



Ottoman Vaccination Regulations in The Context of Public Health

Halk Sağlığı Bağlamında Osmanlı Aşı Nizamnâmeleri

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Introduction

Throughout history, mankind has sought not only the treatment of diseases but also ways to prevent and immunize diseases. With the discovery and development of vaccines, some diseases have been prevented, some have been controlled and some have been eradicated. These results have been shown among the greatest achievements of public health protective practices (1). The view that preventing diseases is more valuable than treating them is in a sense an acknowledgment that public health protective practices are extremely important. In this context, vaccines are recognized as one of the most important inventions of modern medicine in the fight against infectious diseases (2).

Smallpox is believed to have first appeared in agricultural societies in North Africa around 10.000 BC. It is then thought to have spread to India via Egyptian traders. However, the first evidence of skin lesions resembling smallpox was found on the faces of mummies in Egypt in 1570-1085 BC. At the same time, this disease was described in China, one of the ancient Asian societies, in 1122 BC and was mentioned in ancient Sanskrit texts of India. It arrived in Europe between the 5th and 7th centuries and affected the West negatively with epidemics in the Middle Ages. With the discovery of the New World, the

Spanish and Portuguese brought the disease there. Similarly, the disease was brought to the east coast of North America. In these affected regions, the devastating effects of the disease led to population decline. The transmission of the disease increased rapidly with the start of the slave trade from Africa, which is thought to be the origin of the disease, to America (3). When evaluated in terms of medical history, this disease, which is considered to be one of the oldest and most fatal diseases in the world, has deeply affected societies (4).

Emanuel Timonius (1669-1720), an Ottoman physician of Greek origin, who was one of the court physicians of Sultan Murat IV, was the first to write about a Turkish smallpox vaccine. After completing his medical education in Padua Oxford Medical Faculty, Timonius returned to İstanbul and became a court physician like his grandfather Vincent Timoni. In 1714, Timonius succeeded in having "Turkish smallpox vaccine" published in the "Philosophical Transactions" through John Woodward (Figure 1). About two years later, Jacob Pylarini (1659-1718), the Greek-born physician to Russian Tsar Peter the Great and Consul of the Venetian Government in İzmir, published an article on variolation in the same journal. However, despite these articles, British physicians did not accept what was written (5,6).

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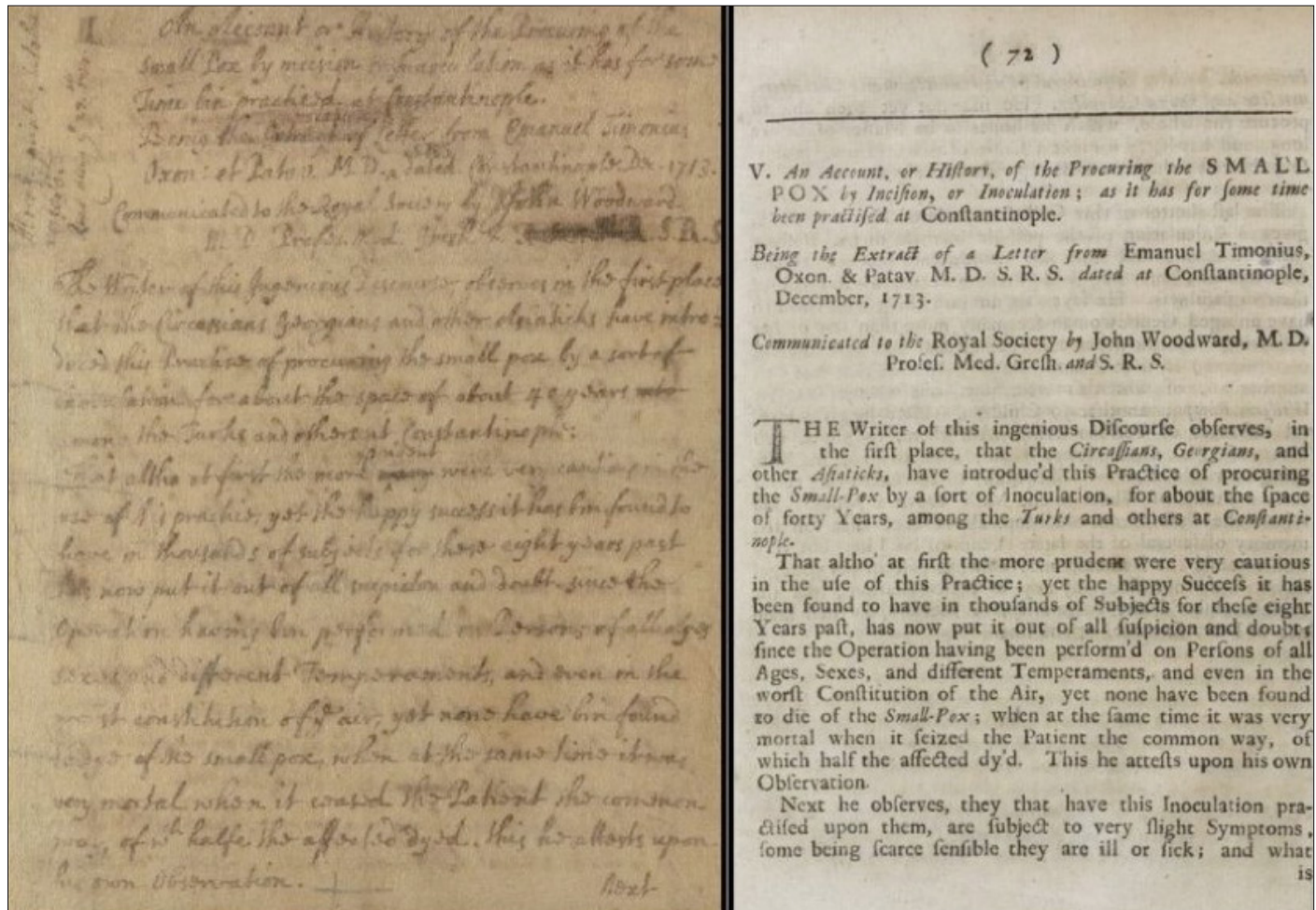


Figure 1. Emanuel Timonius article on Turkish style smallpox vaccine (1714) (7,8).

The English farmer Benjamin Jesty (1737-1816) saw that two milking women working for him did not get sick despite taking care of his brother and nephew who had smallpox. When he examined the subject closely, he found that applying the liquid taken from the pustules of sick cows to scratches on the arms protected them from the disease. However, since he could not systematically interpret this immunization process, it could not be called vaccination (4,9). Until Edward Jenner (1749-1823) discovered vaccinotherapy, it was possible to see the practice of variolation, in other words, the method of administering the liquid taken from the lesions of people who had smallpox, especially in the Middle East and Far East countries, through the incision made on the skin of someone who had the disease. This method became known in Europe when Lady Mary W. Montagu (1689-1762) wrote a letter to her friend Sarah Chiswell in England on April 1, 1717, describing the details of how vaccination was done. In 1721, Montagu returned to England and made special efforts to popularize the vaccination practice she had learned in Ottoman lands. When the smallpox epidemic broke out in the year he returned to England, she had her daughter vaccinated with this method (10).

It was widely believed in rural areas that cowpox, a mild localized disease, provided immunity against smallpox. Edward Jenner, an experienced village doctor, found this information interesting. In the early 1780s, he began collecting data on the subject. Information on immunity to smallpox was gradually collected during routine smallpox vaccinations. Much of the data was collected by Jenner between 1792 and 1797, and others by his nephew and assistant Henry Jenner (11). The method he found was that smallpox vaccination from animal to human produced immunity against the disease in the administered human. He wrote up his findings and sent them to the Royal Society in 1797, but they were rejected. Thereupon, in 1798, he wrote about the smallpox vaccine he discovered in a book titled "An Inquiry into The Causes and Effect of The Variolae Vaccinae, A Disease Discovered in Some of The Western Counties of England, Particularly Glocestershire, and Known by The Name of 'The Cow-Pox'" (Figure 2) (10). His discovery of the smallpox vaccine was certainly guided by his research into the stories of milking women and his analysis of real and unreal cowpox. Jenner's dissemination of the idea of vaccination marked a turning point in the control of smallpox (11).

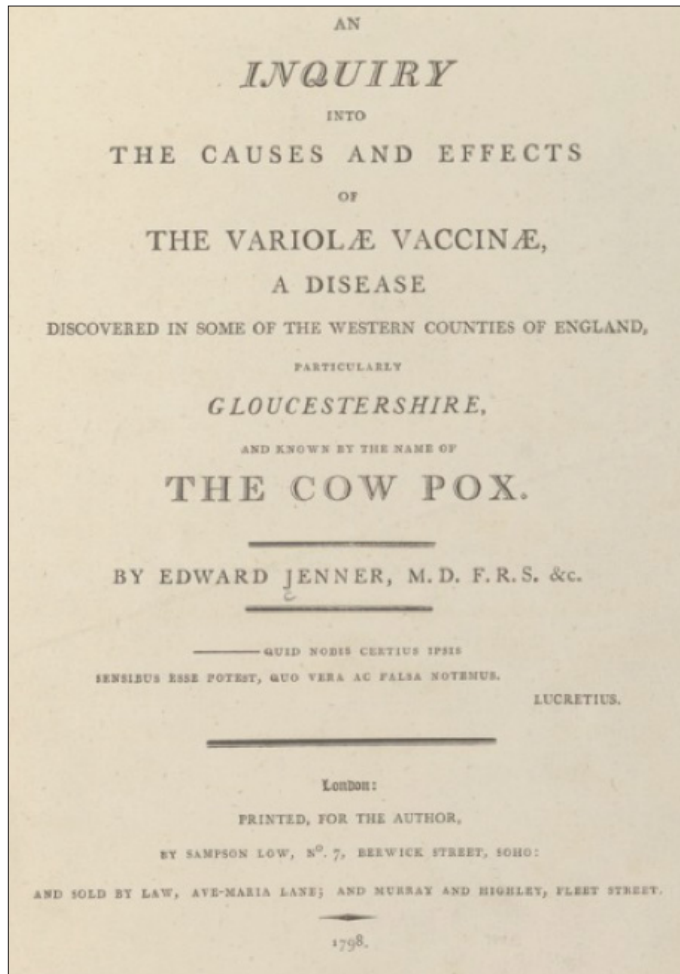


Figure 2. The book in which E. Jenner wrote the smallpox vaccine he discovered in 1798 (12).

Since 1800, the new smallpox vaccine developed by E. Jenner has been used on humans in European countries and America. It is noteworthy that variolation was banned and vaccinations were made compulsory in Europe in the following years. Bavaria introduced a compulsory vaccination policy in 1807, Denmark in 1810 and Russia in 1812. England resisted the compulsory vaccination policy for a long time, as a matter of fact, variolation was banned with the law enacted in 1840. Later, vaccinations were made compulsory by a law enacted in 1853 (5). In the Ottoman Empire, the first vaccination with the method developed by E. Jenner was performed on December 23, 1800. During the period of Chief Physician Mr. Şanizade Atullah (1771-1826), the first local vaccine of the country was also started to be produced, but opposition to this situation prevented the continuation of vaccine production (6).

The second half of the nineteenth century was a period of accelerated efforts to establish a health organization in the Ottoman Empire. In 1867, a civilian medical school was opened to train civilian physicians and these physicians were appointed to the provinces after graduation. These physicians were

authorized to carry out both preventive (public health) and curative health services. In addition, a health service network was started to be established from the center to the provinces in order to improve public health (13). As part of the fight against smallpox, vaccination practices became widespread in the 19th century. In order to meet the need for personnel, the institution of vaccination officer was established and vaccination officers were certified after undergoing a certain training process. In addition, vaccination houses called telkihane (vaccination bureau) were established for vaccine production and the vaccines produced in these houses were distributed to various parts of the empire. The state regulated the duties of vaccination officers by controlling vaccination practices and aimed to increase the effectiveness of vaccination (10).

In the 19th century, the Ottoman Empire employed various practices in the fight against epidemics and infectious diseases such as plague, cholera and smallpox. In this context, measures such as quarantine practices, disinfection procedures and isolation of patients were implemented. In addition, information activities were carried out to raise public awareness and education was encouraged to increase the number of health personnel (14). In addition, legal regulations on vaccination were made to protect and improve public health. These regulations were especially related to smallpox, and according to these regulations, the first target of compulsory vaccination was children. It was observed that widespread vaccination activities in İstanbul were carried out within the framework of these regulations by assigning physicians and vaccination officers by the Mekteb-i Tibbiye (Imperial School of Medicine). Families, imams and mukhtars (neighborhood representatives) were also included in all these vaccination processes, and maximum effort was made to ensure that no child was overlooked. These vaccinations were not limited to children, but also targeted students in schools and higher education institutions (15).

In this study, the vaccination regulations enacted to combat epidemic diseases in the Ottoman Empire will be analyzed. Thus, the place and importance of these regulations, which came into force in the 19th-20th century Ottoman period, in protecting and improving public health will be revealed.

Materials and Methods

In this study, qualitative research method, which is a survey model and document analysis method, was used. In order to identify Ottoman vaccination regulations in accordance with the research topic, Düstûr in the Open Access Collection of the Grand National Assembly of Türkiye Library was utilized. In addition, Takvîm-i Vekâyi (Official Gazette) and the Ottoman Archives of the Presidency of the Republic of Türkiye State Archives were used. In these sources, the Ottoman Turkish texts related to the research were transcribed. In addition, İstanbul University Library and Documentation

Department Directorate Abdülhamid Han II Photography Albums were examined and visual materials suitable for the purpose of the study were identified. *Servet-i Fünûn* (Wealth of Sciences) and *Sihhiye Mecmuası* (Medical Journal) were used among periodicals. Finally, copyrighted works were examined. The findings obtained were analyzed systematically.

Results

In line with the methodology determined in the study, one provincial law, four vaccination regulations and two vaccination instructions were identified as findings regarding vaccination regulations. The first of these is a provincial law enacted in 1883 for the Eastern Rumelia Province. This law formed the basis of the vaccination regulations that came into force in the following period. Following the entry into force of the first vaccine regulation in 1885, revised vaccine regulations and instructions were prepared in 1894-1895, 1904 and 1915, respectively, with reference to the previous regulation and instructions, with periods of approximately 10 years each.

Provincial Law for Eastern Rumelia (1883)

The first vaccination regulation in the Ottoman Empire, which was prepared on certain principles, entered into force in December 1883 with the regulation titled *Rumeli-i Şarkıye Mahsus Kanun-ı Vilayetti on Vaccine Surgery* (Provincial Law for Eastern Rumelia on Vaccine Surgery), which consisted of 20 articles. Essentially, this regulation was related to smallpox vaccination and was issued for the province of Eastern Rumelia. The regulation made smallpox vaccination compulsory for the entire population of the region. Vaccinations were to be administered within six months of the child's birth, and in case the first vaccination did not work, the second and third vaccinations were to be administered. Vaccinations were to be repeated every seven years. The use of vaccines obtained from people who had smallpox was prohibited. It was decided that unvaccinated children would not be allowed to enter schools and industrial administrations, and those liable for military service would not be accepted into the militia without vaccination (16).

The duties and responsibilities of local administrations and health personnel were also clearly defined in the vaccination regulation. The medical council was held responsible for providing borough and municipality physicians with vaccine materials of "cins-i âlâ". Accordingly, municipal doctors and surgeons were obliged to vaccinate free of charge in the towns, and it was stated that vaccinated persons would be given a vaccination certificate sent by the sanitary council. When doctors and surgeons needed to go to a village to vaccinate, it was decided that they should communicate with the village headman. Thus, the headman was expected to make

the necessary announcements in the region and complete the preliminary preparations, and the vaccination was expected to be completed within one or at the latest two weeks. It was stated that the vaccinating doctor or surgeon had the right to take the vaccine pus from the child he deemed appropriate. Following vaccination, after 10 or 20 days, it was obligatory to visit the area and examine the vaccinated children. City and village administrators were obliged to prepare a book of vaccinated children and deliver it to the accident doctors. It was also deemed appropriate for the borough doctors to prepare notebooks containing the names of vaccinated children and send them to the Health Council every three months. It was also decided that the district directors would keep a notebook with the names of children who had been vaccinated within a year, those who had not been vaccinated or who were unvaccinated as a result of the ineffectiveness of the vaccine, and those who came from other towns or villages without vaccination. The district director was obliged to notify the district governor if smallpox was seen in a region, and the district governor was responsible for instructing doctors to vaccinate unvaccinated children (16).

In order to ensure that vaccination was carried out smoothly, the regulation set penal procedures: Those who did not vaccinate were fined 50-100 pennies in gold, those who refused to allow doctors and surgeons to take vaccine pus from children or hid their children were fined 15-30 pennies in gold, those who took pus from a smallpox patient and used it were fined 200-1.000 pennies in gold, those who went to school or joined the army without vaccination were to pay a fine of 150-300 pennies in gold, doctors who neglected their duties were to pay a fine of 150-300 pennies in gold, and finally, district administrators who failed to fulfill their responsibilities were to pay a fine of 20-50 pennies in gold (16).

Vaccination Regulation (1885)

Following the first regional Smallpox Vaccination Regulation in the Ottoman Empire in 1883, a nine-article Smallpox Vaccination Regulation covering the entire Ottoman geography came into force in 1885. Accordingly, all male and female students in public and private schools were required to be vaccinated. Those who had already suffered smallpox were exempted from vaccination. Children were required to be vaccinated in order to start or continue attending schools, and they were also required to present a certificate of successful vaccination. Otherwise, they would not be admitted to schools.¹ Vaccination certificates were to be issued by authorized doctors, surgeons and vaccinators on printed documents prepared by the Ministry of Medicine. After the names of the vaccinated children were written on these documents, they were to be officially recognized with a seal and signature. In

¹ Principals, administrators and teachers of public and private schools will be fined in accordance with Article 254 of the Ottoman Penal Code if they violate this regulation and admit students without a vaccination certificate.

the absence of printed documents, the papers signed by doctors would be considered valid (17).

In addition to students studying in public and private schools, smallpox vaccination was mandatory for those who would enter state service for the first time, those who would study at madrasahs, and those who would join the army and the *zaptiye* (city police) organization. It was decided that those who were not vaccinated among the *kur'a* (selected by lottery) and *redif* (standby force) soldiers who were recruited and those who joined the *zaptiye* (city police) organization would be vaccinated by the doctor or surgeon of the battalion to which they belonged, and that they would be given a certificate of vaccination (17).

Vaccination practices were to be carried out free of charge by doctors, surgeons and vaccinators assigned by the state in the examination at the *Mekteb-i Tibbiye-i Şahane* (Imperial School of Medicine) and in designated health centers in İstanbul. It was decided to temporarily send vaccinators to municipal offices two or three times a year to administer free vaccinations and issue vaccination certificates. In addition, in the provinces, vaccination would be carried out by the country physicians, and special vaccinators would be sent to the regions where there were no physicians. It was stated that the *Nezaret-i Umur-ı Tibbiye-i Mülkiye* (Ministry of Medicine) would send "fresh and full vaccine pencils and as many empty pencils as needed to be filled and multiplied by themselves" to the health workers in charge of vaccination. In the vaccination certificates to be submitted by the health officials who administered the vaccine, the names and reputations of the vaccinated persons, their numbers and the date of vaccination were to be clearly written. In addition, it was also obligatory to indicate on the certificate if the vaccine had been administered to previously vaccinated persons and if a permanent scar, i.e. scarring, was observed on the skin (17).

The authority to supervise the full implementation of the vaccination regulation in İstanbul and the provinces was given to the Ministry of Health. It was stated that civil servants and military officials who did not pay attention to the implementation of the regulation would be legally responsible (17).

Vaccination Regulations and Instructions (1894-1895)

The 25-article vaccination regulation, which entered into force in 1894, had similarities with the previous regional regulation of 1883 and included all the articles of the 1885 regulation. With the updated regulation, a number of new articles were added. Accordingly, when a case of smallpox was detected in a province, district and accident, it was decided that the occupants of the sick household would be vaccinated immediately. Local administrators were held responsible for the failure to vaccinate children in provinces, districts, and boroughs. All people were obliged to vaccinate their children within six

months of birth. The information of the children born would be reported without delay by the civil registry officers to the local Council Administration and the Council Administration would notify the doctors or vaccination officers and ensure that they were vaccinated. The regulation stated that vaccination was free of charge and that health officials were obliged to administer it, and emphasized that up to three vaccinations could be given. It was stated that vaccinated children should be examined within a week and if the vaccine was effective, they should be given a certificate of vaccination by the officer. This certificate was to be sealed by the vaccination officer, as well as religious leaders such as imams, *mukhtars* (neighborhood representative), etc. when necessary. The vaccination certificates were to be recorded and the stubs were to be sent to the Ministry of Medicine by the local government and the certificates of approval were to be sent to the Ministry of Medicine by the vaccination officers and municipal physicians. It was also decided that vaccination statistics would be kept annually. A list of those who were not vaccinated for any reason was to be prepared and sent to the Ministry of Medicine. It was stated that vaccination would be repeated once every five years (18,19) (Figure 3).

In the regulation, it was decided that a vaccinator with a salary of 400 pennies would be appointed to each *sanjak* (troop) and that they would be given an allowance of five pennies per hour by the municipality for traveling around the towns and villages. In order to strictly enforce vaccination control, it was emphasized that those who did not have their children vaccinated would be fined 150 pennies, those who took pus from people with smallpox and vaccinated others would be fined 200-1.000 pennies, and if this harmed anyone, the offenders would be brought to court. Civil servants were obliged to provide the necessary assistance to vaccinators in towns and villages (18).

Seven months after the regulation entered into force, a 17-article instruction titled "Instruction on the Regional Execution of the Regulation on Smallpox Vaccination Procedure", which sets out the principles of the regulation, was put into effect. With the instruction, the principles in the regulation were elaborated. Accordingly, every month, the *Dersaadet* Population Administration would report the births in İstanbul and its environs to the Ministry of Medicine and the city administration with the following information: The child's date of birth, age, denomination, city, borough, district, neighborhood, street, household number, father's name, father's occupation or vocation. Accordingly, the *Şehremaneti* (City Administration) would direct the child named in the birth notification to the necessary department to be vaccinated within six months and inspections would be made by the *telkihane* (vaccination bureau) officer. At the end of each month, the municipal directors in İstanbul were obliged to report to the Ministry of Medicine those vaccinated within their district,

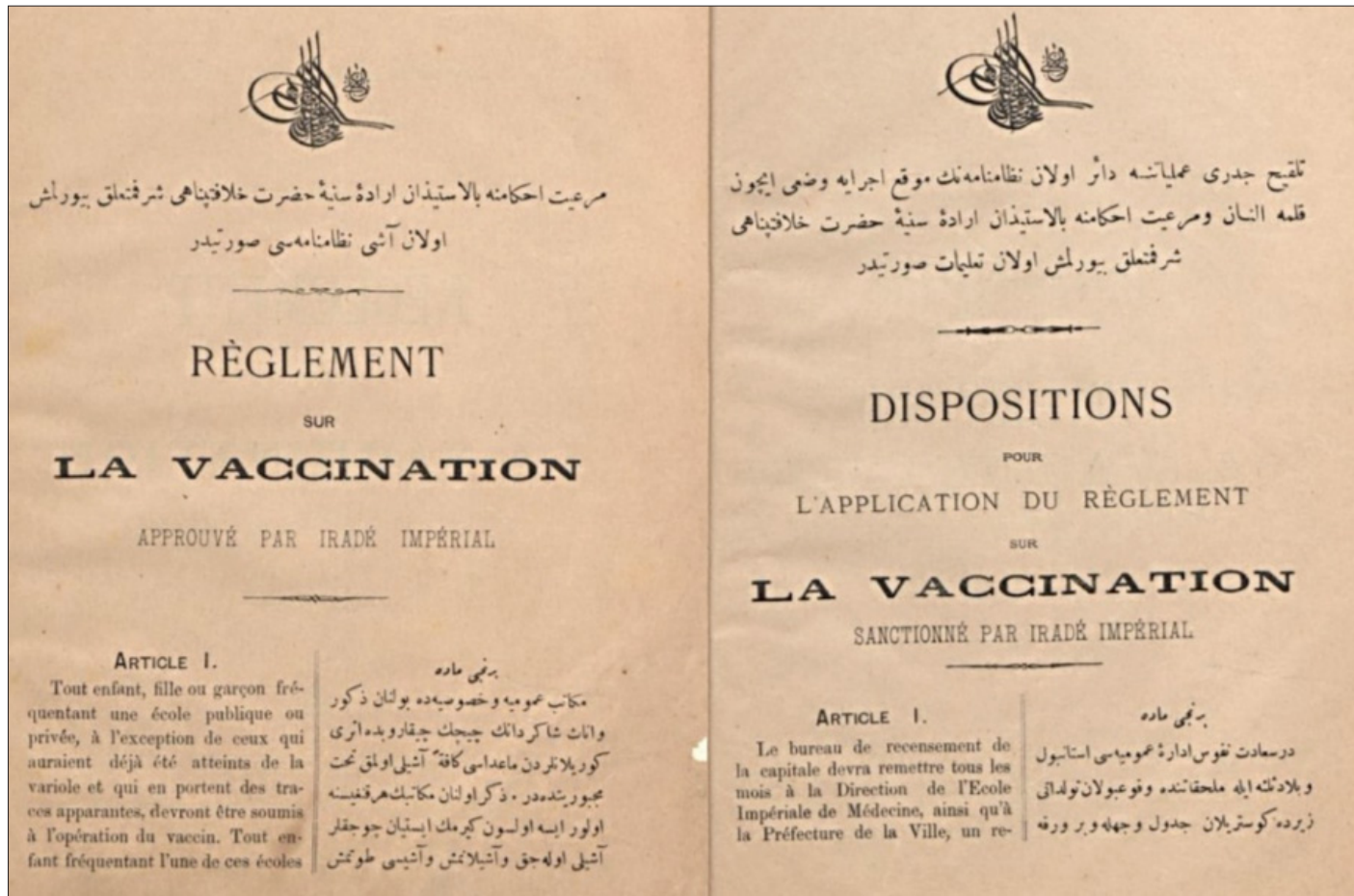


Figure 3. 1894 vaccination regulation and 1895 vaccination instruction (19,20).

and the following information had to be included in the book: Municipal office, name, date of birth, district, date of vaccination, neighborhood, father's name, name of the vaccination officer, street, father's profession or vocation, date of inspection, household number, sect, name of the inspector, certificate number. For İstanbul and its districts, it was determined that mobile vaccinators would be appointed from the telkikhane (vaccination bureau). Population officers in the provinces were to send lists containing vaccination information to the administrative council, doctors and vaccination officers. Provincial municipal doctors and vaccination officers were responsible for announcing the dates of vaccination to the public. Vaccination² was to be carried out as follows: "The physician and vaccination officer will clean the arms of those to be vaccinated and perform the surgery with the tools provided. And after drying, it will be wrapped with idrofilli cotton and gas pique and contact with air will not be allowed. And he will not perform the procedure on the other until he has fitted and practiced the equipment he has used" (20,21).

Doctors and vaccination officers who did not comply with this procedure would be fined between 1 and 3 madjidie. After vaccination, they were to carry out the necessary examinations within 8-25 days. When smallpox occurred in a region, municipal directors in İstanbul would report the case to the Ministry of Medicine, while in the provinces, the mayor, district governor and directors would report the case to the nearest doctor and vaccination officer. When smallpox was seen in a region, doctors and vaccination officers would separate the sick from the rest, and their clothes and belongings would be disinfected or burned. Doctors and vaccination officers who did not take the necessary precautions would be banned from working for two months. In addition, doctors and vaccination officers who did not go to the scene of the case would be punished according to Articles 6 and 10³ of the Law on Health Crimes (22). Those who used counterfeit or ineffective substances in vaccination would also be punished according to the law. Police officers were responsible for providing the

² When smallpox was not widespread, the vaccination of people with skin diseases was to be postponed until the disease had passed. Doctors and vaccination officers who did not comply with this decision would be fined between 1 and 3 medjidie.

necessary convenience to doctors and vaccination officers. Any fines would be transferred to the municipal budget (21).

Vaccination Regulations and Instructions (1904)

The vaccination regulation, which entered into force in 1894, was updated 10 years later in 1904 with some additions while maintaining its basic structure. The regulation expanded the scope of mandatory vaccination: Students studying in public and private schools, workers in commercial establishments and factories, and those working in various service and industrial sectors. Anyone wishing to enter any of these institutions was required to be vaccinated and to present a certificate of vaccination dated within the last five years. Vaccination was compulsory for those who entered the state service, scientific madrasas, the army and the *zaptiye* (city police), as well as for those who were recruited from the “*kur’a*” (selected by lottery) and “*redif*” (standby force) units, the *gendarmerie* and the police. *Muhajirs* (Migrants) who migrated to Ottoman lands were also required to be vaccinated in the region where they arrived. People were obliged to carry their vaccination certificates with them, and they could not enter schools, madrasas and industrial institutions without a vaccination certificate. Vaccination certificates were also required for marriage, travel and some official transactions (23).

The 1904 Vaccination Regulation, like the previous ones, emphasized that doctors, surgeons and vaccinators were obliged to vaccinate free of charge. Vaccine supply, the procedures and principles of vaccination, the time of vaccination, the institutions where vaccination would take place, how the vaccination certificate would be issued, how vaccination statistics would be kept and how the necessary controls would be carried out remained valid as in the previous regulations (23). In the 1904 Vaccination Regulation, the penalty procedures were expanded. Public and private schools, administrators of industrial establishments, shopkeepers, hoteliers and inn chamberlains were to be fined⁴ in accordance with Article 254 of the Penal Code if they admitted people without vaccination certificates (24). Parents who failed to have their children vaccinated within six months of birth would be punished in the same manner.

In addition, since vaccination had to be repeated every five years, school administrators, managers of industrial enterprises, shopkeepers, imams and *mukhtars* who did not have their children vaccinated and did not inform them of this situation were also held liable for fines in accordance with the same article of the law. Imams, *mukhtars* and shopkeepers who submitted official documents without a vaccination certificate were also to be punished in accordance with Article 254. Families who did not have their children vaccinated by vaccination

officials would first be warned and in case of a repeat offense, they would be fined two *medjidie*. In the 1904 Vaccination Regulation, as in previous regulations, the most severe penalty was given to those who took pus from smallpox patients and vaccinated others: A fine of 200-1.000 pennies would be imposed, and it was emphasized that if this harmed anyone, the offenders would be handed over to the court. According to the regulation, civil servants were obliged to assist in vaccination work, and those civil and military officials who did not comply with the provisions of the regulation would be subject to further penalties. The inspection of the implementation of the regulation in *İstanbul* and the provinces was given to the responsibility of the Ministry of Health. In the provinces, districts, accidents and sub-districts, local administrators were held responsible for unvaccinated children or deaths that occurred as a result of vaccination, and further penalties would be imposed on them (23).

Although the 1895 vaccination directive was revised in 1904, two articles were fundamentally changed. The 1904 directive stipulated that if doctors and vaccination officers failed to fulfill their responsibilities, they would be suspended from duty for the first time and dismissed in repeated cases. In addition, with this new regulation, it was decided that the fines would not be paid to the municipalities, but would be handed over to the Ministry of Health treasury to be used to cover the costs of the Imperial School of Medicine with the decision of the Assembly of the Ministry of Health and the approval of the Ministry of Medicine (25).

Vaccination Regulation (1915)

The last Ottoman vaccination regulation (*Telkih-i Cederi* Regulation) was issued in 1915 during World War I. This regulation, consisting of two sections and 18 articles, was revised based on the previous regulations, but also included some important changes. In the regulation, students, civil servants, those serving in the army, *gendarmerie* and police, and immigrants were again subjected to compulsory smallpox vaccination and the necessity of vaccination certificates was specified. The main difference in this regulation is that everyone in the Ottoman Empire up to the age of 19 was obliged to be vaccinated at least three times, while their parents were considered responsible for the vaccination of children. The duration of vaccination was determined as follows: The first vaccination was to be given within six months of birth, the second at the age of seven and the third at the age of 19. Those who had not been vaccinated during these periods due to any illness had to submit a doctor’s report stating their excuse, and the report had to clearly state the approximate time of vaccination (26).

³ Article 6: Lifetime rowing penalty. Article 10: Temporary rowing penalty.

⁴ Procedures were to be carried out according to the Penal Code of 1858: A fine from one white five to five white five.

The 1915 Vaccination Regulation, as in previous regulations, emphasized that vaccination officers would be sent to the entire Ottoman geography in order to carry out strict vaccination. In addition, the responsibilities imposed on local administrations, vaccinators and civil registrars were clearly explained to ensure that vaccinations were recorded. Doctors, surgeons, pharmacists and midwives would be able to vaccinate, and municipalities were responsible for providing them with sufficient number of vaccination certificates. In order to ensure that vaccination was carried out smoothly, it was stated that vaccination officers who did not comply with the instructions would be dismissed and further legal action would be taken against them. It was also stated that those who did not fulfill the obligations of the regulation would be punished in accordance with Article 99/3 of the Penal Code (26).

Discussion

With the proclamation of Tanzimat in the Ottoman Empire, important reform movements started in the field of health, as in every field, and regulations came into force one after another. Although the vaccine regulations came into force in 1883, many regulations on vaccination have been made since the early years of the Tanzimat. In 1840, the first will on vaccination was published under the title "Mekteb-i Tibbiye-i Adliye'de Meccanen İcra Olunacak Aşı Ameliyesi Hakkında İrade-i Seniyye-i Mübelliğ Buyruldu". Accordingly, it was stated that both those who could not afford it and those who were well-off and wanted to have their children vaccinated could take them to the Tibbiye-i Adliye-i Şahane (Imperial Medical Center) and receive smallpox vaccination free of charge through the doctors there. In 1841-1842, 1705 children were vaccinated here (27,28). In 1846, Reisületibbâ (Chief of Medicine) İsmail Pasha prepared a very detailed layiha (bill) for the execution of smallpox vaccination, which was discussed in the Supreme Court and Council of State and the Grand Assembly (29). Accordingly, the official announcement published in the Official Gazette on February 16, 1846 contained the decisive rules for smallpox vaccination. Accordingly, it was decided that vaccination would be carried out on a regular basis in order to protect children living in the Ottoman territories, especially in İstanbul, from smallpox. The vaccination service was carried out at Tophane-i Âmire, but it was planned to establish vaccination points in remote areas such as Eyüp, Yedikule and the Bosphorus, and to send doctors to ensure that people who could not afford it could have their children vaccinated. It was stated that a doctor would be assigned to the Bezmiâlem Valide Sultan Gureba Hospital to vaccinate children, doctors to be assigned to Üsküdar would provide vaccination services at the Ahmediye Madrasah, if a suitable place could not be found in Eyüp, vaccination would be carried out by renting a shop, and in the Bosphorus, instead of a specific center, a boat would be hired to carry out mobile vaccination in the villages and towns in the region. In order to vaccinate children born

especially during the periods when smallpox was prevalent, it was stated that this situation should be notified to the imams and mukhtars and the people of the region should be warned. In order to popularize the vaccination practice, it was deemed appropriate to prepare pamphlets in Turkish, Greek, Armenian and Hebrew, print them in the necessary quantities and give them to the doctors to be appointed to three branches of Anatolia and Rumelia. The doctors were to reside in the towns and cities for 15-20 days, "having some surgeons read the pamphlet and vaccinate a number of children", and after teaching them the vaccination procedure, they were to hand over their duties. In order to spread vaccination practices to a wider area, five literate children from each province were to be enrolled in the Imperial School of Medicine, two of whom were to be trained as junior surgeons, two of whom were to be trained in medicine and surgery for five years, and one of whom was to be trained in all fields of medicine for 15 years and become a competent doctor. Those who had completed their education were to be given a certificate of permission and sent to their hometowns, where they were to work in vaccination and epidemics (30). Towards the end of the year, a new set of principles regarding the principles of vaccination was determined. Accordingly, two children would be selected from each district with the consent of their parents: They had to be between the ages of 13 and 18, intelligent, talented and educated (having recited the Holy Qur'an at least a few times). These students would be enrolled in the School of Medicine, exempt from military service, and would return to their hometowns to serve after their education (31).

In the articles published in Takvîm-i Vekâyi (The Official Gazette), the importance of smallpox vaccination was repeatedly emphasized. It was stated that vaccinated children were never infected with smallpox and that the Sharia had issued fatwas on the appropriateness of vaccination. It was stated that although free vaccination was provided in İstanbul and provinces, deaths occurred due to those who were not vaccinated, and that this was due to the negligence of some parents in vaccinating their children. In order to eliminate such problems, it was stated that it had become an obligation to vaccinate all children who had not developed smallpox or had not been vaccinated. This situation was communicated to the public from time to time (32,33).

The notices published in Takvîm-i Vekâyi (The Official Gazette), were put into practice. During the Tanzimat Period, smallpox vaccinations began to be administered all over the Ottoman geography. Many doctors were assigned for this purpose, including children who came from the provinces to learn smallpox vaccination and graduated after receiving education, as stated in Takvîm-i Vekâyi (The Official Gazette). Especially with the establishment of the School of Medicine in 1867 and the beginning of civilian medical education, the process progressed even faster (34,35). Following the smallpox

epidemic in İstanbul in 1871, a Vaccine Inspectorate was established in 1872 and headed by Mr. Hüseyin Remzi. The aim was to ensure that vaccines prepared from strains (vaccine yeast) imported from Europe could be shipped quickly (4).

By the reign of Abdülhamid II, developments in the field of medicine and health in the Ottoman Empire had reached a very modern level compared to the period (36). During this period, while smallpox vaccine production continued at the Imperial School of Medicine, Dr. Giovanni Battista Violi (1849-1928), an Italian living in İstanbul, established a private vaccination house called Etablissement Vacciogéne (Telkih-i Cederî Ameliyathanesi) (Vaccination Facility) in Beyoğlu in 1880 and started to prepare smallpox vaccine from cow calves (Figures 4-6) (4).

Dr. Violi was rewarded many times by the Ottomans for his efforts during the smallpox epidemic in İstanbul, his free vac-

ination of poor children in the districts of the Beyoğlu Municipality, and his participation in international exhibitions.

During this period, many health regulations on plague, cholera, smallpox, syphilis and malaria were enacted. In 1883, with the provincial law specific to Eastern Rumelia, a regional regulation on smallpox vaccination was enacted and tested as a pilot practice in this region. The regulation clearly defined who would be vaccinated, when vaccination would take place, the duties and responsibilities of local administrations and health personnel, and penal sanctions (37). In 1885, a Vaccination Regulation covering the entire Ottoman geography came into force. It can be stated that this regulation was prepared by revising the 1883 regulation. Although both regulations had similar features in practice, the penal sanctions were limited to only one article in the 1885 Vaccination Regulation compared



Figure 4. Production of smallpox vaccine in the Etablissement Vacciogéne (Telkih-i Cederî operating theater): 1) Rumelian calf on which the vaccine will be produced, 2) Large vaccine boils on the abdomen of the calf five days after vaccination, 3) Small vaccine boils on the abdomen of the calf six days after vaccination, 4) The abdomen of the calf after obtaining the vaccine (43).



Figure 5. Dr. Giovanni Battista Violi's smallpox vaccination kit: 1) Smallpox vaccination tools and equipment set, 2) Smallpox vaccination tools and equipment exhibited at the 1884 Rome exhibition, 3) Smallpox vaccination tools and equipment exhibited at the 1887 Vienna and Pavi exhibitions, 4) Smallpox vaccination tools and equipment exhibited at the 1893 Chicago exhibition (43).

to the regional regulation. The practice of compulsory vaccination, on the other hand, has similar subtexts in both regulations and it was decided to be applied in institutions such as schools, state service, army, etc. (37,38). The Vaccination Regulation (1885) was followed in the same year by a regulation on vaccinators, which clarified issues that were not specified in the regulation or that needed to be reinforced (39).

After Pasteur introduced the rabies vaccine to the scientific world in 1885, an Ottoman scientific delegation consisting of Zoeros Pasha, Colonel Hüseyin Remzi and Mr. Hüseyin Hüsnü traveled to Paris and conducted studies at the Pasteur Institute. In addition to learning how to prepare and administer the rabies vaccine, the delegation acquired important knowledge in the fields of bacteriology and virology (37,38). Accordingly, the Dâû'l-kelb (Rabies) and Bacteriology operating room

was opened in 1887 and the Pasteur-style rabies vaccine was introduced (40).

Colonel Hüseyin Remzi, the Vaccine Inspector, who was one of the three people who went to Paris, made very important attempts to open a vaccination bureau in the Ottoman Empire (41). On January 24, 1891, Mr. Hüseyin Remzi sent a layiha (bill) to the Ministry of Medicine and Imperial School of Medicine in which he drew attention to smallpox and vaccine production and presented a bill for the opening of a vaccination bureau. Mr. Hüseyin Remzi mentioned the vaccination system and studies in France since he had been there: "The Paris Council of Experts has completely rejected the principle of "telkih-i cüderi-i bakariden telkih-i cüderi-i beşeri (producing human vaccine from cow smallpox vaccine)", which consists of inoculating a human being with cow vaccine and tak-



Figure 6. Smallpox vaccination by Dr. Giovanni Battista Violi and an Ottoman doctor (43).

ing the vaccine material from his arm and filling it with a pen, based on the facts of the case, and has approved to inoculate everyone with the fresh cow vaccine" (42). It was also stated that in France, private and official vaccination centers were established in every region with a Darülfünun (University). Mr. Hüseyin Remzi stated that the effect of the vaccine would be at the highest level by opening a vaccination center in the Ottoman Empire and vaccinating people with the "pure water of fresh vaccine flicks" obtained from calves. Thus, thanks to this method, there would be no need to import vaccines from private vaccination centers in France, and reliable and effective vaccines produced locally would be used instead of perishable imported vaccines. Mr. Hüseyin Remzi's proposal was received very positively by the Minister of Medicine (42). Since the vaccination bureau could not be established despite all these attempts, it was suggested that instead of importing vaccines from Europe, vaccine production should start in the calf barn in the Tufeylat-ı Hayvaniye (Husbandry) operating room. It was also important to get the vaccination center up and running as soon as possible, as "people of fi'l-yevminâ-hazâ" objected to being vaccinated with human vaccine (44). As a result of these initiatives, Imperial Vaccination Bureau was opened in July 1892 in the Tufeylat-ı Hayvaniye Ameliyathane (Husbandry Operating Room) (Figure 7) (45).

In 1894, Imperial Vaccination Bureau moved to a special wooden building with four pavilions in the garden of the School of Medicine. The start of vaccination activities by the Imperial Vaccination Bureau and the emergence of new de-

velopments in vaccination studies necessitated the revision of the 1885 vaccination regulation. Enacted in 1894, the vaccination regulation was more systematized while incorporating the previous regulations. It can be stated that the control over the population administration, local administrations and health officials tightened. In order to ensure that vaccination is carried out in a controlled and strict manner, penal sanctions were expanded compared to the previous regulation. With this regulation, vaccination certificates began to be prepared in a very organized manner. In order to reinforce the procedures and principles of the regulation, a directive was published in 1895 (46,47). Between 1893 and 1896, 1,156,767 children were vaccinated at the Imperial Vaccination Bureau under the directorship of Mr. Hüseyin Remzi (48). After Mr. Hüseyin Remzi's death in 1896, Dr. Hasan Zühtü Nazif was appointed as the director of the Imperial Vaccination Bureau, but he died of typhus during the Greek-Turkish War of 1897. For this reason, Dr. Rifat Hüsametdin, who had studied bacteriology at the Grâce Military Medical School, the Pasteur Institute and worked as an instructor of pathological anatomy at the Imperial School of Medicine was appointed as the director of the Imperial Vaccination Bureau and held this position until 1913 (4).

Following the establishment of the Imperial Vaccination Bureau, it was aimed to vaccinate all the inhabitants of the Ottoman geography. However, sending vaccines to distant parts of the state caused the vaccines, especially those sent to hot regions, to spoil. For this reason, since the beginning of the 20th century, vaccination bureaus were opened in many

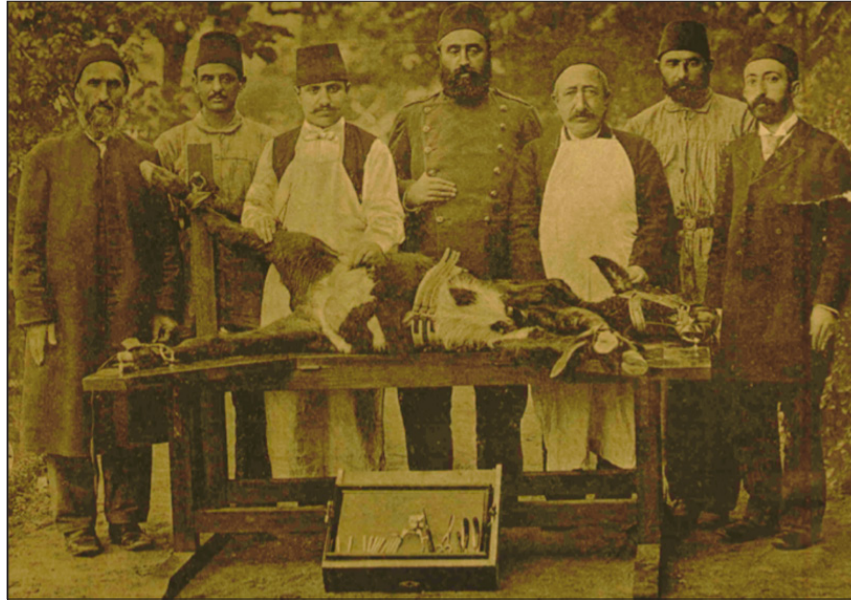


Figure 7. Smallpox vaccination at the Imperial Vaccination Bureau (In the middle: Mr. Hüseyin Remzi), November 1892 (52).

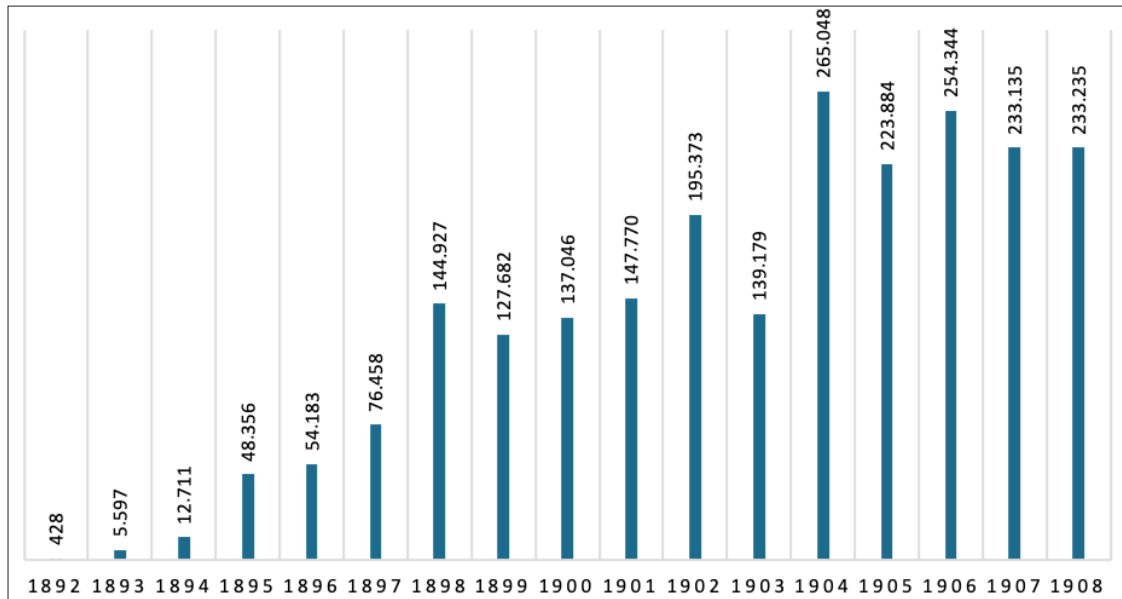
regions, especially in Yemen, Basra, Hejaz, Syria, Mosul and Aydın (49). As a result of the vaccination bureaus opened in various parts of the Ottoman geography in addition to the Imperial Vaccination Bureau and the acceleration of vaccination, the Vaccine Regulation and Instructions were updated again in 1904 after 10 years. The 1904 Vaccination Regulation was prepared in a very comprehensive manner and care was taken not to leave any loopholes in the legislation. A new phase began when vaccination was made compulsory in schools and official institutions, as well as for marriage, travel and various official affairs. Since the vaccination practice was intended to yield full results, penal sanctions were increased and institutions and organizations were given more responsibility. Only a few minor changes were made in the instructions prepared in parallel to the regulation (50,51).

According to the statistical information provided by Kemal Muhtar, Director of Telkikhane-i Osmani (Ottoman Vaccination Bureau), Imperial Vaccination Bureau produced 2,299,356 smallpox vaccines from its foundation until 1908. Vaccine production in the institution has generally increased and a certain level of vaccine production has been achieved over the years (Figure 8) (Graphic 1).

Following the proclamation of the Constitutional Monarchy II, the name Imperial Vaccination Bureau was changed to Ottoman Vaccination Bureau (Figure 9). Even though the higher authority to which the institution was affiliated was changed frequently, the existing structure was preserved under the directorship of Mr. Rifat Hüsameddin and 3,334,271 smallpox vaccines were produced until 1914 (4).



Figure 8. Smallpox vaccine production in the Imperial Vaccination Bureau (43).



Graphic 1. The number of smallpox vaccines produced by years in the Imperial Vaccination Bureau during the reign of Abdülhamid II (53).



Figure 9. Imperial Vaccination Bureau Director Rifat Hüsameddin, Ottoman Vaccination Bureau after 1908 (43).

Kemal Muhtar (Özden) replaced Rifat Hüsameddin Pasha as director of the Ottoman Vaccination Bureau in July 1913. Meanwhile, Şerafettin Mustafa, an assistant, was sent to the Pasteur Institute, where he received training and gained important knowledge on vaccination, disinfection and sterilization. Upon the outbreak of World War I, the Vaccination Regulation was revised again in 1915. The main change in this regulation was that all Ottoman citizens up to the age of 19 had to be vaccinated at least three times. Ottoman Vaccination Bureau ensured that 27.688.449 doses of smallpox vaccine were sent to Anatolia during the war (4,28,54).

Conclusion

Before the discovery of smallpox vaccine in Europe, the variolation method was practiced in the Ottoman lands, and this method was carried to England from the Ottoman Empire and inspired modern vaccination processes. The new smallpox vaccine developed by Edward Jenner began to be used in Ottoman territories from the 1800s onwards, and legal and administrative arrangements were made to ensure its effective use. The Ottoman Empire took important steps in protecting public health and combating infectious diseases

since Tanzimat and adopted a systematic vaccination policy, especially during the reign of Abdülhamid II, to popularize the smallpox vaccine. Vaccination was not only seen as a medical procedure, but also a legal obligation. The Vaccination Regulations are important regulations that ensure that vaccination is carried out by the state and include the obligation to vaccinate, the authorization of vaccination officers, the recording of vaccination processes and the establishment of supervision mechanisms.

The regulation, which was initiated regionally in Eastern Rumelia in 1883, soon spread throughout the Ottoman geography and was updated and made more comprehensive in 1885, 1894, 1904 and 1915. In addition, instructions were enacted to increase the effectiveness of the regulations and vaccination practices. In this process, smallpox vaccine was produced domestically through institutions such as Imperial Vaccination Bureau and provincial vaccination bureaus, and the vaccine was made available to large masses of people.

The Ottoman administration regulated not only the administration of the vaccine, but also the movement of unvaccinated individuals in society, making vaccination certificates compulsory in many areas such as school enrollment, military service, entry into state service, and even marriage. Thus, beyond being an individual health measure, vaccination was considered as an institutional process that secured public health. The Ottoman vaccination regulations are pioneering in terms of developing a state policy for public health. This historical legacy forms the basis of today's immunization programs and demonstrates the importance of legal, institutional and medical integration in the fight against infectious diseases.

In the Ottoman Empire, global developments in immunization were closely followed, legal arrangements were made at the highest level, and public health was protected amidst great economic hardship. The fact that there is still no significant legal regulation on vaccination today, despite the rapid medical development and thousands of evidences on the importance of vaccination in the past 150 years, is a matter that needs to be seriously considered. As one of the most important preventive health services, the Ottoman approach to vaccination and vaccine production is a model for all countries. It would be beneficial to examine this perspective, which is the product of hundreds of years of accumulation, in much more depth.

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