The Role of Medical Schools in Handling the Outbreaks in the Dutch East Indies

Djoko Marihandono[1,*]

[1] *History Department, Faculty of Humanities, Universitas Indonesia*
[*] *Corresponding author. Email: djoko_marihandono@yahoo.com*

ABSTRACT
The current pandemic is not the first for Indonesia. Indonesia had dealt with several outbreaks during colonial times. To cope with the emerging plague and the limited budget to bring medical personnel from the Netherlands, the colonial government sent all Javanese doctors throughout the Dutch East Indies region. The doctors were stationed on remote islands or in big cities to serve public health for fighting against smallpox, bubonic plague, cholera, and fever that were common in this region. When there was the Spanish Flu pandemic in 1918, not only the graduates but also the students of STOVIA were sent to several regions to fight the Spanish Flu. Aside from being medical personnel, they also taught people to live healthy to prevent disease. This article uses a narrative methodology as its historical method, which is connecting one event to another based on a causal relationship. Primary data used in this article are several archives from the National Archives of the Republic of Indonesia in Jakarta and the Leiden Library in the Netherlands. Meanwhile, secondary data, printed data such as newspapers and contemporary were taken from the National Library of the Republic of Indonesia and the Library of the University of Indonesia. STOVIA, represented by its teachers, graduates, and students, has fully participated in handling the various outbreaks in the Dutch East Indies, particularly the Spanish Flu pandemic that hit this region in 1918.

Keywords: *STOVIA, Spanish Flu, Influenza Ordonnantie, The Handling of Outbreaks Pandemic*

1. INTRODUCTION

Historical data indicates the spread of the smallpox outbreak throughout Java, particularly in cities along the Java seacoast towards the end of 1848 due to the dirty air from the swamps of the coastal areas. Governor-General JJ Rochussen summoned the Head of the Military Health Service, dr. W. Bosch to discuss how to deal with this outbreak. The Dutch colonial government planned to recruit native personnel to be trained as vaccination officers. This idea came up due to the difficulty and limited cost of bringing medical personnel from the Netherlands to the Dutch East Indies. He proposed the establishment of a medical school for native Indonesians, which were independent, separate from the existing military institutions in the region. Eventually, he issued Decree No.2 dated January 2, 1849, regarding the establishment of the school [1].

Based on this decree, the Dutch government planned a two-year education for 30 Javanese youths who will serve as medical personnel and vaccination officers in fighting unresolved smallpox and the new outbreak called cholera. This plan had to be realized soon in 1851 and the graduates would be placed in the Central Government Health Service as vaccination officers [2].

Referring to the decree, the Governor-General, in 1850 the Dutch government opened registration for 12 prospective students consisting of 6 students in *Weltevreden*, Batavia and 6 students in Surabaya. The Health Service would build houses as student dormitories in *Weltevreden*, Semarang, and Surabaya. The government also provided other facilities such as laboratories, educational tools, and books. However, due to limited funds, this school was only built in *Weltevreden*, Batavia. In 1853 the school, named the Javanese Doctor School, had managed to graduate 11 doctors. Based on the Decree of the Governor-General number 10 dated June 5, 1854, the graduates were given the title *Dokter Djawa*.

Furthermore, according to the request of the community, this school carried out several reorganizations in 1864, 1875, 1881, 1890, 1902, and 1913. The Javanese Doctor School was renamed the Indigenous Doctor School (*Inlandsche Geneeskundige School*) after the reorganization in 1875.

When the school building moved from the military hospital to the new building next door in 1902, the *Inlandsche Geneeskundige School* was renamed *School tot Opleiding voor Inlandsche Artsen* or better known as STOVIA. The name change had an impact on changing the medical school curriculum. Prospective students not only came from Java but from all regions in the Dutch East Indies. Before the medical school was moved to Salemba in 1919, the name of this institution was changed back to School tot *Opleiding voor Indische Artsen*, also abbreviated as STOVIA, in 1913, and all

residents of the Dutch East Indies, such as Europeans, Arabs, Chinese, and Moors, were allowed to follow this education.

By employing the narrative method, this article discusses the role of medical schools in dealing with disease outbreaks that emerged in the Dutch East Indies. Regarding data collection, this article uses a heuristic method, based on the theme, period and place of events in the past. The data includes colonial archive collections from ANRI (National Archives of the Republic of Indonesia), documents from Leiden University in the Netherlands and the National Library of the Republic of Indonesia. Primary data in the form of a collection of Governor-General Decrees is obtained from ANRI's *Algemeen Secretarie* collection. The STOVIA annual report is from the *Jaarlijke Verslag School Tot Opleiding van Inlandsche Artsen* bundle of the period 1902-1920 in the Leiden University manuscript room [3]. Contemporary sources including newspapers are from the National Library of the Republic of Indonesia, in Gambir and on Jalan Salemba, Jakarta. Secondary sources such as the book *Ontwikkeling van het Geneeskundig Onderwijs te Weltevreden: 1851-1926* [4] and old magazines and printed sources *Koloniaal Verslag* are obtained from the Library of the University of Indonesia.

It is not required for this writing material to go through a source criticism process, both internal and external, since all materials in this article are obtained from the official and authoritative archive and library storage centers, both in Indonesia and in the Netherlands. Thematically the subject matter of this article is limited to the role of STOVIA in dealing with the pandemic that emerged in the Dutch East Indies, both by its lecturers and students.

2. BERIBERI AND SWAMP FEVER

In September 1877, the Director of the Naval Base on Onrust Island, sent a letter to the Health Service in Batavia HB van Daalen to assist the handling of the beriberi and fever outbreaks caused by mosquitoes from the swamps, which had claimed lives. From September to December 1877 there were 14, 8, 4 and 16 employees died, while there were 53 and 59 people died in January and February 1878 [5]. Meanwhile, it was reported that the number of workers hospitalized in early March 1878 was 150 people.

The assignment of several Javanese doctors and military health officers was then a response to the letter. However, the supply of drugs was insufficient, so that the medical personnel only took care of the patients, without administering drugs to patients. Even though there have been many casualties, within 5 months, the epidemic of this disease was well contained.

In 1879, a Javanese doctor was sent to Lumajang, after the Health Service in Batavia received reports of smallpox outbreaks in Pasirian, afdeeling Lumajang. To reach the pandemic area, the Javanese doctor had to cover a distance of 20 paal (1 paal equivalent with 1057 meters), which cost f 25 for round trip transportation. Given the rapid contagious smallpox, four Javanese doctors were sent to the southern region of Lumajang [6]. With so many sufferers, the patients were laid in a pavilion owned by a rich resident of the area. Several people died from the disease. The smallpox outbreak eventually spread to the Gresik area and caused other social problems, for example, conflicts between residents since the sufferers were not handled properly [7].

Table 1. Number of Patients of Swamp Fever in Several Cities in Java [8].

Number of Patients of Swamp Fever in Several Cities in Java				
Region	**Number of Patients**	**Recover-ed**	**Treated**	**Died**
Banten	927	161.367	162.294	33.245
Batavia	89	13.735	13.824	1180
Tegal	681	13.587	14.268	566
Pekalongan	142	258	400	7
Semarang	2466	82.208	84.647	4849
Jepara	481	7389	7870	1658
rembang	1307	90.321	91.628	5144
Probolinggo	1501	11.905	13.406	2043
Banyumas	1327	3117	4444	447
Kediri	302	87	389	9
Banyuwangi	307	3381	3751	702
Madiun	-	65	65	1
Krawang	-	2779	2779	82
Surabaya	-	639	639	254
Madiun	-	12.340	12340	1480

The government's quinine plantations prepared hundreds of thousands of pounds of quinine in Java to handle the swamp fever. Doctors and community leaders clashed over the decision to isolate sufferers far from residential areas. Many people resisted when their family members had to undergo isolation elsewhere. To avoid isolation, according to reports from members of the Regional Health Service, many community members hid or fled for fear of being exiled. This led to a high number of casualties.

When people were not monitored, they ignored the quinine pills given to them and enjoyed their rujak, cassava, salted fish, and coconut water. Consequently, they had severe diarrhea. They also did not take other advice from health workers. They still went to the fields and took a shower when they had a fever. Thus, although the government targeted the sufferers to recover within three days, it did not happen. Unwillingness to take medication, wrong perspectives, and health illiteracy thwarted efforts to contain this epidemic.

Furthermore, the report of the Central Health Service HB van Daalen, also quoted in the complaint of the Banten resident Metman, that the population often did not obey orders given. What the government has done was limited to sending doctors of Java and distributing quinine pills. The quinine pills were not distributed to the

sufferers but were sold in private hospitals and not handed over to patients [9].

On November 5, 1880, it was reported from Madura that cholera outbreaks occurred sporadically within the Madurese population. The number of victims died in cities was less than in rural areas, particularly in villages. The local government has closed several schools in Sumenep since the cholera outbreak hit the population very quickly and caused the death of several people in just a few hours. By the arrival of Javanese doctors to Sumenep, many people were saved, including one European. The doctors faced a limited supply of drugs. Thanks to the help of shop owner T. Van Duine for the free medicine that made many indigenous residents saved. The Assistant Resident of Madura and his staff taught people to always maintain cleanliness and prevent the sale of rotten fruit. He mobilized the police to take out the smuggled fruit for sale. Police threw watermelons and young mangoes into the river. Yet, after the officers left, several residents plunged into the river to compete to take the fruits back [10].

As reported at the end of October 1894, along the east coast of Lombok, there had been a large-scale smallpox outbreak affecting the Sasak population. The head of the local government requested medical assistance by bringing in a Javanese doctor and a vaccine officer. Inspector of the Public Health Service, doctor AG Vorderman, assisted by Controller Engelenberg, made a visit with the smallpox vaccine along with him. The smallpox outbreak could only be overcome after all citizens were vaccinated [11].

Figure 1 The Smallpox Vaccination was carried out by a Javanese Doctor in Lombok around 1900 [12].

3. UTILIZATION OF CREOLIN PILLS

Towards the end of the XIX century, the colonial government through the Central Health Service asked all people, individually and in groups, to participate in overcoming the frequent outbreaks in the colony. A doctor from a plantation company tried to educate the workers to live a healthy lifestyle and to take medication regularly as recommended by the doctor when they were sick. Any community member who had swamp fever should take quinine pills, or for any family members who had cholera, they should take 5 grams of creolin pills for prevention. Unfortunately, the lack of supply of the two drugs became the frequent obstacle in handling the outbreaks. In Yogyakarta, Indramayu, Purwokerto, Banyumas, native residents voluntarily used creolin for its easy availability. Yet, in Surabaya people refuse to take creolin pills. The strong smell caused the rejection [13].

In early 1899, the Central Health Service issued a circular declaring one Javanese doctor would be assigned for each residency. The doctor's job was not only to deal with the population when hit by an epidemic but also to maintain public health. The residents welcomed this Circular. Yet, since the number of Javanese doctors was still limited, not all residencies had a doctor. For example, doctor Raden Suryadarma has been transferred from Medan to Java to support the smallpox outbreak handling on the Javanese coastal areas. A resident of Medan, Kooreman, asked for help from the Head of the Central Health Service, but the request was refused due to a lack of Javanese Doctors. The rejection was also based on the existence of military doctors in the city, who had been granted permission to practice outside military service hours [14].

Given the many diseases in this area, some Javanese doctors assigned to remote islands had to be relocated. Officials from the Ministry of Education, Religion and Industry submitted a proposal to the Central Health Service to transfer a doctor from Bawean. Following the transfer, the outbreak occurred, and the controller asked the Health Service to send back the doctor, otherwise many patients would have to be sent to Gresik and Surabaya, yet his attempt was unsuccessful. He finally had to take the role of a doctor, distributing quinine and Kastroli pills [15]. Sometime later, cholera began to spread in other areas such as Lebong Soelit near Medan, Klaten, Makassar, Padang, Bangkalan, and several other areas [16].

While the Cholera outbreak has not ended, reports mentioned the rise of swamp fever outbreaks in Klaten, Central Java. A person who recently visited Bangkalan, Madura, reported that a fever outbreak had also hit Madura, especially in Bangkalan, Sampang, Ketapang and Banyuates. The number of sufferers was 2,100 people. The Javanese doctor assigned in Bangkalan reported that the number of sufferers was increasing over time. This outbreak had turned into a pandemic, as it spread throughout the Dutch East Indies. The news was also reported from the Kangean islands, Sapekan Island in Madura, Cilacap, and several other areas. This news was also published in several newspapers in the Dutch East Indies such as *Het Nieuws van den dag voor Nederlandsch Indie*, *De Preanger Bode*, *Algemeen Handelsblad*, *De Sumatra Post*, *Het Vaderland*, and *Bataviaasche Nieuwsblad*, published in 1910-1917.

4. SMALLPOX, BUBONIC PLAGUE AND SWAMP FEVER OUTBREAKS

To overcome various outbreaks in the Dutch East Indies, on December 12, 1916, the Indies Foundation under Prof. JH Boeke, director of STOVIA, invited doctors in Java and its surroundings (both Javanese and European doctors) to talk about how to deal with frequent smallpox and bubonic plague outbreaks. He hoped that doctors will be more independent in dealing with the plague which was spreading and increasing in number. Therefore, the doctors on duty will be equipped with vaccine equipment and several drugs often needed by the community [17].

In Madura, four to five people die from the bubonic plague per day. The government sent several Javanese doctors and isolated the affected areas. A local security organization, *Barisan Madura*, was involved to prohibit residents from going in and out infected areas. Several markets, schools and community meeting halls were closed. In Solo, doctors introduced natural treatment, that is consuming as little solid food as possible and administering drugs made of seaweed. Patients were required to drink lots of water, then covered themselves with a 4-layer blanket to make them sweat. Although this healing method was still in doubt, some affected areas followed the same [18]. In Yogyakarta, the number of patients decreased by 551 patients within a few months, so that it was 1,386 in total [19]. From the records of the Central Health Service, there was the fever outbreak in Central and West Java. So quickly this disease spread, the number of victims in Cilacap at the end of 1917 reached 39,821 patients with a death toll of 7,739 people. In Indramayu, 20,093 people were having this fever and 4,591 of them died. The most affected areas were the common areas for malaria. Since these two diseases had the same symptoms, the doctors used the same drugs [20].

5. THE ARRIVAL OF SPANISH FLU IN THE DUTCH EAST INDIE

When the government was preoccupied with eradicating the bubonic plague, a mysterious disease emerged in Medan carried by the passengers and crew of the Maetsuyker ship who had just docked at the port of Belawan. The ship departed from Singapore to Medan. All the passengers and crew exposed to this mysterious disease. Transmission via ships from Singapore recurred when the Singkarak ship docked at the Belawan port. The passengers and crew were also exposed. The ship Treub which dropped 35 passengers in Belawan also experienced the same. Through radiograms, the captain of Lematre, departed from Bangkok to Medan via Singapore then to Batavia, was also reported to have dropped off his passengers exposed to the high fever and shortness of breath. The captain reported that at the Singapore port, no porters were found since they were exposed to this deadly virus. As these ships from Singapore docked in Medan, 60 police officers of the town got infected in a relatively short time. The day after the report, 100 Chinese porters were known to have died around the same time. It was confirmed that the Chinese coolies were also exposed to this new virus. People know this disease as Spanish influenza, Vlam influenza, or Russian influenza, some even call this virus the Dutch virus, but the Dutch government did not like the use of the term [21].

The rapid transmission of the virus made doctors overwhelmed. A huge number of patients needed to be hospitalized in a relatively short time. Due to the limited capacity, many patients were forced to bring their own sleeping mats and occupy the hallways of the hospital. Doctors only gave quinine pills since that was the only medicine provided by the government [22].

To cope with the Spanish Flu pandemic with its fast transmission, rural communities carried out several rituals, such as performing disaster repellent ceremonies, fasting, reciting prayers in congregation. They were happy when the rain came since they believed that rainwater could shed all diseases. This has hampered the government's work in dealing with the Spanish Flu in its early spread. In fact, since June 23, 1918, the public health situation in Batavia was very poor. Seventy-seven prisoners in Batavia prison were exposed to this virus. At the state railroad company in Batavia, there were 90 brake engineers, 22 machinists and 43 customs officials infected. Not only among the private sectors, but this virus also attacked the army. In Meester Cornelis near Jatinegara area, in the dormitory of the 16th Battalion, 100 new military patients were found every day. *Weltevreden* military commander Major Smits along with his two aides were also infected [23].

The STOVIA laboratory reported that the Spanish flu attacked the mucous membranes that made the patient experienced very severe inflammation, persistent coughing, sneezing and fever. Medicines usually given to patients, such as quinine pills, did not affect the patient's recovery. Given that doctors have not been able to solve this problem, after receiving instructions from the Central Health Service, Javanese doctors must educate the population to maintain the health of community members. Doctors urged everyone to leave public places and stay away from crowds if they cough or sneeze or stay away from other family members if they cough or sneeze in the house. They also raised awareness of not spitting or salivating anywhere while eating betel.

In October 1918, almost all areas in the Dutch East Indies were confirmed to be infected with the Spanish flu. The ship Daendels bound for Majene carried passengers infected the virus. When the ship returned to Makassar, it turned out that many citizens already had the Spanish flu. Semarang was not free from the pandemic. The hospital in Semarang was reportedly packed of patients, most of whom were members of the army. As many as 30 per cents of members of training squadron *Kompi Latihan II* must be treated at this hospital. In Probolinggo and

Mojokerto some railway employees were reportedly infected. Apart from these cities, the flu began to reach Bandung. Chinese schools, public schools were closed because some of their students were infected [24].

Javanese doctors and STOVIA students were deployed throughout the Indies to concentrate on suppressing the spread of disease and healing patients. For this purpose, the Colonial Government planned to build an emergency hospital aside from the existing hospital. The government will immediately build emergency hospitals in Cirebon, Bandung, Sukabumi, Garut, Palembang, Medan, and Makassar. For its implementation, the Regional Health Service must coordinate with the local Military Health Service [25].

After more than three months, the number of infected people continued to increase due to a lack of discipline among the community. STOVIA students were sent to Padang, Bengkulu, Kepalang, and Makassar to give education on healthy lifestyle to the public. In Padang, the mortality rate was very high. Their arrival was able to replace the doctors who died from this virus. In Makassar, 102 people died every day, even on November 3, 1918, it was reported 204 people died in a day and all of them were native residents [26].

The situation in Batavia was not much different. 50 per cent of the people died. Most of them suffered from influenza, pneumonia, and shortness of breath. The Health Service was deemed to have acted too late since they had just learned that this virus was transmitted through the air and disinfectants could not be used. Also, the medical personnel at STOVIA, both teachers, tutors, and students, have been distributed throughout the Dutch East Indies [27]. This is what urged the Governor-General to report to the Minister of Colonies in The Hague. Finally, the Minister of Colonies ordered to form a commission to produce a decision, among others:

a. Doctors are obliged to warn regional heads if the death rate due to this pandemic continues to increase;

b. Distributing food and medicine to the population;

c. Overseeing the drug supplies of the area;

d. Conducting outreach to residents on maintaining oral and nail hygiene;

e. Wearing masks according to predetermined rules, namely 4 layers;

f. Making rules conveyed in various languages for the public understanding;

g. Providing small, fast-moving boats to transport medical personnel to remote islands;

h. Requesting the government to prepare regulations at the level of the Law regarding Influenza regulations [28].

The government in The Hague saw the lack of good coordination between the local and central government in the colony as a weakness, compounded by the indiscipline of the community. Therefore, rules governing the discipline of the population were needed.

With the issuance of the Influenza Ordonnantie on 20 October 1920, people were legally sentenced with a fine of f50 or 6 day-imprisonment for violating health protocols. Meanwhile, any captain who failed to report the ship crew infected with the Spanish flu was deemed to have violated the law and could face one year-physical sentence or a fine equal to f 2,000. STOVIA students were asked to participate to warn the public if they violated this law and reported it to the authorities.

6. CONCLUSION

STOVIA students and graduates played an active role in dealing with various epidemics in the Dutch East Indies colony, particularly those that caused many casualties of the indigenous population. They took control in enforcing community discipline to maintain public health, to not coughing, sneezing, and spitting in public places.

By the issuance of Influenza Ordonnantie, their position as medical personnel were important since they had a legal basis to coordinate with local officials, both residents, controllers, and at the same time to liaise with regional and central health service. They were also set to be independent, equipped with medicines and tools they never had before, to cope with the frequent shortages of drugs and health facilities used to happen. The Health Commission has guaranteed the need for medicines and medical equipment.

It was far from easy to eradicate the outbreaks in the Dutch East Indies region since the public had a very low discipline. It is estimated that one million people became victims of the ferocity of the Spanish Flu virus, including Europeans, Chinese, Arabs, Moors, and native peoples.

Aside from providing medical services, STOVIA medical personnel must educate the public to maintain public health. With modest equipment, it is not uncommon for these medical personnel to also have the risk of being exposed to a virus. Many of them were also victims of the vicious virus.

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