

Smallpox vaccination in Nias Island, Indonesia, 1854-1915

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Abstract. Nias Island, during the Dutch colonial period, became one of the strategic areas owing to its location in the commercial route of the maritime area of the west coast of Sumatra, which directly contributed to the contact between its inhabitants and the outside world. It was common that contact with the outside world opened up opportunities to spread several types of infectious diseases, including smallpox. Smallpox had caused fatal damage and fear in the local population due to the high death rate and the threat of economic devastation to the population. Therefore, the Dutch colonial government attempted to overcome smallpox on Nias Island by introducing a vaccination program. This article aims to investigate the extent of the intervention of the Dutch colonial state in carrying out measures to eradicate smallpox on Nias Island.

Key words: Epidemic, Indonesia, Nias Island, the Dutch colonial state, smallpox, vaccination

Introduction

Health is among the essential things in the continuity of life and prosperity of human beings. In the 21st century, the whole world is worried about the spread of various disease outbreaks whose consequences are fatal as they threaten the health and continuity of the world's population. The disease outbreaks include SARS, Anthrax, MERS, Avian Flu, Swine Flu, Ebola and Covid-19. These epidemics have made many exposed countries overwhelmed in anticipating them, including Indonesia. If examined further, the case of disease outbreaks is not new in this country since epidemics have occurred repeatedly and affected the life of the Indonesian population in the past. Even early Europeans dubbed this island as a region of the unhealthiest places in the world (1).

Among the deadly disease outbreaks that hit the Indonesian Archipelago in the past include malaria, dysentery, cholera, influenza, beriberi and smallpox. Of all these diseases, smallpox was the most fatal, resulting in a high mortality rate and making some areas to experience depopulation. Therefore, it is not surprising that smallpox terrified residents; even Europeans who were familiar with this disease also had a fear of contracting smallpox.

The ferocity of the smallpox epidemic in the Indonesian Archipelago at that time was the same as in other areas of the world. When compared to deaths from smallpox during the 18th century, the percentage of deaths was about one-sixth in Europe, while the mortality rate was about one-third of the population in Maluku, one-fourth of the population in Timor and one-third of the population in Bengkulu (2-3).

Based on Boomgard's calculations, the smallpox epidemic in the Dutch East Indies during the 17th century occurred about 12 times, while the 18th century witnessed its occurrence about 13 times. In the 19th century, the smallpox epidemic was much broader, covering Maluku, Timor, Sulawesi, Kalimantan, Java and Sumatra. In the report of British officials in Bengkulu, smallpox deaths in Sumatra were as deadly as in Europe (2, 4).

In Sumatra, smallpox did not only occur in coastal cities where the population was dense and it was common to interact with outsiders in commercial activities but also spread to remote areas where many local populations lived, such as in Kubu (Jambi and South Sumatra), Mandailing and Sipirok (Tapanuli-North Sumatra) and Nias Island off the west coast of Sumatra (North Sumatra) (2, 5).

Information about smallpox infecting the people

of Nias Island was first reported by Dr Willem Bosch, Head of the Dutch East Indies Military Health Service, in 1832. At that time, Bosch was in the city of Padang, and he inspected a ship that had just arrived from Nias Island with slaves to be employed on the plantations of the Dutch colonial government in West Sumatra. From his inspection results, Bosch discovered that some of the slaves had smallpox (6).

The Bosh report indicates the first exposure to smallpox on Nias Island at that time. However, the Dutch colonial government did not initially take precautions until 1854. This was because Nias Island was still an independent territory. However, along with *Pax Neerlandica*'s policy to 'liberate' the indigenous population from endless tribal wars, the custom of beheading, barbarism and exploitation by tribal chiefs against the

population became the reason for the Dutch colonial government to be present on Nias Island.

Methods

This article discusses how the Dutch colonial government eradicated smallpox in Nias Island by introducing a vaccination program from 1854 to 1915. As mentioned by historian Peter Boomgaard, the topic of history regarding the eradication of smallpox outside Java has not been written. Hence, this study aims to reveal the process of eradicating smallpox in Nias Island to contribute to the development of writing a social history of health in Indonesia.

The research problems included how were the



Figure 1. Nias Island.

spread, frequency and virulence of the smallpox epidemic on Nias Island and to what extent did the Dutch colonial government take measures to eradicate the smallpox epidemic by introducing a vaccination program, including the obstacle to vaccination in Nias Island. To obtain answers to these problems, this study utilised the historical method consisting of four stages, namely heuristics, source criticism, interpretation and historiography. In the heuristic stage, primary and secondary sources were collected. The primary source included the archives of the Dutch colonial government that were traced to the National Archives of the Republic of Indonesia, Jakarta. Meanwhile, secondary sources involved press briefs from the Dutch colonial government, zending records, contemporary travel/researchers records, along with books and journals obtained from the National Library of the Republic of Indonesia, Jakarta. After the heuristic stage, the next stage was source criticism. Source criticism is divided into external and internal criticism. It aims to verify the sources used in a writing. The next stage is interpretation, namely the interpretation of the facts that have been found both in the form of analysis and synthesis. In this study, the analysis used was qualitative. The final stage of this process was historiography, namely the process of writing as a historical construction.

Terror of the smallpox epidemic

Inadequate information is available about the diseases suffered by the inhabitants of Nias Island before the 19th century. William Marsden's 'History of Sumatra', first edition in 1783, is the only earliest reference to the first European ethnographic report on Nias Island. In his work, Marsden mentioned skin diseases commonly affecting the inhabitants of Nias, such as leprosy and herpes (rash and itching on the skin) or ringworm (3). No information was available for other infectious skin diseases including smallpox until Dutch authorities were on the island in the mid-19th century.

In the 19th century, the first information that said the inhabitants of Nias were exposed to smallpox was the statement of Dr Willem Bosch, Head of the Dutch East Indies Military Health Service, as quoted by Boomgaard:

"We found that when a boat sailed from Nias to Padang in 1832 transmitted smallpox to an unsuspecting and unvaccinated population, 17% of these people were killed by this disease" (6).

The Nias people referred to in the quote above were slaves who were deliberately transported from their native area in Nias Island to be employed on European plantations on the west coast of Sumatra (7). Willem Bosch, who was in Padang city at the time, realised that some of the slaves had smallpox. Therefore, Bosch attempted to take preventive measures by separating slaves infected with smallpox and vaccinating them and those who interacted with the slaves. Otherwise, the transmission percentage would be much higher (6).

If the slaves transported from Nias Island contracted smallpox, this means that smallpox had already existed before the Dutch authorities arrived on this island in 1840, which can be related to the previous explanation that the inhabitants of Nias Island had long interacted or established commercial activities with many nations. The openness of Nias Island to world trade traffic had allowed smallpox to spread to the inhabitants of Nias as smallpox in the Indonesian archipelago was considered an imported case (2).

Since the Dutch authorities were in Nias Island, the first smallpox epidemic occurred in southern Nias in 1857 infecting almost half of the Dutch soldiers in Fort Lagundri. The smallpox epidemic in this area coincided with malaria and dysentery. As a result, many Dutch soldiers died. Lieutenant Heiligers, head of the Dutch military forces in South Nias, had to be evacuated to Sumatra for treatment. Meanwhile, the remaining Dutch soldiers in Fort Lagundri finally had to leave the fort, heading for Gunung Sitoli. The ferocity of the smallpox epidemic in this region was undoubtedly very detrimental to the Dutch Indies as many soldiers eventually died, leaving the southern part of Nias without military supervision (8-9).

In 1886, Elio Modigliani, a young Italian explorer, visited Nias Island's southern interior and west coast. There, he found many villages destroyed by the smallpox epidemic, such as the villages of Halambava, Hilidaura, Baloho, Lolomaia, Tohoovo, Tuheberau and Hili Lagia. In Halambava, nearly half of the popula-

tion fell victim to the ferocity of this epidemic, including the children of King Sanaiao (King Halambava) (10). Elio described smallpox as follows: *“At that time, I learned a lot about the knowledge of Nias people’s medicine... Among the most incurable diseases, the most serious and whose consequences often result in many deaths in Nias villages, especially during the rainy season, are fever and smallpox”* (10).

Entering the end of the 19th century, information about the smallpox epidemic in Nias Island was obtained from reports by *zendeling* (missionaries). According to their records, major epidemics had hit villages in Nias several times, causing many villages to be almost empty from the death of many residents through smallpox.

In 1891, a smallpox epidemic hit Humene, the east coast of Nias. As a result, many people lived in misery. *Zendeling* Thomas who occupied Humene’s *zending* post at the time tried to calm the locals by visiting the homes of the sick people. He also gave medicine and prayed for their recovery (11). The same thing was done by *Zendeling* Lett and Reitze when a smallpox epidemic broke out in Fadoro, the west coast of Nias in 1893 (12).

In the early decades of the 20th century, almost half of the population of Nias was exposed to smallpox. In southern Nias, the areas around Sifaoroasi, Hilisimaetano and Teluk Dalam were hit by a smallpox epidemic from 1909-1910. The smallpox epidemic killed about 1000 people. Many human bodies were found lying in houses and being eaten by dogs. Meanwhile, in Sirombu, on the west coast of Nias, according to *zendeling* Von Erlen, “there were hardly any houses where one or more of the occupants were free from illness” (13).

Such a miserable situation also occurred in Ombolata, northern Nias, where the smallpox epidemic lasted from 1909 to 1910 and resulted in destruction. Many people, including children with smallpox, were led to death. *Zendeling* Fehr described the ferocity of the smallpox epidemic in Ombolata as follows: *“Almost in every house, one or more people, despite all the drugs we gave them, died after a few days... A father and his five children died in a row in one house... In another family, the two eldest children died of smallpox two years earlier and now the last two children died of dysentery in just a few days, while the father contracted the same disease”* (13).

The ferocity of the smallpox epidemic also occurred in Sogaeadu, on the east coast of Nias. As a result of the epidemic in this area, about 70 people died within a few months. Almost no one was safe from contracting smallpox in every household since vaccination had never been introduced here (13).

Zendeling Thomas shared his personal experience when he visited a village in Nias. He discovered that the population was on the verge of extinction due to the smallpox epidemic in the area (13). According to controller E.E.W.Gs. Schroder, the Dutch administrator on Nias Island, a smallpox epidemic that swept across most of the island, had infected about 65,000 people with about 40,000 people having been declared dead, while the fate of another 25,000 was unknown. If referred to the population census in the previous year (1908), the population of Nias Island was approximately 200,000 people (14). This means that the smallpox epidemic that hit Nias Island at that time had killed about one-fifth of the population. As a result of the ferocity of the smallpox epidemic, many villages in Nias became empty and uninhabited, as Schroder states, “... after the epidemic, I visited several villages where 15 people were left in villages that used to have a population of approximately 250 people” (14).

From this description, it is unsurprising that the people of Nias were terrified of smallpox. Moreover, a native who became Schroder’s servant was also infected with smallpox. After he recovered, many people did not recognise him half a year later as smallpox had damaged his face. Not only local residents but Westerners were also susceptible to contracting smallpox, as happened to the director of a coconut plantation in northern Nias who reportedly died from smallpox (13).

In the face of a smallpox epidemic, usually healthy *ono niha* (Nias people) would leave the village if one of them had smallpox. They did this to avoid the risk of contracting smallpox. Usually, they would go to the interior, in the middle of the forest, and establish a new village. This custom usually occurred in villages in northern Nias, where the population was sparse. Meanwhile, with its dense population in the southern part of Nias Island, people would prefer to live in villages (15).

According to the native inhabitants of Nias, the

smallpox epidemic occurred periodically. In the western part of Nias, the smallpox epidemic cycle occurred every ten years, while in the southern part, it occurred every nine years (13). Since the smallpox epidemic had occurred repeatedly on Nias Island, many of its inhabitants lived in poverty. Therefore, the Dutch colonial government came to the island to take measures for preventing smallpox through a vaccination program.

Smallpox vaccination

Smallpox was the most feared and fatal disease on Nias Island during the mid-19th to early 20th centuries. Therefore, the Dutch colonial government was ambitious to introduce smallpox vaccination on the island. According to a brief report on actions and investigations (*kortverslag der handelingen en verrigtingen*) from Major General J. van Swieten, Civil and Military Governor of the West Coast of Sumatra, the smallpox vaccine was first transferred to Nias Island from Padang on November 1854. Sixty-five people were successfully vaccinated (16), comprising Dutch colonial soldiers and officials stationed at Gunung Sitoli, the first Dutch post on Nias Island.

In 1856, by the suggestion of G. van Thienen, 2nd class health supervisor on the West Coast of Sumatra, the Dutch colonial government placed a vaccinator in Gunung Sitoli, receiving remuneration of f.20 per month. The placement of the vaccinator was aimed at improving vaccination services on Nias Island (17). With this vaccinator, implementing the smallpox vaccination in 1857 went smoothly in Gunung Sitoli. Vaccinations that year were given to Dutch soldiers who contracted smallpox after returning from duty from Fort Lagundri, in the south of Nias, where a smallpox epidemic was ravaging the region (8).

Along with the 'war against smallpox' campaign launched by the Dutch colonial government, the Dutch authorities in areas affected by smallpox were able to report cases in their area to the Civil Health Service in Batavia so that a vaccination introduction program could be made in the affected areas. These measures were essential to allow vaccination programs in each area, where permission from the Head of the Civil Health Service was required. Once permission

has been granted, responsibility for implementing the vaccination program fell under the authority of the vaccine inspector (17).

Nonetheless, smallpox epidemics continued to spread in various areas on Nias Island, which angered Captain H.P. de Vos, head of the Dutch authorities in Gunung Sitoli. Thus, De Vos reported cases of smallpox epidemics that hit areas in Nias Island to Major General J. van Swieten, the Governor of the West Coast of Sumatra based in Padang. Based on the *besluit* (decree) dated April 20, 1857, the government of the West Coast of Sumatra submitted a request to the Head of the Civil Health Service in Batavia for a massive smallpox eradication program to be implemented in Nias Island. The proposal also accompanied the request that the smallpox vaccine is introduced in four different places on Nias Island, namely Gunung Sitoli as the centre of Dutch authority, Lapau in the north, Hilidai (now Hilizoi) located in the middle of the island and Lagundri in the southern part (17). The determination of the four places had a principle of importance that placing the vaccine there would make the Dutch authorities more permanent and sustainable.

Although four places were proposed by the government of the West Coast of Sumatra, only Gunung Sitoli and Lagundri have been designated by the Head of the Civil Health Service as places for introducing the smallpox vaccine in Nias Island. Therefore, one native vaccinator, usually a Javanese doctor, was placed as the smallpox vaccine provider in both places. Meanwhile, Hilidai and Lapau never received permission from the Head of the Civil Health Service to introduce the smallpox vaccine on Nias Island (17).

In the middle of 1864, a smallpox epidemic broke out on Nias Island again. The number of sufferers continued to increase until January 1865. The Dutch authorities in Gunung Sitoli attempted vaccination, which was not optimally executed since the supply of vaccine seeds was insufficient. In addition, many vaccine seeds in Gunung Sitoli were no longer active, thus requiring new vaccine seeds. Therefore, the Dutch authorities in Gunung Sitoli sent a letter requesting smallpox seeds (*pokstof*) to the Dutch authorities in Air Bangis. Air Bangis authorities then responded to the letter by sending previously vaccinated children to

Gunung Sitoli along with a Javanese doctor named Abdul Karim (9). After the vaccine arrived in Gunung Sitoli, the top priority for vaccination remained with the military, officials and other Europeans. Meanwhile, local residents got vaccinated in case of an epidemic.

Between 1865 and the end of the 19th century, the introduction of smallpox vaccination programs in Nias Island continued in four places: Gunung Sitoli, Lapau, Hilidai and Lagundri. In Gunung Sitoli and Lagundri, a military doctor and a Javanese doctor were stationed. Meanwhile, there was only a government representative office placed in Lapau. Thus, when vaccination was needed, the service came from Gunung Sitoli. For Hilidai, a Javanese doctor named Si Nurdin who held the title Sutan Sahirullah was assigned, where he worked in this area until February 11, 1899 (17).

Meanwhile, in independent areas where the Dutch government had not yet been established, the Dutch colonial government would send Javanese *zending* and doctors to the affected areas in the event of a smallpox outbreak to introduce vaccinations to the people. That was the case if these areas had previously been part of the *zending* service centre that local residents were also familiar with Western people and medical personnel (17); otherwise, the local people would refuse to be vaccinated and even oppose vaccination activities in some areas by forming resistance.

Therefore, it can be said that not all areas in Nias Island received the same treatment in the introduction of smallpox vaccination. Vaccination services were prioritised in areas where the regular Dutch government had been established and where *Zending* posts were located. This was because of the difficulty of road access to remote areas. As mentioned earlier, most of the people of Nias lived in rural areas of hilly highlands accessed through narrow and slippery trails (18).

Entering the 20th century, along with the expansion of the Dutch colonial territory in Nias Island, the creation of new routes or roads made rapid progress, connecting the Dutch territories on the island. It improved health care, allowing vaccinators to quickly get to places where help was needed. Government control was also more convenient in areas with good routes (13).

In the early decades of the 20th century, the plague became inevitable although government control and

hygiene campaigns had been promoted on Nias Island. As mentioned earlier, the smallpox epidemic that hit the western part of Nias in 1908 caused the population to live in misery. Therefore, the Dutch authorities there, Mr Leverman, asked the Gunung Sitoli government to send vaccine seeds and smallpox orderlies to West Nias. With his efforts, smallpox vaccination was carried out in villages infected with smallpox. Considering the vast area of West Nias consisting of 12 *ori* or landscapes, Leverman continued to try bringing in health workers to serve as additional smallpox orderlies (whose position was assistant to smallpox orderlies) in West Nias until January 1911. With the assistance of the smallpox orderlies, the implementation of the vaccination program was immediately completed. As soon as it was discovered that a smallpox epidemic had broken out in one village, all the residents in that village were immediately quarantined with mass vaccinations being carried out. If the epidemic are to break out in another village at the same time, a smallpox orderly will be obliged to visit all affected villages alternately every two days, assisted by his assistant (13). For example, if a smallpox orderly is in village A for two days, an assistant in village B would come for the smallpox orderly, and vice versa.

Likewise, in Lahewa, North Nias, the smallpox vaccination in this region began in October 1909 and ended on July 14, 1911. According to R. Th. Maidman, head of the Dutch authority in North Nias, the success of vaccination in her area was due to the hard work of a smallpox orderly and two assistants of smallpox orderly, who regularly visited every person infected with smallpox outbreaks around the 25th of every month to record the number of people vaccinated in a register, of which copies were sent to the vaccine inspector and assistant resident at Gunung Sitoli (17). In the vaccination process, every man, woman and child was vaccinated in a different place. Revaccination was again carried out in this region after more than a year. If an outbreak occurs in one *ori*, the head of the *ori* would report it to the local civil official so that vaccinations can be carried out in the affected area immediately. According to Maidman, the results of vaccination in North Nias were very positive that after 1911, the number of people infected with smallpox continued to decline, while the disease was almost unheard of there

in the following years (13).

Meanwhile, in South Nias, vaccination began in 1909 and ended on September 1, 1911. According to the head of the Dutch authorities there, Captain P. Hajenius, all residents living in the Teluk Dalam, Sifaoroasi and Hili Simaetano areas were vaccinated en masse when the smallpox epidemic broke out in the southern region of Nias. After that, the vaccination continued to other villages in South Nias. Captain P. Hajenius established a military patrol to monitor the course of vaccination in this area where smallpox orderlies were carrying out their duties. In addition, the government also used an *ono niba* who had previously been vaccinated in Gunung Sitoli and recovered from the smallpox he was suffering to campaign to the local population that vaccination was good. This was done by the government as they believed that local residents would be more easily persuaded by their fellow inhabitants than by foreigners (13).

According to Captain P. Hajenius, the vaccination carried out in South Nias was brilliant since it managed to protect many villages from the ferocity of the smallpox epidemic although some other villages still experienced destruction as the vaccination was not done there. The impact of vaccination in this area was excellent with many people coming from independent villages to villages where the Dutch government was located just to get vaccinated, especially young children and girls aged 12 years since revaccination was carried out once a year in the village or district designated by the Vaccine Council without any charge (17). This was a breath of fresh air for the colonial government to further campaign for vaccinations in Nias's remote areas. This way, the expansion of the Dutch colonial territory in Nias can continue to grow.

Thus, the smallpox epidemic that infected the population in almost every area of Nias Island from 1908 to 1910 was accompanied by an eradication of the disease by the Dutch colonial government with a vaccination program that lasted from 1909 to 1911. According to Assistant Resident N. van Vuuren, the government had tried eradicating smallpox on the island. Zendeling had done its best to help the government convince local residents of the beneficial effects of vaccination. According to van Vuuren, at least 60,000 people were vaccinated during this period (13).

Vaccination was carried out in Nias Island through two methods, namely the humanistic method or person-to-person using vaccine seeds from previously vaccinated people with an interval of 7 to 10 days, and vaccination using animal methods by taking the lymph from animals that had previously been planted with vaccine seeds. The most frequently used method was humanistic, while animal vaccines were only used for a few years in Nias Island and were limited to the military and officials (19). The procurement of vaccine seeds for Nias Island was sent from the vaccination agency in Batavia. In addition, the Head of the Indies Health Service also ensured the availability of smallpox and additional smallpox orderlies if needed in case of a major epidemic.

After the passing of the smallpox epidemic from 1908 to 1910, no more major epidemics hit the island. Nevertheless, the smallpox vaccination program continued until 1915 in some places, in small capacities, while revaccination was also carried out in areas prone to smallpox. Until 1915, there were no reports of this disease anymore; thus, the government decided to end the smallpox vaccination program on Nias Island.

Obstacles to implementing vaccination

For approximately 60 years, the introduction of smallpox vaccination in Nias Island had been inseparable from its problems. The biggest obstacle related to the introduction of vaccination in Nias Island was the vaccination site in Hilidai that the implementation of vaccination in Hilidai was considered a procedural defect since it did not have vaccination implementation permission issued by the Civil Health Service, Dutch East Indies. The name of the Hilidai area appeared in the proposal from the governor of the west coast of Sumatra when submitting a request for vaccination on Nias Island in 1857. However, of the four places proposed at that time, only two were permitted by the Head of the Civil Health Service, namely Gunung Sitoli and Lagundri. The reason was that in those two places, there were already garrisons, indicating Dutch military supervision. In comparison, the other two places, Lapau and Hilidai, did not get permission as a place for introducing smallpox vaccination from the

Head of the Civil Health Service since there was no military security in those two places, whereas vaccinators could still reach vaccination services from Gunung Sitoli (17).

However, the implementation of vaccination for Hilidai continued, even without permission from the Health Service Office. Based on the *geheime missive* (secret letter) of the Resident Assistant dated December 7, 1860, Number 2, Ehalip Samdoen was appointed as the vaccinator for the Hilidai area. A few years later, he was replaced by a smallpox orderly, a Javanese doctor named Si Nurdin who held the title Sutan Sahirullah. The decision taken by the Gunung Sitoli authority referred to the proposal of General J. van Swieten, the Governor of the West Coast of Sumatra.

The Dutch authorities in Gunung Sitoli considered that the placement of Si Nurdin who held the title Sutan Sahirullah, as a native smallpox orderly or vaccinator in Hilidai, was the right choice. The reason was to maintain the authority of the Dutch government in the area because, after all, the vaccine campaign to the remote areas that were still independent would be more successful if it was delivered by a fellow native inhabitant who was familiar with the language of the local population and understood the situation of the region. Therefore, in other words, the vaccination program in Hilidai for the Dutch colonial government in Nias was a way to expand power to the remote areas of Nias Island without having to resort to physical warfare (17).

However, the Vaccine Inspector considered that making Hilidai a place for vaccination campaigns without going through the permission of the Head of the Civil Health Service was an act that violated the rules since the appointment of a vaccinator or smallpox orderly and procurement of vaccines in an area was the authority of the Vaccine Inspector. In addition, based on a secret warrant dated August 3, 1895, number 547/10, the Vaccine Inspector found that the placement of the smallpox orderly Si Nurdin who held the title Sutan Sahirullah in Hilidai had never been through this permission (17).

In the end, the polemic debate led to the dismissal of Si Nurdin who held the title Sutan Sahirullah as a smallpox orderly in Hilidai. The dismissal letter was issued by R. C. Kroesen, Governor of the West Coast of

Sumatra, contained in the *besluit* (decree) dated February 11, 1899. The decision disappointed the Dutch authorities in Gunung Sitoli, which considered that government intervention in independent areas in the remote areas of Nias Island would be disrupted. Therefore, to compromise it, the Gunung Sitoli government, which did not want to lose its civil servant, requested that Si Nurdin remain employed at Hilidai, not as a smallpox orderly but as a clerk and translator. Si Nurdin also became a clerk and translator for Zending Lagemann, who had just been assigned to Lahagu Zending Post, a new zending post in the central part off Nias island (17). Without a translator, a zending would have difficulty communicating the contents of the Bible to the people of Nias (20).

In addition to the polemic in Hilidai, introducing a vaccination program in other areas of Nias Island also encountered obstacles from the people who were against it. In 1909 in Ulu Susuwa, West Nias, a smallpox orderly was stabbed to death in his workplace at the beginning of the introduction of vaccination in the area. Likewise, in North and South Nias, people's resistance often occurred. Therefore, the introduction of vaccination in independent areas was carried out with great care to avoid conflicts. In addition, military patrols always supervised every vaccination introduction mission in independent areas. Maintaining the safety of smallpox orderlies and the continuity of the smallpox vaccination program in these areas was essential. According to the Dutch authorities in Nias, the indigenous people tried to avoid vaccination as they felt uncomfortable at first with the pain caused after being vaccinated. However, in the end, most of the population received the vaccination after seeing its good benefits (13).

Conclusion

Smallpox was already present on Nias Island when Europeans arrived on the island in the 19th century. Smallpox was thought to have entered Nias Island long ago, since the 7th century AD, through commercial activities. The location of Nias Island at the crossroads of trade routes on the west coast of Sumatra certainly allowed it to be visited by many international traders

such as Arabs, Persians, Gujarati, Indians, Chinese, Portuguese, French, British and Dutch. Meanwhile, local traders such as Acehnese, Minangkabau, Javanese and Bugis traders also enlivened the maritime area of the west coast of Sumatra. With these commercial activities, contact between the indigenous people of Nias and the newcomers had long existed. However, the contact of a nation with other nations in commercial activities, which was common at that time, also opened up opportunities for the spread of infectious diseases. The intensity of the movement of people from one area to another allowed them to carry the seeds of disease and then transmit them to the indigenous people of the region where they traded. This happened on Nias Island, where smallpox was assumed to originate from migrants who had long-standing commercial contacts with the indigenous people of Nias. Therefore, smallpox on Nias Island was considered an imported case.

Throughout the 19th century, smallpox became the most serious threat when the Dutch colonial government was slowly gaining influence on Nias Island. Many Dutch troops died in Nias, not only because they lost the war against Nias' soldiers but also due to the ferocity of the smallpox epidemic. On the other hand, many of the people of Nias lived in poverty since the smallpox epidemic destroyed the foundations of their economy. Some areas on Nias Island were almost empty as many of the inhabitants suffered from smallpox, leading to death. Such conditions continued into the early decades of the 20th century. As a result, the population of Nias continued to experience depopulation. The smallpox epidemic, which occurred in 1909-1910, claimed the lives of about one-fifth of the population of Nias.

Therefore, the Dutch colonial government implemented a policy of eradicating smallpox on Nias Island by introducing a vaccination program. Initially, the vaccination was aimed at protecting colonial interests on the island. However, the policy gradually became widespread in areas where the regular Dutch government had been established. To facilitate the implementation, the administrator made many regulations regulating vaccination services to organise the implementation of the vaccination so that all inhabitants could benefit from it.

The Dutch authorities directly controlled the im-

plementation of vaccination in each area of that place. In places that were still prone to conflict, the vaccination location was guarded by military patrols aiming to ensure the safety of smallpox orderlies or vaccinators in carrying out their duties to vaccinate people infected with smallpox.

In the end, although obstacles were found in implementing the policy of eradicating smallpox through the introduction of a vaccination program on Nias Island, the Dutch colonial government claimed that the smallpox eradication measures implemented on the island were successful. Despite the initial intention to protect Europeans and their interests on the island, the colonial government's vaccination policy on Nias Island brought prosperity to its people.

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