

Weaving Hope in Tanah Deli: Life and Healthcare of Plantation Workers in the East Sumatra's Plantation Belt, 1870-1940

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Abstract. The economic growth in the form of the plantation industry in East Sumatra changed the landscape and societal structure in this region. The plantation industry took in plantation workers from outside East Sumatra, namely Chinese, Javanese and Indian. The increasing number of plantation workers had elevated the industrial economy, yet it also caused social and health problems in East Sumatra. These plantation workers were recruited and bound by a regulation called the Coolie Ordinance (Koeli Ordonnantie 1880). This Coolie Ordinance regulated the rights and obligations of employers and workers, including health services. This paper aims to explain the life and healthcare of plantation workers in East Sumatra from 1870 to the 1940s. The results of this study reveal changes that occurred in the life and health of plantation workers at the turn of the 19th to 20th centuries. The quality of health among plantation workers increased since the early 20th century due to better policies introduced by plantation companies to maintain the health of their workers. The efforts made were curative and preventive actions, as well as the eradication of infectious diseases and epidemics. The curative efforts were carried out by building health facilities and infrastructures such as polyclinics and hospitals. Meanwhile, the preventive efforts carried out included providing better food supplies, adequate drinking water, settlement development and good sanitation. Efforts to eradicate epidemic diseases were made by conducting research and establishing a disease research institute, namely the Medan Pathology Laboratory.

Keywords: coolie ordinance, diseases, East Sumatra, healthcare, plantation worker, the Dutch East Indies

Introduction

Towards the middle of the 19th century, there was a shift in the economic policy of the Dutch colonial government, from a conservative economy to economic liberalisation. This policy shift was strengthened by the Agrarian Law (Agrarisch Wet) in 1870. One of the areas in the Dutch East Indies that developed rapidly after this economic liberalisation was East Sumatra. Since the 1870s, East Sumatra developed as a Sumatran plantation belt (1). Plantation entrepreneurs come to invest in this region from various nations such as the Netherlands, Germany, England, Belgium, Switzerland, Poland and the United States. In addition, workers were brought in from the Malay Peninsula, Java and China consisting of Chinese, Javanese and Indian

workers (2). Hence, the plantation economy had significant impacts on the demographic, social and health situations in East Sumatra.

The growth of the plantation industry led to a massive increase of foreign population, thus creating new issues such as health problems exemplified by the spread of tropical disease outbreaks. These tropical diseases included cholera, malaria, dysentery, typhoid fever, beriberi, and tuberculosis. These diseases were usually caused by the poor qualities of health, housing and sanitation conditions (3). In addition, the Europeans were unaware that these outbreaks were associated with the incompatibility of the tropical climate with the race and physique of those who cannot live there (4). This view and debate lasted until the end of the 19th century. From the colonial perspective, this tropi-

cal climate could only suit local residents (5).

The wild environment and tropical climate of East Sumatra during the early stage of opening plantations in the region led to a high labour mortality rate. Outbreaks of tropical diseases hit the Chinese and Javanese workers. Van Klaveren showed that at the start of the recruitment of plantation workers, the number of deaths of Chinese workers was higher than that of Javanese workers. This was due to climate, food, the workers' age and hygiene. The death rate decreased after the turn of the century due to the implementation of the Coolie Ordinance (6). Health services were advocated by plantation doctors to be fully implemented by plantation companies.

The high mortality rate among plantation workers is also caused by inadequate healthcare facilities and the insufficient number of doctors during the early stages of plantation development (7). The exploitative opening of plantations in East Sumatra was initially not focused on the sustainable future of the plantations, resulting in the neglect of workers' health maintenance. Furthermore, many plantation workers refuse to be treated at plantation hospitals due to their low health awareness (2).

The actions and policies of plantation companies in providing health services were bound by the Coolie Ordinance. Studies by Devi Itawan (2020) and Gani Jaelani (2023) stated that this regulation authorised doctors to treat any sick plantation workers, even if they did not want to be treated. This was due to the lack of awareness on work hygiene among plantation workers (8-9). Meanwhile, Ochsendorf (2018) stated that healthcare from the companies was a corporate social responsibility towards their workers. Although health facilities and infrastructure were intended for workers, local residents could also benefit from the presence of health services in the plantations (10).

The efforts carried out by plantation companies to maintain the health of their workers were in line with the changes in health policies that were hygienic-prophylactic by the colonial government since the early 20th century (11). The development of health services, which was originally intended to be curative, was to assert colonial power and protect elements of the colonial government, especially the military and government officials (12). Actions to promote health and eradicate disease outbreaks were also increasingly carried out due to the decentralisation of health services to lower levels in the early 20th century (11).

Several scholars have conducted studies on the health of plantation workers in East Sumatra, including Marieke Klaveren (1997), Frank Ochsendorf (2018), Devi Itawan (2020), Budi Agustono et al. (2021), and Gani A. Jaelani (2023). In contrast to the studies conducted by these scholars, this paper focuses on the changes in the lives of plantation workers and their health maintenance carried out by plantation companies in East Sumatra.

Based on the background above, this paper attempts to show the changes in the life and health of plantation workers that occurred in East Sumatra from the late 19th century to the 1940s. The main questions in this study are how were the living and health conditions of the plantation workers in East Sumatra and how many health services were provided by the plantation companies? In order to answer these questions, the situation and development of the East Coast region of Sumatra as a plantation belt are explained in order to discover the historical background of the life of plantation workers and the factors in providing health services to plantation companies in East Sumatra.

Methods

This paper used the historical method, which involved four stages. First, the heuristic technique, which involved the collection of historical sources consisting of plantation company archives and documents, plantation company annual reports, notes and reports from hospital doctors. The medical records and reports are from the hospital, namely the Senembah Company Plantation Hospital, while the colonial government archives consist of labor inspector reports from the Dutch East Indies, as documented in labor inspection letters in East Sumatra. These sources were compiled from the National Archives of the Republic of Indonesia and the National Library of Indonesia in Jakarta, as well as the KITLV Leiden website and the delpher.nl website. Second, source criticism consisted of internal criticism and external criticism, namely the process of verifying sources in determining the authenticity and credibility of data as historical facts. Third is interpretation, which is the process of examining historical facts with analysis and synthesis to produce historical narratives. Finally, historiography is the process of writing and constructing historical events.

East Sumatra Plantation Belt

East Sumatra, which was known then as Sumatra's East Coast Residency, is currently part of the North Sumatra Province in Indonesia. Since the mid-19th century, this region was opened by investments from Western entrepreneurs, which made its economy grow rapidly. The massive investments started from the opening of plantations, which led to the expansion of the plantation economy in the region. It began in 1863 when Jacobus Nienhuys, a Dutch trader, visited Deli in East Sumatra upon being invited by Said Umar bin Abdulah Bilsagih who had claimed to be the brother-in-law of the Sultan of Deli. Bilsagih stated that Tanah Deli produced high-quality tobacco leaves that could be sold at a high price (13-14). Indeed, since the 18th century, trading activities had been established between residents of East Sumatra and foreign traders, which continued to increase until the early 19th century. However, Cummings stated that pepper is the region's main export, not tobacco (15).

Since the beginning of the 19th century, economic activity and trade relations between regions in East Sumatra and the Malay Peninsula occurred freely and continued to increase over time. Such economic activity had yet to attract the attention of the Dutch colonials as during that time, they were concentrating on exploiting the West Coast of Sumatra with the enforced planting policy (also referred to as *tanam paksa*) of coffee. This policy was carried out in the 1840s when the West Coast region of Sumatra was fully controlled by the Dutch colonials after the Padri War. The exploitation of the coffee economy is centred on the regions of Minangkabau and Tapanuli (16).

The concentration of the Dutch colonials on the island of Sumatra was divided due to economic and political contestation of the Dutch with the British since the 1820s. After the Treaty of London was ratified in 1824, the colonial territories of the region were clearly divided, where the Dutch ruled Sumatra while the British controlled the Malay Peninsula. Interestingly, a year earlier in 1823, the British sent an explorer, John Anderson, to explore the East Coast of Sumatra. Anderson travelled along the East Coast of Sumatra for a year, starting from Siak to Asahan, Batubara, Serdang, Deli and Langkat (17). The ratification of the Treaty of London, however, ended British political activities on the island of Sumatra. Yet, it did not stop the economic activities and free trade of British merchants, which

were still ongoing on the East Coast of Sumatra.

Trading activities that continued to rise on the East Coast of Sumatra between British merchants and Chinese intermediary traders as well as the other local traders in the region made the Dutch colonials try to dominate the region politically. One of the first political steps by the Dutch colonials was signing the Siak Treaty on 1st February 1858 with the Siak Sultanate, which became the gateway for them to further control the rest of the East Coast of Sumatra. From the 17th to 18th centuries, the region was alternately claimed by the Sultanates of Aceh and Siak as parts of their vassal states. Based on the Siak Treaty, the Resident of Siak, Eliza Netscher, undertook a military expedition to the East Coast in 1862 to negotiate, and sometimes threaten local sultanates in Langkat, Deli, Serdang and Asahan to submit to Dutch rule. Since then, the Sultan of Deli submitted to the Dutch colonial rule with a request that the status of Deli is equal to that of the Siak. The Dutch colonial government bound the Deli Sultanate in a political agreement called *Acte van Verbod* (Confinement Certificate). Since then, the Dutch colonial government stationed Controller J.A.M. van Cats Baron de Raet in Labuhan Deli, the capital of the Sultanate of Deli. Furthermore, other sultanates in East Sumatra were also subjected to a Dutch military expedition in 1865 (18). Since then, the process of Dutch colonialisation gripped East Sumatra in a structured manner by making this region part of the Dutch administration.

Along with the entry of Dutch colonialism into the East Coast of Sumatra, numerous Dutch entrepreneurs as well as other Western nationals such as Germany, England, Belgium, Switzerland, Poland and the United States had invested in this region since 1863. These multi-national entrepreneurs established plantation companies in East Sumatra. The first plantation company in the region, NV Deli Maatschappij, was established in 1869. Subsequently, other companies such as NV Tabak Arendsborg Maatschappij, NV Deli Batavia Maatschappij and NV Senembah Maatschappij were established in 1875, 1877 and 1889 respectively (19). In a short span of time, the environment in the East Coast of Sumatra had evolved into the East Sumatra plantation belt.

The extent of plantations in East Sumatra stretched from Langkat in the north to Asahan in the south, which continued to increase in number. Since 1873, 15 plantations were distributed across the region, with

13 in Deli and one each in Langkat and Serdang. In 1884, the number of plantations increased to 86, with 44 in Deli, 20 in Langkat, nine in Serdang and three in Padang Bedagai. Such increase reached its peak in 1891, with 169 plantations distributed throughout the region. Until 1900, the number of plantations in East Sumatra was 139 plantations (20).

The development of plantations since the late 19th century had only uncovered more potential to sustain the economy in East Sumatra. After the economic depression hit the tobacco plantation companies on 1891–1892 in the region, several companies conducted research on tobacco commodities and soil fertility in East Sumatra. Previous speculation by plantation entrepreneurs assumed that the land in Deli would only be suitable for single planting was in fact wrong as it was found that the land was quite fertile to continuously produce high-quality tobacco leaves at high prices in the world market (14). In addition, after the 19th century, there was an expansion of plantation exploitation of other commodities such as rubber, tea, sisal and coffee.

This rapid development of plantations attracted people from outside East Sumatra to work as plantation workers or to migrate spontaneously because of the economic pull of this industry. Since then, the population in East Sumatra increased significantly. Thee Kian Wie's records showed that in the 30 years after Nienhuys arrival, the population in East Sumatra nearly doubled, from 150,000 people in the 1850s to 285,000 people in 1890. The population continued to increase after the 1900s. In 1905, the population of East Sumatra was 568,417 people. Eight years later, in 1913, there were 773,106 people. In 1920 it further increased to 1,197,554 people, and the 1930 population census showed the number was 1,693,200 (20).

Based on the table 1, there was an increase in the number of plantation workers throughout the planta-

tion industry in East Sumatra for nearly 50 years. This booming population in East Sumatra was indeed closely related to the rising economic industry of the region. The pull of the plantation economy resulted in the migration of people from around East Sumatra such as the Tapanuli, Minangkabau and Acehese people. The need for positions in the administration of the colonial government, the autonomous government of the empire and other jobs encouraged people to flock to East Sumatra. In addition, the recruitment of plantation workers was one of the major factors for population growth in East Sumatra. In 1910, the number of workers who were actively working in plantations was around 170,000 people. In 1920, the number of workers increased to around 308,000 people and increased again in 1930 to around 372,000 people. This is despite there having been fluctuations in the increase of the number of workers between 1920 and 1930 due to the unstable economic conditions post-World War I. Another factor was that the world economy experienced the Great Depression before 1930, thereby reducing the number of workers working on plantations (21).

The Life of Plantation Workers

At the beginning of the development of plantations, the majority of workers working in tobacco plantations were Chinese, especially until the end of the 19th century (22). These Chinese workers were recruited from the Malay Peninsula (Penang and Melaka). The first group of Chinese workers to arrive were 120 workers that were called *laukeh*. The selection of Chinese labourers as plantation workers were considered more skilled and tenacious in processing and caring for tobacco leaves (23). When there were restrictions on recruiting workers from the Malay Peninsula by the British colonial government, the recruitment of

Table 1. The number of Chinese, Javanese and Indian plantation workers in East Sumatra.

Year	Chinese	Javanese	Indians	Total
1883	21.136	1.711	1.528	24.375
1893	41.700	18.000	2.000	61.700
1898	50.846	22.256	3.360	76.462
1906	53.105	33.802	3.260	90.167
1913	53.617	118.317	4.172	176.106
1920	27.715	209.459	2.010	239.184
1930	26.037	234.554	1.021	261.612

Chinese workers were carried out directly from South China. In 1886, the Dutch colonial government in cooperation with plantation companies placed a government representative named Hoetink to increase the recruitment of labourers to East Sumatra (22, 24).

Along with the uncertainty about which Chinese labourers could be imported to the plantations, there was a shift from Chinese labourers to other types of nationalities. This was compounded by the increasing interest of plantation entrepreneurs in the quality of work of Javanese labourers since the early 20th century (2). The factor causing the shift from Chinese to Javanese workers was the diversification of plantation crops from tobacco to tree species such as rubber, tea, sisal, and coffee (14). The recruitment of Javanese workers was also carried out because the costs incurred were cheaper than bringing in Chinese workers. The Javanese workers who were brought in were not only men but also women. Women workers are employed in plant maintenance activities such as looking for tobacco caterpillars, sorting, hanging and tying tobacco leaves. Coupled with this, the wages of women workers are cheaper compared to other workers (25).

Workers recruited by plantation companies get *voorschot*, which was an advance payment of wages that were paid to workers working on the plantation. The *voorschot* given was actually going to be taken back by the plantation company by cutting wages after the workers have worked (2). The practice of fraud and deception against plantation workers who were going to work in East Sumatra had even been carried out by labour search agents (*wereks*). Many workers were deceived by these *wereks* who promised high-paying jobs. They said that "Tanah Deli is the Land of Dollars". The population of Javanese, who were mostly poor, easily followed the *wereks* invitation. They weaved hope to get a better life in a foreign country. Prospective workers who came from Central Java were usually gathered at the office of a labour-seeking agency in Semarang. After that, these prospective Javanese workers were sent to Belawan Harbour (23).

The increasing number of plantation workers made plantation companies obligated to provide decent accommodations to live in. This was also called for in the Coolie Ordinance as stipulated in Article 2 of the regulation (26). In a plantation setting, there was a pattern of settlements between workers, foremen, staff, assistants and administrators or managers, which showed a hierarchy of social strata in it. Plantation

workers were at the lowest level (1, 27). In addition to showing the differences in the social levels of the lives of the plantation community, the workers settlements also had sanitation and hygiene problems. Poor residence and settlement patterns could cause outbreaks to spread quickly among plantation workers (28).

The type of residence of plantation workers was divided into two, namely permanent residence (colonisation) and temporary residence (usually built in the middle of tobacco fields and will be moved every time a new planting was carried out). Permanent residences were usually inhabited by Javanese workers while temporary residences were occupied by Chinese workers. Permanent residences were usually in the form of houses on stilts with a stone floor and equipped with a kitchen, well and garbage disposal area covered with boards (29). Temporary residences, on the other hand, were usually in the form of barracks with little light ventilation space. In the middle of the barrack was a public kitchen that functioned as a place to provide food for plantation workers. In addition to public kitchens, a bathing place and drinking water supply were also built around the barracks. Clean water access was controlled every year by plantation companies (28).

The hierarchy of the plantation community was not only observed based on the settlement pattern but also on the economic and social environments (30). The comparison was clearly seen in the salary received by European and wages received by the foremen (*tandil*) and workers, both Chinese and Javanese. Since the beginning of the 20th century, European staff received a salary of f. 200 per month, which will be raised to f. 400 after six years of service. Meanwhile, the wages of Chinese foremen were f. 319 per year, while the Javanese foremen were f. 258 per year.

For the Chinese labourers, their wages were calculated based on the number of care and harvest on tobacco, in a wage system referred to as the piece rate system (*sistem upah borongan*). Hence, their wages were calculated as f. 10 for every 1,000 tobacco trees that each of them worked on. Meanwhile, the wages of Javanese labourers were calculated based on how long they had worked on a plantation, which was f. 0.55 per day for newbies, and f. 0.60 per day for those who had worked longer. Besides that, the wages of Javanese labourers who were women were charged f. 0.50 per day (23).

In addition to wages, plantation workers also received rice, which was called *catuan* or *rangsum* (14). In addition to the differences in wages, there was an

atmosphere created to indirectly made workers remain under contract. For example, certain events like night markets and performances were organised on the plantation after the payday of each month, usually on the 1st and 16th of the month. At these events, plantation workers spent the wages they received from the company (31). Certain problematic activities were deliberately held freely for the plantation workers to spend their money heavily on such as gambling, prostitution and opium sales (32).

The problematic situations that were deliberately created by the plantation companies were carried out so that workers would continuously be bounded by their contracts. After their wages ran out in one night, these plantation workers would owe the company by signing a new contract and work agreement (33). The dependence of plantation workers towards plantation companies was exacerbated by severe work exploitation. Under the practice of the coolie ordinance, plantation owners and managers would often commit acts of violence in punishing workers as sanctions, which was known as *poenale sanctie* or penal sanction (27). *Poenale sanctie* became a tool and legitimacy of plantation managers to discipline their workers. In various plantation archives, it was explained that acts of violence such as beating or physical penalties by European assistants were deliberately carried out because it was assumed that workers would not understand their work if they were not treated like that (34).

Exploitation, acts of physical violence, and the wild tropical environment made the plantation workers continue to weaken physically. Workers worked their fingers to the bone since the beginning as opening up plantations required severe physical work force especially in clearing new forest land. Coupled with several outbreaks of infectious diseases such as malaria, dengue fever, dysentery and cholera, it caused high mortality rates among plantation workers. However, there were no valid reports on the mortality rate of workers in the early 20 years of the plantation industry in East Sumatra. Such reports would only begin to be recorded and available around the late 19th century (6).

Healthcare Service

Health services for plantation workers had actually been arranged in coolie ordinance. The rules required planters to provide appropriate healthcare, shelter or

housing, as well as good food for their workers (26). Until the end of the 19th century, the rule was not made well by the planters. The momentum of a change happened in the early 20th century when much criticism was addressed on the bad condition of the plantation, the change of government policy into ethical policy and the development of medical technology in the early 20th century in the field of tropical diseases.

In the field of medicine, some policies were conducted as an effort to provide healthcare services to plantation workers. The efforts covered the curative and preventive actions along with research on disease outbreaks. The efforts to eradicate the disease and to supervise the workers health had actually been made since the workers entered the area of East Sumatra in Belawan Harbour. Supervision was carried out by establishing quarantine station as an initial shelter for plantation workers. This place served to select and separate workers who were healthy and workers with infectious diseases (35).

The establishment of the quarantine station in Belawan Harbour was initiated due to the outbreaks of plague and cholera in the late 19th century (35). Towards the end of the 19th century and the beginning of the 20th century, outbreaks of smallpox and the Spanish flu also occurred. These epidemics spread through the movement and mobility of people from one place to another (36). The high mobility of people and goods, due to the existence of plantations, facilitated the easy entry of epidemics into East Sumatra through plantation activities. Government doctors at Belawan Harbour refused the arrival of plantation workers until quarantine was conducted. Plantation owners proposed the construction of the quarantine station in Belawan as a quarantine facility to screen plantation workers and prevent the spread of diseases in East Sumatra. This was in line with government regulations (*epidemie-ordonnantie*) regarding the prevention of epidemics in the Dutch East Indies. After completing quarantine at the Belawan quarantine station, plantation workers would also be placed in self-quarantine buildings for 14 days before working on the plantation (35).

The curative action was done by building facilities, infrastructure, and healthcare facilities. This policy was realized through the development of polyclinics and plantation hospital. Doctors from Europe were initially brought in to oversee and head the central hospital. The first treatment facility for sick workers was the poly-



Figure 1. Quarantine station in Belawan. Available from: <https://colonialarchitecture.eu/>

clinic. Plantation workers who suffered from severe and harmful diseases would be referred to the central hospital. Every week or two, the head doctor of a central plantation hospital went to the clinic to perform a medical examination of plantation workers (23). Central hospitals in plantations served to accommodate existing polyclinics and as a center for health services on plantations. Facilities and infrastructure of the hospital were quite complete and functional. Initially, planters had their own medical personnel. They were Indian-British medicines and dispensers recruited from Straits Settlements. Then, in the next period, the health worker was replaced by doctors from Europe (2).

The first European physician on the East Sumatra plantation was E. Sanders, an Englishman who came to Deli in 1871. He became a doctor at the NV Deli Maatschappij. In 1873, NV Deli Maatschappij built the first hospital (37). It was written in several reports that there were three plantation doctors and one health worker at the plantation of East Sumatra in 1880. Entering 1889, twelve European physicians served in East Sumatra – some of whom were military doctors who could serve seven hundred's Europeans and plantation workers. In 1896, there was an increase in the number of doctors consisting of ten doctors, seven health laborers, and one veterinarian. The increase in the number of doctors on the plantation was related to the outbreak of cholera which required medical devices including doctors to treat workers due to the outbreak (38).

Ahead of the turn of the 20th century, various records indicated an improvement in the quality of health in plantations. The doctors' health statistics showed a drastic reduction in mortality among plantation workers. The complete record of this came from the plantations owned by NV Senembah Maatschappij. The number of workers' deaths decreased from 60,2 per 1000 people in 1897 to 45,1 per 1000 in 1901 (39). However, according to Breman, the figure was still relatively high when compared with the number of workers in the plantation of East Sumatra because the workers were still young and previously had to pass a series of health tests upon their arrival at the plantation (2).

In addition to curative actions, other efforts made by planters were preventive measures. The policy was to provide drinking water, good food, hygiene maintenance and sanitation improvement. Water supply was done by constructing wells around the area where laborers lived. The well-constructed wells were checked for hygiene levels in water using a water-level controller called the Eijkman water controller. The authority provided the drinking water which has previously been boiled to remove germs to prevent the outbreak of communicable diseases. Moreover, it was usually also equipped with tea that served to purify the water (40).

The provision of food for the plantation workers was related to beriberi disease prevention. The main food of workers on the plantation was rice. In addi-

tion, the additional foods were dried fish. The problem emerged because the rice consumed by the plantation workers was milled rice imported from Siam (Thailand) in which its vitamin B₁ was low. Accordingly, workers in the plantations were deficient in vitamin B₁ so that many of them were infected by beriberi. Beriberi disease could be eradicated by replacing all rice with milled rice (*zilvervliet*). However, it was found in some cases that Chinese foreman (*tandil*) kept on eating Siam (Thailand) milled rice instead of the *zilvervliet* milled rice because they considered Siam rice was whiter than rice *zilvervliet* which were less subtle and not by social tastes (41).

In maintaining the cleanliness and sanitation in the plantation environment, latrines were built a little far from the drinking water supply well so as not to be contaminated. Hygienic latrine construction was mostly done in tobacco sorting warehouses in every plantation. Within the sorting warehouses there were usually nearly 800 workers working, so a proper sanitation system was needed to anticipate the spread of the disease (40).

In the construction of barracks of plantation workers, the number of light and air vents was carefully cal-

culated, so the room inside was not stuffy and could provide good air circulation inside the barracks. The room with minimal light and air usually had high humidity level, so it was very easy to be a disease breeding ground. In addition, the plantation authority also tried to apply hygienic and healthy lifestyles to plantation workers, especially Javanese labourers who were required to build a beautiful barracks environment like in rural Java (40).

To eradicate the diseases, the doctors on the estate established an institute researching diseases that were prevalent among plantation workers. This institution was named Medan Pathology Laboratory, established in 1906 on the initiative of the administrative head of NV Deli Maatschappij, namely Van Vollenhoven and the board of directors of NV Senembah Maatschappij and NV Medan Tabak Maatschappij namely C.W. Janssen (28). The establishment of this laboratory was purely the idea of the planters and after a while, there came a government role in it. This breakthrough indicated a significant influence on the part of the plantation rather than the government so that the policy must be done through the participation of the planters.

This laboratory aimed to research health issues in plantations. Some of the activities undertaken were to



Figure 2. Treatment room in the plantation workers hospital of Amsterdam Deli Company in Padang Bulan, Medan, 1900. Available from: <http://hdl.handle.net/1887.1/item:905875>

propagate healthy lifestyles for plantation workers, provide assistance to doctors who conducted research on diseases and provide information related to sanitation issues on plantations (3). This laboratory had competent physicians and health laborers in the field of bacteriological and serologic. Routine activities undertaken in the laboratory were the prevention of disease, treatment therapies and diagnosis of disease cases (42).

Health services conducted by plantation authorities have laid the groundwork with various health measures such as curative and preventive actions, as well as research on diseases. This effort was made as a way to show the existence of plantations, especially in the field of health workers. Plantation workers as the main tool of the capitalist could be given health services in order always to be able to produce and provide benefits for planters. The health services undertaken was an investment by planters in the long term.

Conclusion

The plantation industry in East Sumatra changed the environment, demographics, economics, and social structure of the community. The rapid development of the plantation industry had also been impacted by health issues among the plantation workers by spreading diseases and increasing the death toll. In line with the phenomenon, plantation companies began to integrate healthcare for the workers at the end of the 19th century, especially since the implementation of the Coolie Ordinance. In addition, it was also motivated by speculation on the future of the plantation industry, which made plantation owners consider such integration. This healthcare service was seen as one of the forms of investment made by plantation owners. Efforts in providing healthcare for plantation workers resulted in a decrease in mortality rates and infectious diseases among workers. In addition, such actions increased the hope in life among plantation workers, especially the Javanese labourers.

The healthcare services provided by the plantation companies changed the quality of workers health in plantations. Policies were implemented such as curative and preventive efforts, as well as developing research on diseases endemic in the plantation area. Curative efforts were carried out by building facilities, infrastructure and health facilities such as polyclinics and hospitals. Preventive efforts were carried out by

providing a better food supply, adequate drinking water, building better settlements, and good sanitation. Efforts to eradicate diseases were carried out by conducting research and building a disease research laboratory, namely the Medan Pathology Laboratory.

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