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The Problem of Malaria and Its Eradication System in Tanjungpinang During The Dutch Colonial Era

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Abstract

Malaria outbreaks are a health problem that is not easy to overcome. Its spread and prevention have been an important issue ever since the Dutch colonial period. This article explains how the malaria outbreak became an important issue during the colonial period in the Tanjung Pinang area, one of the areas where the endemic spread and was quite worrying due to the large number of fatalities. This article also explains how this endemic occurred and was overcome by the Chinese population in Tanjung Pinang, as well as the handling of the colonial government. This article uses existing historical sources to describe the problem of endemic diseases and efforts to eradicate them during the Dutch colonial period. The main aim of this paper is to examine the seriousness of endemic issues and their causes in the region and describe how the colonial government resolved them. There has been significant progress in malaria eradication, and the understanding of the causes of malaria and the selected eradication methods reflect scientific advances and economic considerations.

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Introduction

The archipelago (Indonesia) is included in the tropical region with an endemic distribution that varies in each region. Endemic diseases such as malaria, hepatitis, tuberculosis, leprosy, and other endemic diseases exist today and have existed since the colonial period. Studies on endemic diseases, their spread, and their prevention have attracted the attention of medical or tropical disease experts and historians. Endemic studies conducted by foreign historians, such as the history of malaria control in Uganda, and Zambia, to the history of malaria vaccines and state interventions, such as those experienced by the Swiss Tropical and public health institute, (Akello, 2015; Meier et al., 2022; Nawa, 2019; Packard, n.d., 2007; Sarkar, n.d.; Strelkova et al., 2020) as well as, Indonesian historians who are concerned with the history of endemic spread and its prevention (Emalia, 2020; Hesselink & Koninklijk Instituut voor Taal-, 2011; Itawan, 2020; Nawa, 2019; Nawiyanto, 2018; Pols, 2018; Sugiarto, Baird, Singh, Eliyazar, & Davis, 2022). Malaria outbreaks are a significant problem in Indonesia due to its tropical environment. This issue has persisted since colonial times because of the

geographical characteristics of the region. The Ministry of Health has considered this issue significant for a long time, based on several studies (Marbun & Zein, 2020; Elyazar, Hay, & Baird, 2011; Dijk, 2013).

Apart from geographical reasons, demographic factors make an important contribution to accelerating the spread of the outbreak. Bosma's study on smallpox in the Dutch East Indies in the 19th century shows that the disease was influenced by factors such as demography and being brought in by enslaved people-enslaved people traded from areas in the archipelago. Enslaved people on Java and outer islands had different vaccine usage and were exposed to endemic diseases like smallpox and cholera. The government's lack of seriousness and negligent vaccine distribution and administration increased the death rate in the late 19th and early 20th centuries, despite the existence of a vaccine (Bosma, 2015).

Bosma's explanation above is strengthened by the findings of Nawiyanto (2018). He explained that the expansion of human activity caused malaria. Increased human activities ranging from food production building irrigation canals, agriculture, ponds, and fish ponds cause other problems, namely creating broader fertile breeding grounds for malaria vectors. Human modification of the environment has further increased malaria vectors. Although, in the end, the colonial government believed that it was necessary to combine medical and hygienic measures to overcome malaria, economic limitations meant that the implementation of hygienic measures was still limited.

The malaria outbreak became a serious concern for the colonial government after the irrigation development project on the island of Java ended in 1904, affecting people's health. Poorly managed irrigation in Java led to a malaria outbreak (Marbun and Zein 2020). Another case involved the Dutch Army first experienced the spread of malaria during the Dutch East Indies era. The Cirebon Plague occurred in 1852-1854, and based on laboratory results in 1890, it was found that the cause of this disease was a parasite contained in the patient's blood carried by the Anopheles mosquito. This parasite is transmitted through mosquito bites. Anopheles mosquitoes are considered carriers of disease. To reduce the spread of malaria, the colonial government carried out various eradications from 1907-1911 (Boomgaard, 2003, p. 593).

Meanwhile, smallpox (Smallpox/Pokken) is caused by the Variola virus, an Orthopoxvirus species. Smallpox affected children and was known as childhood disease (kinderpokken) or even "children's disease" (*kinderziekte*) by the Dutch, implying that this disease killed most of the children (Boomgaard, 2003, p. 593). However, the studies above ignore other endemic distributions in other parts of Indonesia, especially in the Riau Archipelago (Tanjungpinang). Tanjungpinang, which is in the outer islands and close to Singapore, also has problems with endemics that attack this region. Tanjung Pinang, an area in the Dutch East Indies, had a serious malaria problem in 1930. It was reported in a newspaper with the title "Assasineering te Tandjoengpinang." The article explains the malaria outbreak and how the colonial government handled it in Tanjung Pinang.

By using available historical materials, this paper seeks to explore endemic

problems and how the colonial government dealt with them. The main aims of this article are 1) to discuss the endemic problems in Tanjungpinang and 2) to describe how the colonial rulers handled endemic problems.

Method

The research method used in this article is the historical method. The historical research method explores facts, experiences, and developments by interpreting the data on past events. This study uses four stages of historical research methods, namely, heuristics (Asnan, 2016, p. 23) source criticism, interpretation, and historiography. The first stage of writing this article is heuristic (source collection), consisting of primary and secondary sources. The primary sources were collected from the National Archive. Other secondary sources were private collections and libraries in Tanjungpinang and The National Library. In addition, to obtain processed data using literature studies, this research also uses various reference sources from articles, photos, pictures, and newspapers that can be accessed online: media, kitlv.org, library.leiden.edu, jstor.org, and others of relevance to complement historical sources. These colonial sources, both from official government reports and newspaper reports, provide an overview of who was the victim of the malaria outbreak and how this outbreak was handled by local residents such as the Chinese and the colonial government.

The Problem of Endemic in the Colonial Period

Dutch traders arrived in the archipelago in the late 16th century and colonized the archipelago for the next two centuries. Initial letters and reports from Dutch traders indicated that a specific type of fever, most likely malaria, was a significant health problem affecting military and trading activities (Hay et al., 2011, p. 29). The central government and administration of the Dutch East Indies Company (Vereenigde Oost-Indische Company; VOC) were located on the island of Java, most of the initial publications related to malaria in Indonesia were from Java. This includes a cross-sectional comparison of malaria prevalence and parasite density in two major cities (Hay et al., 2011, p. 30) and subsequent research in the 18th century in Batavia showed high morbidity due to tertian fever or persistent fever, which claimed the lives of thousands of VOC employees each year (Hay et al., 2011, p. 31). In a report to the German Colonial Office in 1899, Robert Koch examined aspects of malaria in adults (including military hospitals) and children in Java (Hay et al., 2011, pp. 30-32). Furthermore, the Dutch East Indies 'ethical policy' (ethische politiek), which purported to increase the welfare if indigenous Indonesians through irrigation, transmigration, and education, accidentally triggered a malaria outbreak in Java in the first 30 years of the 20th century by increasing transmission (Hay et al., 2011, pp. 33-34).

Europeans believed that the causes of disease had something to do with long-standing chronic diseases and an unhealthy tropical environment (van Eekelen, 1989, p. 58). Around 1900, the perception of malaria changed significantly due to scientific findings by Ronald Ross in India and Giovanny Battista Grassi linking the spread of malaria through Anopheles mosquitoes. Ronald Ross and Malcom Watson argue that

the malaria parasite has nothing to do with "water or marsh air, or decaying vegetation" but with the Anopheles mosquito, which acts as a vector (Ross & Watson, 1930, p. 7).

The findings confirm previous local investigations by Swellengrebel at various sites across the archipelago but differ from Watson's observations in the Malay Peninsula, which suggested A. umbrosus and A. maculatus as the most dangerous and significant malaria vectors (J.P, 1989, pp. 88-93; Watson, 1938, pp. 53-54). More recent observations indicate that in addition to Indonesia's coastal areas of Java, Sumatra, North Kalimantan, and several others. A. sundaicus was observed in coastal areas extending from northeastern India to southern Vietnam and has been blamed for malaria epidemics in India between 1930 and 1940 and in Vietnam in 1965 (Dusfour & Harbach, 2004, pp. 518-521). Another case of malaria in the archipelago was found in Tanjungpinang. Tanjungpinang people consider Anopheles mosquitoes as a particular species that attack people at night ("De malaria-bedwinger naar Zuid-Sumatra," 1935).

The Control of Endemic by Dutch Government

The Dutch East Indies government used the Dichloro-diphenyl-trichloro-ethane (DDT) spray, successfully developed in 1939. DDT was a chemical spray aimed at reducing malaria outbreaks. At first, DDT was effective enough to reduce the spread of malaria, but using it too often caused mosquitoes to become immune to DDT (Pusat Data dan Analisa TEMPO, 2019). In addition to using DDT to control the spread of malaria, establishing hospitals is also a significant focus.

The Chinese in Tanjungpinang paid attention to the health sector by establishing a hospital in 1852 and having 34 nurses, founded on the community's contribution (Ministerie van Kolonien, 1852, p. 54). This hospital is for general disease services only, while for other diseases, such as leprosy, it is located in Senggarang. In 1859, there were 24 leprosy patients. The nurses who treat the patients are Chinese. The establishment of this house for leprosy sufferers originated from the concern of the Tanjungpinang Chinese people for lepers who were treated discriminatively. In the 1859 Koloniaal Verslag it was stated that the Chinese people are also prominent donors apart from the voluntary donations and contributions of the Chinese and other ethnic communities. In the This hospital serves not only leprosy patients but also other common diseases.

In the early 20th century, according to Bahau'din, the government paid strict attention to the economy and health. Because during this period, there were many cases of epidemic diseases, deadly infectious diseases such as smallpox, cholera, and malaria, which occurred in almost all of Java Island. However, it is also possible that there are also outside Java. For this reason, since 1906, the government has provided health subsidies in the form of funds for medicines, hospital equipment, and doctors' and paramedics' salaries in private hospitals (native private and auxiliary) and regional hospitals (Baha'uddin, 2006, pp. 142-143).

In the city of Tanjungpinang, according to koloniaal verslag, malaria, dysentery,

beriberi, and some cases of smallpox and even cholera were often complained of by the people from 1905 to 1912. However, did not record the number of victims in the colonial report documents (Ministerie van Kolonien, 1903, p. 78; Ministerie van Kolonien, 1905, pp. 51-53; & Ministerie van Kolonien, 1912, pp. 24-25). In fact, towards the end of the year, sporadic dengue fever occurs, as well as beriberi, which is carried by coolies as stated in the (Ministerie van Kolonien, 1907, p. 50.

Health conditions were generally better than in 1915, but malaria still predominated in April and May. The lack of medicines, such as quinine supplies, made it challenging to treat malaria, mainly occurred in Tanjungpinang and Pulau Tujuh as mentioned in the (Ministerie van Kolonien, 1917, pp. 25-26). In 1917, the number of malaria sufferers in the city of Tanjungpinang was huge, a doctor named Dr. Swellen Grebel submitted his report on this paper to the government regarding the handling of this malaria outbreak, but there has been no follow-up action from the government. Overall, the health condition in Tanjungpinang is quite good, except for malaria, which is caused by dirty swamps and roads and ditches, which are filled with stagnant water and become breeding grounds for mosquitoes when entering the rainy season (Het Geneeskundig Laboratorium, 1924).

The preventive action of cleaning the drainage ditch behind the prison to the village of Dobi in the city of Tanjungpinang was carried out well. The project is expected to clean up and repair waterways to reduce malaria outbreaks as stated in *Vervolg Memorit Betreffende de Residentie Riouw En Onderhoorigheden Opgemakt Tergelegenheid van Het Aftreden van L.M.F Plate Op 10 Juni 1924*. Furthermore, in 1918, Winckel discussed vaccine service arrangements with Dutch residents in Tanjungpinang. The final result of the meeting was unsatisfactory because it was challenging for the colonial government to distribute vaccines to the various small islands scattered around Bintan Island as attached in Vervolg Memorit Betreffende de Residentie Riouw En Onderhoorigheden Opgemakt *Tergelegenheid van Het Aftreden van L.M.F Plate Op 10 Juni 1924*, pp. 16-17.

The uneven distribution of vaccines and labor-intensive environmental conditions affect the death rate of coolies. The greatest number of deaths among plantation workers occurred in the Tanjungpinang, *afdeeling* of a total number of around 4062 contract workers who died around 438 people in 1919 (Ministerie van Kolonien, 1919, p. 64). The cause of death of the plantation workers is caused by many things, ranging from malaria, the dirty conditions of the plantation workers' settlements, lack of hygiene, and other epidemics. So, it is not surprising that the death of coolies on the plantation occurred. Entering the 20th century, health conditions in Tanjungpinang are still not free from this endemic threat. Koloniaal Verslaag's records from 1905 to 1912 show that people in Tanjungpinang often experienced malaria, dysentery, beriberi and several cases of smallpox and cholera. However, the exact number of victims was not recorded in the colonial report (Ministerie van Kolonien, 1903, p. 78; Ministerie van Kolonien, 1905, pp. 51-53; Ministerie van Kolonien, 1907, p. 50; Ministerie van Kolonien, 1912, pp. 24-25). This situation did not only occur in Tanjungpinang, but the declining health conditions also occurred in other areas

around the Riau Archipelago. In 1914, malaria was very disturbing, especially for Chinese and less fortunate people, so it was difficult to get treatment. Although the government hospital is in Tanjungpinang. The community was reluctant to ask for medical assistance from the colonial government. This situation caused the colonial government to set up an outpatient clinic in the Chinese district. This clinic is less successful in treating malaria sufferers due to the lack of available medical facilities. Outbreaks of dysentery also hit adults and measles in children. The paramedics from Tanjungpinang took part in carrying out the treatment and examination. They also found 30 cases of dysentery and 25 cases of measles. Based on the records of paramedics and local officials, the death toll reached 86 people in 20 days from May 20 to July 7. Cases of death are estimated to consist of 26 adults and 60 children. The death rate continues to increase due to the lack of facilities and slow medical treatment, coupled with the absence of isolation rooms for the healthy and the sick (Ministerie van Kolonien, 1914).

Health conditions improved in 1915, although malaria was still a threat in April and May. It is because these months transition from the rainy to the dry season. When the weather gets warmer, it allows for the development of malaria mosquitoes. Not only the weather, but the swamps are also dirty, and the streets and ditches are filled with stagnant water so that they become breeding grounds for mosquitoes when the rainy season enters (Het Geneeskundig Laboratorium, 1924, pp. 4-5). Therefore, malaria is still a different problem in Tanjungpinang City. Meanwhile, the supply of medicines, especially quinine, is limited, making it challenging to treat malaria. This condition occurs in Tanjungpinang and Pulau Tujuh (Ministerie van Kolonien, 1917, pp. 25-26).

In 1918, the colonial government tried to reduce the impact of the spread of malaria by planning to send medicines to remote areas. The colonial government could not be carried out because the distance was too far to reach the interior and the difficulty of transportation (*Sumatra Bode*, 1925). Although malaria drugs are difficult to reach in remote areas, the government is still carrying out other programs to prevent malaria, such as ordering 100 detainees in Tanjungpinang to cut grass and clean and sanitize areas around Tanjungpinang. The detainees were under close surveillance by armed police. Tanjungpinang is a hotbed of malaria (Indische Gids 1931 II, p. 763).

Coolies receive medical treatment, although at a limited cost (Indische Gids 1931 II, p. 763). In 1922, the colonial government issued a policy to provide outpatient clinics along with doctors and nurses as part of efforts to improve and serve the community. Previously, all outpatient medical facilities were costly and scarce. This rule only changed when the head of the civil society health service, on October 13, 1922, No. 13521, formed an outpatient clinic that received subsidies from the government. Subsidies are given in the form of utilization of health facilities using different health cards. The card will show who is entitled to the facility. The blue visiting card is free of charge for those entitled to free medical treatment. The owner of the red card must pay a fee of f 0.25, valid for one week. The owner of a white card must pay f 0.75, which is valid for one month. The owner of the yellow card must pay f 2.50 for one-month

outpatient health facilities, and the green card must pay f 1 for one week (ANRI BB No 3488," Verlog Memorie Betreffende de Residentie Riouw En Onderhoorigheden Opgemakt Ter Gelegenheid van Het Aftreden van L. M. F Plate" Op 10 Juni 1924, p. 14).

Malaria is almost endemic everywhere in the lowlands (Deli Courant, 1937). The newspaper De Indische reported that in 1927 malaria patients had decreased, and Prof. Dr. Rodenwaldt conducted an investigation in Tanjungpinang to observe the decline and progress of the malaria eradication program (De Indische Courant 30 Maart 1927). The malaria eradication program is a crucial agenda to reduce the number of malaria sufferers on the islands in the South China Sea and other islands in the Riau Archipelago. The islands around the Riau Archipelago that have carried out a malaria eradication program and are considered complete, such as Anambas, Terempa, and Midai (De Sumatra Post 21 October 1936). In Tanjungpinang, Dr. Theunissen held discussions with various government officials and other authorities. This discussion discussed many things, including yaw control in Indragiri, although there is still a need to improve deficiencies in controlling this disease. Medical personnel will be added and sent there, and will cost around 20,000 guilders (Bataviaasch Nieuwsblad 31 Mei 1939).

The next visit was carried out by one native doctor and engineer from the Netherlands, namely dr. Soesilo and Ir. Bleichrood. They made an inspection trip to Tanjungpinang because of the significant spread of malaria in 1930. The increase in malaria cases caused one newspaper to write a bold title, "Assasineering te Tandjoengpinang" which translates to "Murder in Tanjungpinang." The spread of malaria in Tanjungpinang originates from the river flow. Actions taken to reduce the spread of malaria are to normalize the flow of rivers and make many wells. This action has not been able to show actual results in reducing malaria. In the following year, doctor Pflugbeil will visit Tanjungpinang to see the malaria control process (Het Nieuws van de Dag Voor Landsch Indie 29-11-1930; De Sumatra Post 8 December 1930). The visit was not only carried out by doctor Pflugbeil but also attended by Professor Rodenwalt, whose job was to assess and monitor the development of malaria there. (De Sumatra Post, 8-12-1924).

Various endemic eradication programs implemented by the colonial government and support from various Dutch medical experts in Tanjungpinang began to show results. Dr. Ultee, with the local government visited, conducted an extensive tour of the Riau region, aiming to find out how to eradicate malaria in malaria hotspots and how further regional operating hospitals could make savings (De Sumatra Post, 24 Juli 1934). The expert visits continued when one of the class 1 health workers, W. Moojim, who also worked at the military hospital, visited Riau to investigate the malaria situation there (Sumatra Post, 18 January 1940). The results of visits and reports from the activities of Dutch experts in observing the natural conditions and causes of malaria will be processed again by Dr. Theunissen to be able to find a way to eradicate malaria, which has caused many losses, especially in the economic field (De Locomotief 13 Maart 1939).

Conclusion

This paper has indicated that the fight against malaria was integral to the struggle for colonial economic development. The disease attacked the region's inhabitants and claimed a significant number of victims, both among the indigenous and Chinese populations. Although the problem of endemics, especially malaria, certainly had roots in the region's natural environment consisting of flowing rivers, ditches, and an unclean environment. In several cases, the escalation of malaria was often caused by the influence of the expansion of human activities and modification of the environment rather than due to natural factors.

The colonial government's response to reducing the spread of this endemic started with cleaning waterways, cleaning the surrounding environment, establishing health centers, and providing medicines. The efforts made by the government by combining medical and hygienic measures in the fight against malaria and other endemic diseases still need to be completed. Financial limitations, the ability of the community to absorb information, and all the things that still need to be improved have caused the eradication program to be limited. How is the colonial legacy in controlling various diseases in Tanjungpinang, and would the issues be an interesting topic for another research?

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