanaka Sato’s accomplishments and abilities, and in 1869 appointed him to the highest teaching position, daihakase, in the nationally–run university Daigaku Toko. The origin of Daigaku Toko, the predecessor of The University of Tokyo Faculty of Medicine, was the Otamagaike Institution for Vaccination established at the end of the shogunate. It became the shogunate’s Western medical clinic that was then requisitioned by the Meiji government, becoming Daigaku Toko in 1869. Daigaku Toko was both an institution of medical education and a core institution of national medi-

Figure 2  Letter from Ryojun Matumoto to Taizen (1860). Ryojun explains to Taizen that learning in Nagasaki is beneficial for Takanaka. (Image courtesy of Juntendo)
cine and public health administration, supervising the management of vaccination affairs and patenting of medication.

Tanaka entrusted Juntendo to his pupil and adopted child, Doan Okamoto. He came to Tokyo, where he was appointed court physician to the emperor, and in 1871, became both the faculty and supervisor of Daigaku Toko. However, everything did not run smoothly because this was a period of great upheaval, and organizations were changed one after the other in a short period. Daigaku Toko also changed its name several times: Toko (1871), Igakusho (1872), Tokyo Igakusho (1874), and Faculty of Medicine, University of Tokyo (1877). The demands of the role constantly shifted, and Takanaka had to face many obstacles.

Amid these difficulties, Takanaka struggled to spread the use of treatments based on Western medicine. At the time, Daigaku Toko had a 5-year course to train medical students and to educate them in foreign languages, and a 3-year course to train physicians using texts translated into Japanese. Takanaka preserved this system and made arrangements to train a large number of physicians. When German physicians in Japan reduced the numbers of students and removed short-term education courses, Takanaka protested in newspapers.

Furthermore, in relation to the availability of medical treatment, Takanaka changed the name of the medical facilities affiliated with Toko from 病院 byouin to 医院 i’in in 1872. It is thought that he did this to suggest from the name that the institution was a facility, 院 in, to heal, 医 i, patients, rather than a facility for sick, 病 byou.

In response to the fact that there were extremely small facilities providing treatment in Western medicine compared to the number of patients requiring treatment, Takanaka published a petition in 1872 to establish a private organization. This petition was accepted, and Hakuaisha Hospital was built. In the newspaper advertisement for this hospital, it was written that Hakuaisha was neither a hospital attached to a public institution of education nor a hospital affiliated with the military; rather, it was the first city hospital, and people suffering from illness were invited to receive treatment there. Further, Takanaka requested the Imperial Household Agency to donate funds to construct a large, 300-bed hospital of the Tokyo Prefectural government, that was established in 1873.

Moreover, he believed that making healthcare provisions in Tokyo, wherein the population was rapidly increasing, was important, and therefore he himself opened a hospital named Juntendo: the facility in Sakura in the care of Doan Okamoto was then entrusted entirely to him. The Juntendo in Tokyo was built in 1873, which was near the Akihabara station now. It featured a large-scale (at the time) hospital with 50 beds. Japan's first nursing specialist Kane Sugimoto, who had been overseeing nursing at the Toko's hospital, moved to Juntendo in 1873 and took charge of the nursing program. Immediately after its opening, the number of patients visiting Juntendo rapidly increased, and although extra beds were added, this soon proved insufficient, and the hospital moved in 1875 to its current location in Yushima. Immediately following the move, Takanaka fell ill. However, his pupils from Sakura assisted in managing the hospital, and Takanaka's adopted son Susumu Sato returned after studying in Germany to manage the hospital. Once Takanaka recovered, he took charge of internal medicine. Susumu took charge of the surgery, and the hospital began accepting a considerable number of inpatients and outpatients.

After Takanaka opened Juntendo in Tokyo, many institutions followed suit and built private hospitals to meet the demand for treatment in Western medicine in conjunction with public hospitals. Even after many hospitals started to be constructed, Juntendo continues to be known as a large-scale hospital with excellent physicians conducting cutting-edge therapies.

Conclusion

Juntendo's founder Taizen Sato and his successor Takenaka Sato implemented and taught Western medicine at the end of the Edo era and during the transition from Edo shogunate to the Meiji era, respectively. The social environment and state of medical treatment and education during their periods differed, and their medical treatments and teachings also differed.

Taizen studied Western medicine and performed Western-style surgeries during the period focused on Eastern medicine in a country that did not allow international travel and trade. When conducting
When Takanaka was active, the country was no longer closed to the world; contact with foreign physicians became possible at the end of the Edo shogunate. The new government standardized medical treatment and education across the country. This was a period focused on the transition to medical treatment based on Western medicine. It was in this environment that Takanaka administered medical treatment and education. Whether regarding the reform of Sakura han medical administration, the educational curriculum of Daigaku Toko, or the establishment of Western-style hospitals in Tokyo, Takanaka consistently championed expanding treatments in Western medicine.

Regarding the medical education under these two directors, both emphasized the implementation of Western medical practice. Compared to Tekijuku, a medical school established in Osaka around the same time, we can understand what makes Juntendo unique.

Tekijuku was established in 1838 by Koan Ogata, and many physicians from across the country came to study. Koan practiced Western medicine with a focus on internal medicine, contributing significantly to vaccination efforts in Osaka, and is highly renowned for his many translations of Western medical texts. Though he trained his students to become highly skilled in Dutch and taught medicine, some students did not aim to become physicians, only to study Dutch and decipher texts. Sensai Nagayo, a graduate of Tekijuku who established public health administration in the Meiji era, reflected that it was difficult to become sufficiently skilled in medical techniques while in Tekijuku.

The following is a list of notable students of Juntendo and Tekijuku active in the early Meiji era:

Tekijuku:
- Yukichi Fukuzawa (1835–1901): Philosopher of Japan’s enlightenment

Juntendo:
- Keisuke Otori (1833–1911): Military scholar, diplomat
- Masujiro Omura (1824–1869): Founder of modern military
- Sensai Nagayo (1838–1902): Proponent of public health administration
- Kensai Ikeda (1841–1918): President of Faculty of Medicine, University of Tokyo

Compared to the number of notable people from Juntendo active in medicine, those from Tekijuku active outside medicine stands out. Both schools trained many talented individuals who were active during the early Meiji era and the Edo era, times when studying Western medicine and foreign languages was not easy. For this reason, the Prime Minister of the Meiji government, Shigenobu Okuma, later noted “Tekijuku of the West and Juntendo of the East.”

Tekijuku was closed in 1869, and Tekujuku’s leader(s) moved to the hospital established by Osaka’s prefectural government, Igakuko. The successors of this hospital and school are the current Faculty of Medicine, Osaka University, and its affiliated hospitals.

Other than this, of the institutions of medical treatment and education that existed in the early Meiji era, the Faculty of Medicine, University of Tokyo, and the Nagasaki University School of Medicine also have their origins in organizations from the Edo era; however, their managing bodies and systems were not constant. Control of the Faculty of Medicine, University of Tokyo, fell to the Edo shogunate after the Otamaigake Institution for Vaccination, the Meiji government, and the Ministry of Education before it became a national
university. The Nagasaki University School of Medicine is the successor of the Nagasaki Hospital established by Pompe van Meerdervoort. Its administration likewise fell to the Edo shogunate, the Meiji government, the Ministry of Education, and Nagasaki Prefecture before it became a national university.

In contrast, Juntendo has remained a private organization, providing medical treatment and contributing toward training physicians. In Edo and Sakura during the Edo era and Tokyo since the beginning of the Meiji era, Juntendo has continued to develop under nine heads of the institute. Presently, it is a large-scale institute of higher education comprising (in addition to the Department of Medicine) departments for the training of nurses and clinical and radiological technologists. With six affiliated hospitals, it is one of the largest institutions of medicine in the country.

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**Author contributions**

ST designed the article and analysed the material. SS presented a perspective on the analysis. ST wrote the draft of the paper. ST, SS edited the final manuscript. All authors read and approved the final manuscript.

**Conflicts of Interest statement**

The Authors declare that there are no conflicts of interest.

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