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Colonial Prison Health Crisis In the Straits Settlements (1826-1900)

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Abstract

This study analyses the health crisis in the British colonial prison system in the Straits Settlements between 1826 and 1900. Although the British prison system is often highlighted as an important element in colonial administration and economic development, the health aspect of prisoners is often overlooked. The main problems lie in the absence of a comprehensive health policy, lack of medical facilities, and the unsuitable physical environment of the prisons. The objective of this study is to reveal how the weaknesses of health management in colonial prisons lie behind the exploitation of British labor and their failure of governance. This study uses a qualitative historical method, including referring to archival records, colonial medical reports, and newspaper coverage from the period. The findings show that the high rates of illness and mortality of prisoners were due to the selection of inappropriate prison sites, lack of hospital facilities, poor water management, and the absence of quarantine policies. Outbreaks of beriberi, malaria, and leprosy became endemic in prisons and reflected the failure of colonial governance in protecting human health. This shows that prison health issues were not rare isolated cases but were a common situation in colonial governance as a result of colonial greed that prioritized the use of labor over human well-being. In general, this study contributes to the broader literature on colonial customs, institutional health neglect and its close connection to the health of workers and the public in Malaya in particular and Southeast Asia in general.

Keywords: Straits Settlements; Prison Management; Health Issues; Prison; Medical

Introduction

The Straits Settlements comprising Penang, Malacca and Singapore were among the strategic settlements for the British colonizers since the late 18th century.[1] The merger of these three provinces in 1826 formed an administrative unit known as the Straits Settlements (SS).[2] In addition to serving as a strategic port and trading center, the area was also the site of an important prison institution within the framework of social control and colonial economic exploitation.[3] The colonial prison system did not only serve to punish criminals, but also as a tool for the exploitation of inmate labor to carry out public works such as road construction, government buildings[4] and urban clean-up works.[5] In order to maximise the labour yield, the health and welfare aspects of prisoners are often neglected.[6]

The main problems that arise are the high rates of illness and death among inmates due to an unhealthy prison environment, lack of medical care and a lax health management system.[7] Despite medical reports and statistics that record the incidence of infectious diseases such as beriberi, malaria

and leprosy, these issues are still under-addressed in mainstream historical discourse.[8] Although prisoners played an important role as labourers in the development of the colonial economy, their health was not given priority by the British administration.[9] There is a significant gap between the use of inmate labor and the level of healthcare provided to them.

This raises the question of the extent to which this neglect is a reflection of the failure of the colonial governance system. This study examines how weaknesses in prison health structures and policies in the Straits Settlements led to the failure of colonial governance on prisoner health. The objective of the study was to analyse health crises in the management of colonial prisons and to identify environmental, policy and structural factors that contribute to the spread of disease and death among prisoners.

Based on past studies, the study of colonial prisons is gaining increasing attention in the field of social history and medical history, particularly in relation to the health of prisoners and the prison environment itself. Prisons not only serve as a space of punishment and control, but also a reflection of colonial structures and power imbalances in health governance. In this regard, the SS, which includes Singapore, Malacca, and Penang, presents a unique case due to its sluggish geographical position, pragmatic British colonial policies, and dependence on convict labour for economic development and colonial infrastructure. Internationally, various studies have touched on health issues in correctional institutions. Mundt, for example, noted that the high mortality rate among inmates indicates a failure of the prison health system that requires special attention from the authorities. This issue is seen not only from a medical point of view but also as a humanitarian crisis that reflects the power imbalance between the state and the individuals in captivity.[10]

Woodall, on the other hand, highlighted the "whole-prison" approach in promoting the health and well-being of prisoners. While this approach is seen as ideal in the context of rehabilitation and disease prevention, its implementation in prisons is often disjointed, incomprehensive, and fails to address physical structural issues such as overcrowding, lack of facilities, and constraints on human resources.[11] A study by Scallan supports these findings by showing that health services in prisons often do not meet the minimum standards of public health care.[12] Meanwhile, Dey focused on the issue of overcrowding that interferes with the implementation of rehabilitation programmes and creates serious psychosocial stress on inmates, thus increasing the risk of infectious diseases and conflicts in prisons.[13] Guo, through a systematic survey study, highlighted the importance of environmental health aspects such as ventilation, hygiene, living space and waste management in ensuring the well-being of prisoners and prison staff. This shows that health in prisons does not only depend on the presence of doctors or the supply of medicines, but is also closely related to the design and physical location of the prison itself.[14]

In the context of Malaya, the Raja discussed the colonial authorities' concern over tropical diseases such as beriberi, malaria and intestinal diseases that were contagious among prisoners in the Federated Malay States. Although this study is descriptive in nature and leans on colonial statistics, it opens up space to understand how diseases are used as a justification to strengthen colonial control through the construction of hospitals and quarantine centers.[15] More importantly, Harun pointed out that the development of colonial health services was not merely for the welfare of the population, but served as a strategic instrument for the British to maintain the political and economic stability of the colony. In the context of prisons, health services are part of an imperialist control system hiding the reality of the exploitation of prisoner labor by presenting a narrative of care and rehabilitation.[16]

However, specific studies examining the health crisis in Straits Settlements Prisons are still very limited. The location of prisons in swampy areas and lack of good sanitation systems such as in Malacca, Penang and Singapore in the 19th century accelerated the spread of infectious diseases. Weaknesses in the management of prison hospitals, lack of medical officers, and colonial policies

that prioritized the economy over the well-being of prisoners also contributed to the very poor health conditions. In most cases, prisoners were used as forced labor to build colonial infrastructure despite their deteriorating health. Thus, this study emphasizes the need to understand the health history of prisons in the dimensions of colonial power. Previous studies have shown that most studies focus more on the general picture of the colonial prison system, but less deeply investigate the health issues of prisoners in the real context of their life in prison. The study of the health crisis of colonial prisons in the Straits Settlements from 1826 to 1900 not only helps us understand the history of prisons more deeply, but also reveals the effects of colonialism on health that are still felt in the prison and rehabilitation systems today.

Methodology

This study uses a qualitative approach based on historical disciplines, with a focus on the analysis of the content of archival documents and colonial publications. The primary sources are obtained from the National Archives of Malaysia in Kuala Lumpur, in particular the British Colonial Office File CO 273, as well as documents from the Department of Prisons and the Straits Settlements Medical Department. CO 273 is the main collection containing official correspondence between the Governor of the Straits Settlements and the Colonial Office in London, annual reports, meeting notes, and medical assessments of prison conditions and prisoners' health. For example, CO 273/19 contained a letter from Sir Harry St. George Ord in 1868 emphasizing the high burden on the prison hospital system, while CO 273/49 of 1884 contained reports on the inadequacy of prison hospital facilities and the increasing death rate due to beriberi. These files not only became the main source of data, but also helped to explain how the colonial administration managed the health issues of prisoners from the point of view of cost and control, not human well-being.[17]

In addition, the study also referred to the colonial government's annual report, the Blue Book, the proceedings of the Straits Settlements Legislative Council, the Government Gazette, and prison regulations gazetted throughout the 19th century. Online newspapers such as The Straits Times, The Straits Observer, and Overland Journal are also important sources, as the media is one of the social institutions that actively reports on issues related to health, prisons and colonial policies. These resources help trace developments in health regulations, government responses to disease outbreaks, as well as the general public's narrative on the condition of prisoners in prisons.

The analysis of the documents was carried out thematically, focusing on three main aspects, namely the physical conditions of the prison environment, the medical and healthcare system of the prisoners and the relationship between colonial policies such as forced labour, including the health aspects of the prisoners. This combination of different types of sources allows the study to formulate a comprehensive and critical picture of prisoner health management in colonial contexts.

Health Crisis In Straits Settlements Prisons

Inappropriate Prison Sites And Environments

One of the main causes of the health problems of prisoners in the Straits Settlements prisons is the inappropriate selection of prison construction locations. Most of the prisons are built in lowland, humid and swampy areas, which are very easy breeding grounds for bacteria and disease-carrying insects. This situation makes the prison environment always wet, dirty and difficult to clean thoroughly.[18] The geographical position and selection of SS prison sites in the 19th century were the main factors that

contributed to the spread of disease as well as the high mortality rate among inmates. Prisons built on moist and swampy soils such as in the Bras Basah Road area, Singapore, are exposed to extreme humidity which is a conducive environment for the breeding of bacteria and disease vectors.

This is in line with Anderson's study which states that damp prison conditions and full of water reservoirs contribute to the spread of diseases such as cholera and malaria. This is a phenomenon that often occurs in other colonial institutions in the tropics[19]. This situation not only complicates sanitation work, but also accelerates the spread of infectious diseases. For example, Singapore Prison is located in a low-lying area and is prone to flooding, especially during the rainy season or during the Northeast monsoon. This constantly moist soil has contributed to the spread of various infectious diseases. This situation prompted the British to carry out land reclamation works to reduce humidity.

The British realised this adverse impact and ordered landfill works, including in the Singapore Prison area. The report of Macnair, Superintendent of Prisons of Singapore in 1863–1864, showed that unsuitable land localities contributed to the emergence of skin diseases, ulcers and fever among inmates. Inmates were instructed to transport soil from the Government Hill area to cover the swampy area until it reached a height of two feet. However, this effort is not enough to overcome the worsening health problems. Statistics show an increase in cases of diseases such as fever, ulcers, ulcers and infections of the legs.[20] Although the swamp area has been buried and drains have been constructed, health problems among inmates continue to occur, indicating that these efforts are not enough to address the larger underlying issue. At the end of the 1870s, beriberi disease began to spread widely. Although not yet officially recognized, the symptoms of the disease have been recorded since 1875 and were declared an epidemic in 1877. The disease is spreading rapidly in Singapore, Penang and Malacca prisons.

For example, between 1874 and 1878, the number of beriberi cases among prisoners remained high and recorded an alarming death rate.[21] In terms of mortality rates, from 1869 to 1874, the mortality rate due to beriberi was 2.6% and 2.4% respectively, which at that time were considered to be still under control. However, in 1875, there was a sharp jump to 12.4%, and this rate continued to rise to 20.63% in 1879.[22] The drastic surge shows the disease has become a serious health crisis in the colonial prison system. It also shows that the control measures taken at that time were inadequate and less effective.

In the case of beri-beri, various factors are associated as factors in the spread of the disease. Among them are extreme humidity and soil conditions due to the monsoon phenomenon that causes stagnant water. The disease became the most significant health issue in SS prisons. Given the rapid rate of increasing cases, it was initially classified as an infectious disease. The data of prisoner admissions to hospitals from 1870 to 1874 show a drastic, related increase in beriberi disease as shown in the following table:

Table 1: Table 1: Total Beri-Beri Cases in SS Prisons in 1874–18

Years	Number of Beri-Beri Cases
1874	763
1876	667
1878	826

Source: Quoted and modified Daily Times, July 30. The Outbreak of Beri-Beri. July 31, 1880, p. 1.

Table 1 shows the total number of cases of beri-beri disease reported in the Straits Settlements prisons between 1874 and 1878. In 1874, a total of 763 cases were recorded. There was a decrease to 667 cases in 1876, which was seen as a result of British efforts in improving the level of hygiene and management in prisons. Nevertheless, the number of cases again increased to 826 in 1878, indicating

that the disease was still not fully controlled. The situation became even more alarming when by 1880, an epidemic of beriberi had spread to other areas such as Penang and Malacca. This shows that the preventive measures taken are still not enough to curb the spread of the disease comprehensively.[23]

Table 2: Percentage of Beri-Beri Disease Deaths for the Year 1869–1879

Years	Mortality Rate
1869	2.6%
1874	2.4%
1875	12.4%
1878	16.20
1879	20.63%

Source: Quoted and modified Straits Times Overland Journal, Beri-Beri in the Criminal Gaol, 12 July 1880, p. 2. & The Straits Times, Beri-Beri. Outbreak in the Singapore Prison. December 18, 1911, p. 8.

Table 2 shows the percentage of deaths from beriberi disease in prison for a ten-year period from 1869 to 1879. In 1869 and 1874, the death rate was at a low level, recording 2.6% and 2.4%, respectively. However, starting in 1875, the death rate increased dramatically to 12.4%. This increase indicates a serious change in the health situation of prisoners. This upward trend continued, with the death rate continuing to jump to 16.20% in 1878 and reaching 20.63% in 1879. This spike indicates that beriberi disease has become more acute and uncontrolled among inmates. Several factors such as high humidity due to the Northeast monsoon winds may have contributed to the increased infection and death rates, as the conditions accelerate the growth of bacteria and weaken the health of inmates. Overall, this table shows an alarming increase in the rate of beriberi deaths during the period. It illustrates the weakness of the prison health system and the initial failure in efforts to prevent and control this serious infectious disease.[24]

The significant spike in deaths in 1875 and 1879 reflected the failure of colonial medical approaches as well as weaknesses in the treatment experiments conducted on convicts. In fact, in some cases, the treatment given causes deadly side effects. Of the 56 deaths recorded, the majority involved Chinese inmates (40 people), followed by Malays (12 people) and Indians (4 people).[25] This pattern raises important questions regarding the relationship between ethnic background, nutritional status, and the level of immunity to beriberi disease.[26]

The fact is that beri-beri disease was often described as a “mysterious” disease in the early 19th century due to a lack of understanding of its causes. However, based on medical history studies, the disease is actually caused by a lack of essential nutrients, specifically vitamin B1 (thiamine), in the daily diet.[27] In the context of colonial prisons, the food given to inmates was very limited and unbalanced and often consisted of polished white rice, which contained almost no thiamine. This deficiency results in nerve damage and impaired bodily functions, leading to beriberi symptoms and, in many cases, death.[28]

This situation is not only happening in the Straits Settlements, but also reported in Philippine and Indian prisons involving other colonial territories that also practice a diet of polished rice among prisoners and soldiers. Thus, the beriberi problem exposed the weakness of colonial medical science in understanding the true etiology of the disease, which at the time relied more on the theory of miasma (toxic air) or environmental factors, than on more accurate knowledge of nutrition and micronutrients. In general, the high mortality rate from beriberi not only reflects the health crisis in prison institutions, but also reflects the failure of colonial healthcare structures and the lack of scientific understanding of diseases associated with malnutrition.

Apart from beriberi, malaria is also a major threat to the health of inmates in SS Prison. The area around the prison filled with stagnant water became a breeding ground for the Anopheles mosquito. Malaria is also believed to be caused by unmaintained water reservoirs and drains.[29] This situation supports the theory of Miasma that was popular at the time, which is a disease caused by polluted air. In 1882, British physicians recommended that soil filling be increased to four feet, but diseases continued to spread due to soil pollution and the presence of pests such as rodents and cockroaches.[30] Colonial medical reports stated that weaknesses in the drainage and water management systems in prison areas exacerbated the spread of the disease. Land reclamation efforts continued, but their effectiveness was limited due to weaknesses in implementation and financial constraints. The effects of this pollution of prison locations are very significant. Almost 90% of the inmate population is reported to have fever, skin problems, joint (rheumatic) diseases and ulcers.[31]

Meanwhile, leprosy struck widely in the 1890s and was associated with dirty working conditions as well as environmental humidity. No quarantine system has been implemented despite the increasing number of disease cases. Sick inmates are left with other inmates in dormitories, including those infected with syphilis and skin diseases. Isolation is only carried out when the prisoner is in a critical condition. Criticism of the system has been voiced by medical officers such as Dr Simon and Dr Kerr who have pointed out the weakness of British management in dealing with the prison health crisis. In many cases, delays in seeking treatment and the absence of a patient isolation system accelerate infection and death rates. Furthermore, the mixing between healthy and sick inmates in the detention cells contributes to the widespread spread of the disease. Overall, the inappropriate selection of prison sites has been a fundamental factor in the emergence of various infectious diseases among inmates. It reflects weaknesses in health planning and prison management by the British colonialists. This situation not only cost the lives of the prisoners, but also put pressure on the existing colonial public health care system. The following is the data on the admission of prisoners to the hospital in 1884-1899.

Table 3: Total Prisoner Admissions for the Year 1884-1899

Year	Prison	Entry	Death	Hospital Places
1884	Singapore	5213	656	Pauper Hospital
1884	Penang	204	81	Jerejak Island Leprosy Asylum
1888	Singapore	626	73	Prison Hospital
1896	Penang	206	21	Criminal Prison Hospital
1899	Penang	139	9	Criminal Prison Hospital

Source: Quoted and modified Annual Reports of the Straits Settlements 1855–1941, Prisons, Vol 3 & Vol 4, Archive Editions Limited, 1998.

Table 3 shows the statistics of inmates admitted to prison hospitals in the Straits Settlements, particularly in Singapore and Penang for the period between 1884 and 1899. In 1884, the number of hospitalizations in Singapore Prisons was very high, with 5,213 inmates, with 656 deaths recorded. Treatment at that time was provided at the Pauper Hospital, which showed that special facilities for prisoners did not yet exist and that treatment had to be shared with the poor. During the same period in Penang, 204 inmates were admitted to the Jerejak Island Leprosy Asylum, with a high mortality rate of 81 cases, reflecting the poor and inappropriate level of treatment for non-leprosy patients. By 1888, a significant change occurred when the Singapore Prisons began to provide its own Prison Hospital, with an admission of 626 inmates and 73 deaths. This shows an improvement in terms of health facilities and a slight reduction in the mortality rate.[32]

In Penang, data for 1896 and 1899 show lower admissions, with 206 and 139 inmates respectively, with 21 and 9 deaths, being treated at the Criminal Prison Hospital. This decrease is due to signs of improvement in terms of health control and sanitation in prisons. In general, this table shows a progressive change in the colonial prison health system from the middle to the end of the 19th century from relying on outpatient hospitals to the establishment of specialized prison hospitals. However, the still high mortality rate, especially in the early 1880s, reflected the poor health of the prisoners as well as the limitations of medical care in the colonial context which marginalised the welfare of the convicts. Among the causes of hospitalization are beriberi, malaria, dysentery and diarrhoea. A cholera outbreak also struck Singapore Prisons in 1888, forcing the transfer and release of large numbers of inmates. Remedial measures such as the construction of additional wards and forest clearance were taken, but their effectiveness was still limited.[33]

Analysis of the prison site issue in SS shows that there is a close link between the inappropriate physical environment and the transmission of disease and the high mortality rate among inmates. Weaknesses in site and environmental selection, sanitation management, and public health understanding are the main causes of prison health crises. The failure of the British to manage the site effectively and the weakness in the provision of treatment and isolation systems were the main factors in the high rate of illness and mortality of prisoners. This experience emphasizes the importance of a comprehensive and scientific approach in the management of rehabilitation institutions to ensure the well-being of the residents of the institution and the management of modern rehabilitation institutions.[34]

Limited and Unsystematic Hospital Services

Next, one of the major crises faced by the British administration in the management of SS prisons was the limited and unsystematic hospital services. This situation has affected the effectiveness of medical treatment for inmates and directly affects health rates and death rates. The lack of facilities and manpower in prison hospitals prompted the British to link prison hospitals with government public hospitals to ensure that prisoners could receive more comprehensive and systematic treatment.

In Singapore, the initial steps towards the integration of health care between institutions began when the General Hospital was built close to prisons and military barracks, near the Singapore River and Outram Road. This strategy aims to reduce the cost of transporting prisoners to hospitals as well as facilitate their transfer process for treatment. In 1868, this measure of unification of treatment institutions was realized when the Inmate Hospital, Prison Hospital and Lunatic Asylum were officially connected to the General Hospital, marking an early attempt towards a more integrated management of prisoner health.[35]

Penang made history as the first state to have a hospital dedicated to prisoners when three prison hospitals were built in 1869, namely the House of Correction, Convict Jail Hospital and Leper Hospital. However, structural problems, limited treatment spaces and unsuitable physical conditions of the hospital have left the health service in a poor condition. For example, the treatment room at the House of Correction is only less than 600 cubic feet in size without a good ventilation system.[36] The physical structure of prison hospitals also shows weaknesses in structural planning. For example, hospital toilets are located adjacent to the kitchen, thus creating a high risk of cross-contamination. Prison hospitals are not only uncomfortable, but also at high risk for diseases such as diarrhea, cholera and dysentery.[37]

Due to these limitations, many critically ill inmates had to be sent to outpatient hospitals such as General Hospital and Pauper Hospital. The Singapore General Hospital was built near the prison area and military barracks to facilitate the transfer of patients, but it also faced problems of lack

of staff, space and equipment. Pauper Hospital was established specifically for the poor, including prisoners, but it also suffered from overcrowding and lack of medicines.[38] Furthermore, some of the hospital staff consisted of inmates themselves who were used as medical assistants due to the absence of sufficient professional staff.[39] Cramped space and lack of facilities forced the British to transfer sick prisoners to the General Hospital. In Penang, the construction of General Hospitals was also driven by significant growth in the labour sector. However, the hospital also faced a shortage of manpower and facilities, forcing the administration to use inmates as medical assistants.[40] This situation raises communication issues given the diversity of languages among hospital staff.[41]

The cost of hospital and prison management is also a major constraint in improving the prisoners' health care system. Between 1868 and 1869, a large amount of funds were used for the repair of prison structures and police stations, as well as the development of other facilities. This expenditure includes 350 renovations at the Banduan Hospital, payment of 850 quarters for wardens, repair of the police barracks in Kampung Kerbau (2800), repair of the House of Correction (1300) and construction of additional prisons (1500). To make up for the lack of prison facilities, prisoners were also sent to Pauper Hospitals in Penang, Melaka and Singapore.[42]

The Pauper Hospital or *Poor House* was originally established to treat the poor and underprivileged.[43] In Singapore, the hospital was donated by the Chinese merchant, Tan Tock Seng and has been operating since 1844.[44] By 1869, Malacca also had the Pauper Hospital on Serimbon Island, which was funded by the Welfare Department and the colonial government. However, the use of Pauper Hospital as a treatment place for prisoners also poses new problems. The number of inmates requiring treatment increased drastically, resulting in inadequate facilities and manpower. By 1871, almost all hospitals of this type faced a shortage of staff and allocations, which ultimately increased the death rate of prisoners. The problem gained the attention of the official SS media and sparked a debate between the Singapore and London administrations.[45] Governor Ord ordered immediate improvements, but the results were only visible after more than a decade.[46]

Data obtained from the *Blue Book Prison Health Report* show that case and death rates among inmates remained high at Pauper Hospital, especially for the years 1888 to 1889.[47] The following table details the statistics that show the continuation of the prisoner health crisis in the SS.

Table 4 : Total Cases and Deaths of Prisoners in SS for the year 1888-1889

Hospital	1888 Total cases	Number of deaths	1889 Total cases	Number of deaths
SINGAPORE				
General Hospital (Europe)	566	27	636	33
General Hospital (Local)	2166	93	2252	57
Prison Hospital	626	73	717	25
Pauper Hospital	5032	653	5549	762
Lock Hospital	244	15	164	12
Leprosy Hospital	90	18	93	26
Lunatic Asylum	383	92	418	80
PENANG				
General Hospital (Europe)	181	4	239	15
General Hospital (Local)	1111	33	1007	33
Prison Hospital	48	5	61	6
Pauper Hospital	2224	348	3744	381
Lock Hospital	163	2	45	3
Balik Pulau Hospital	435	24	573	50
Smallpox Hospital	30	8	8	1
Dindings Hospital	158	12	179	11
MALACCA				
General Hospital	376	5	454	19

Prison Hospital	39	2	23	-
Pauper Hospital	2309	216	3451	590

Source: Quoted and modified from Prison Health: Blue Book, Vol 3: 1884–1891, p. 522.

Table 4 shows statistics on the number of cases and deaths of prisoners in the various hospitals in the three main provinces of the Straits Settlements, namely Singapore, Penang and Malacca for the years 1888 to 1889. This data shows that the health condition of prisoners at that time was still at a critical level, with high case and death rates especially in hospitals associated with the poor such as Pauper Hospital.[48]

The welfare of prisoners in the colonial prison system is an issue that is often marginalized in colonial history. Based on the Blue Book Prison Health Report (1884–1891), health data for the years 1888 to 1889 show that the health condition of inmates in the SS was in a very worrying state. This table shows in detail the number of cases and deaths of inmates in major hospitals in Singapore, Penang, and Malacca during the period.[49] Pauper Hospitals in all three states recorded very high figures in terms of the number of cases and death rates. In Singapore, the number of cases increased from 5,032 in 1888 to 5,549 in 1889, with the death rate jumping from 653 to 762 cases. The same situation also occurred in Penang involving 2,224 cases and 348 deaths in 1888 to 3,744 cases and 381 deaths in 1889, while Melaka with 2,309 cases and 216 deaths to 3,451 cases and 590 deaths.[50]

This increase reflects not only the lack of effective treatment, but also the continued neglect of prisoners and the poor in the colonial health system. Pauper Hospital, which was supposed to be a place of rehabilitation, turned into a location with the highest mortality rate, demonstrating the failure of colonial health policies in providing equivalent and humane treatment.[51] On the other hand, the Prison Hospital dedicated to inmates is showing early signs of improvement. In Singapore, the number of cases increased from 626 in 1888 to 717 in 1889. However, the death rate dropped significantly from 73 to 25 cases. This decline is attributed to the establishment of specialized hospital facilities in prisons that allow for more structured and focused treatment. However, the situation in Penang and Melaka still shows a low number of cases which are below 70 cases each. This indicates that seriously ill inmates are still sent to Pauper Hospital, which remains overcrowded and lacks facilities.[52]

General Hospitals for the Local community and specialized hospitals such as Lunatic Asylum, Leprosy Hospital, and Balik Pulau Hospital also recorded high admissions with alarming death rates. For example, the Lunatic Asylum in Singapore recorded 92 deaths out of 383 cases in 1888 and 80 deaths out of 418 cases in 1889. While the Leprosy Hospital recorded 26 deaths out of only 93 cases in 1889, indicating a very high mortality rate among chronic patients and mental patients. This situation shows that health care in the current colonial system is not comprehensive but leads to isolation, obsolescence of facilities, and a lack of critical human and medical resources.

These data clearly show that the colonial health system in the late 19th century prioritized class and social status, with prisoners and the poor receiving very low-quality treatment. While hospitals for Europeans show a much lower mortality rate. For example, the European General Hospital in Singapore recorded only 27 deaths out of 566 cases in 1888, and 33 out of 636 cases in 1889, while hospitals for locals and convicts recorded death rates many times higher. These weaknesses reveal that colonial medical policies were discriminatory, with a primary focus only on elite or colonial health care, while prisoners were considered insignificant or easily replaceable. The overall data from 1888 to 1889 reflect a serious health crisis among prisoners in the Straits Settlements. Pauper Hospital became the center of mass death, while reform efforts through prison hospitals were still too small to bring about significant change.[53]

Overall, the issue of limited hospital services in SS prison is one of the main issues in the health management of inmates. The imbalance between the demand and supply of medical care, combined with the structural weakness of medical institutions and financial constraints, led to a health crisis that claimed many prisoners' lives throughout the 19th century. This shows how health management in the colonial prison system was influenced not only by logistical and economic aspects, but also by political preferences and colonial policies themselves.

Poor Management of Clean Water and Sanitation

In addition, the problem of clean water management was also one of the most critical issues that contributed to the health crisis of prisoners in the Straits Settlements prisons throughout the 19th century. The failure of the British colonial administration to provide a clean, safe and systematic water supply system had a direct impact on the health and disease infection rates among the prisoners. This condition also accelerates the death rate from waterborne diseases such as cholera, dysentery, diarrhoea and malaria.[54]

One of the main causes to the spread of disease in colonial prisons is the failure to provide effective clean water and sanitation systems. Inmates in Singapore, Penang and Malacca Prisons rely on groundwater supplies and open reservoirs that are often contaminated and untreated. According to Dr. Rowell's report in the *Annual Medical Report of 1882*, the use of unhygienic reservoir water directly contributed to the increase in cholera and beriberi cases among prisoners.[55]

Most prisons in the Straits Settlements rely on groundwater sources and water from untreated reservoirs or mines. The water is used by inmates for drinking, bathing, washing clothes and providing daily meals. This water source is not only polluted, but stagnant and becomes an ideal habitat for the breeding of Anopheles mosquitoes which are the main vectors of malaria. Furthermore, forest clearing and new settlements by inmates also disrupt natural ecosystems, thus increasing the risk of spreading waterborne and insect-borne diseases.[56]

The drainage and drainage system in the prison area is also very poor. Rainwater could not be drained properly and resulted in stagnant water in the area around the prison. This condition causes a humid and foul-smelling atmosphere, as well as increases environmental pollution. For example, the construction of the Stamford Canal in Singapore in the late 19th century resulted in overflow water returning to the prison grounds as the flow of water was blocked.

The overflow of the Stamford Canal has mixed clean water with dirty water, making the area around the prison unsafe for the daily use of inmates. This was recorded in the *Straits Settlements Government Gazette 1888*, which stated the urgent need to build a new drainage system, but it was not implemented on the grounds of cost constraints. This problem shows an imbalance between infrastructure development and public health needs, especially for prisoners.[57]

As a result of this weakness, the spread of malaria increases sharply. In 1890, Singapore Prisons recorded 6156 cases of malaria, and this figure increased to over 7000 cases in 1892. Malaria not only affects the health of prisoners, but also threatens their lives if they do not receive proper treatment. Improvement efforts began to be introduced towards the end of the 19th century. Among the important recommendations was by Dr. Malcolm Watson in 1900, who suggested that an open drainage system be built. He stressed that irrigation systems must be adapted to the terrain to prevent the reproduction of disease vectors.

In addition, a report by Dr. Malcolm Watson suggested the drying of swampy areas to reduce the risk of malaria, but this proposal was not taken by the colonial authorities as prisons were usually built in areas that were difficult to reach and not strategic for urban development. The implementation of this proposal faces various constraints, including the location of the prison near hilly areas which

makes it difficult for water to flow out naturally.[58] Furthermore, malaria-carrying mosquitoes such as *Anopheles* can multiply even in running water, making the problem even more complex. Despite various scientific recommendations, the prison administration and the colonial government did not implement a comprehensive clean water policy, causing this problem to continue until the end of the 19th century.[59]

Overall, failures in clean water management have contributed to a serious health crisis in the colonial prison system.[60] It not only reflects the weaknesses of the colonial administration in terms of public health, but also shows how prisoners who were pillars of colonial forced labour were neglected in terms of welfare and survival.

The following is a summary table showing the link between poor water management and the spread of major diseases among Straits prison inmates.

Table 5: Water Management Problems Related to Disease in Straits Settlements Prisons

Water Management Issues	Effects	Related Diseases	Number of Cases	Years
Water supply from contaminated mines and underground sources	Untreated water, used for drinking and cooking	Cholera, Diarrhea	826 cases of diarrhea	1878
stagnant water due to inefficient drainage system	Damp prison area, foul smell, mosquito breeding	Malaria	6156 Malaria Cases	1890
		Malaria	7000 Malaria Cases	1892
Construction of the Stamford Canal causes water to overflow into the prison area	Overflow water pollutes detention areas	Malaria	59,208 Malaria cases	1893
Absence of filtration or water treatment systems	Increased risk of waterborne disease infection	Cholera, dysentery, recurrent fever	43 cases of Cholera	1896

Source: Quoted and modified The Straits Times, Annual Medical Report of Straits Settlements (1896), CO 273, and colonial health records.

Table 5 details the direct relationship between weaknesses in water management and increased rates of infectious diseases among prison inmates in the Straits Settlements in the late 19th century. Data obtained from annual medical reports and colonial health records clearly show that unhygienic water supply systems, poor drainage, and the absence of water treatment contributed significantly to the spread of waterborne and vector-borne diseases among inmates.[61]

In 1878, drinking and cooking water sources for prisons were obtained from mines and contaminated underground sources, without any treatment or filtration processes. As a result, diseases such as cholera and diarrhea spread rapidly. A total of 826 cases of diarrhoea were recorded that year, indicating very poor hygiene conditions and a lack of basic health supervision.[62]

Weaknesses in the drainage system lead to stagnant water in prison areas, creating an ideal environment for mosquito breeding, a major vector for malaria disease. The damp and smelly conditions of the prison also accelerate the spread of the disease. As a result, the number of malaria cases recorded a sharp increase of 6,156 cases in 1890, and subsequently to 7,000 cases in 1892.[63]

In 1893, the construction project of the Stamford Canal had a significant indirect impact on the health of inmates. The canal causes overflow water to enter the prison area, thus polluting the

detention area and increasing mosquito breeding. A total of 59,208 cases of malaria were recorded that year, indicating a massive health crisis caused by poor colonial infrastructure planning.[64]

The problem of water management in prisons is not limited to resources and drainage, but also involves the absence of a water treatment system. Without a filtration or disinfection system, the risk of infection with diseases such as cholera, dysentery, and recurrent fever increases. In 1896, a total of 43 prisoners were infected with cholera, a figure that indicates the presence of a dangerous disease even in small numbers, but with a high mortality rate.

This table clearly shows how the weaknesses of the basic structure especially in water management have a direct impact on the health of inmates in the colonial prisons of the Straits Settlements. The colonial system's inability to provide clean water supply and a good sanitation system not only provoked the massive spread of disease, but also reflected a disregard for the health of prisoners who were considered insignificant in the colonial social hierarchy.

The rise of diseases such as malaria, cholera, and diarrhoea is not only an indication of a health crisis, but also reveals the colonial political and economic reality in which prisoners are considered burdens and are not treated as human beings entitled to basic health care. Therefore, this issue of water management is seen as part of the structural weaknesses in the colonial system, which not only exploits energy but also sacrifices the health and lives of the oppressed.

Conclusion

In conclusion, this study exposes the harsh reality of the British colonial prison system in the Straits Settlements which was riddled with negligence, discrimination, and neglect of prisoners' health between 1826 and 1900. The emphasis on labor exploitation overrides the basic needs of human health, making prison institutions not just a place of punishment, but also a field of chronic health crisis. Inappropriate selection of prison sites, inadequate hospital services, weak sanitation systems and clean water management, and the absence of effective quarantine policies have contributed to the outbreak of diseases such as beriberi, malaria, cholera, and leprosy that spread uncontrollably.

High rates of disease and mortality, particularly among non-European prisoners, reflect inequalities in health care based on race and social class. The improvement efforts introduced were reactive, incomprehensible and shackled by financial constraints and colonial political priorities. Although there were repair efforts carried out towards the end of the 19th century, the measures were more small-scale, without any major changes to the existing basic structure. The data and reports analysed clearly show that the health of prisoners was not a priority in the British colonial agenda, and instead fell victim to oppressive and inhumane colonial policies. Therefore, the findings of this study not only strengthen our understanding of the realities of health management in colonial rehabilitation systems, but also make significant contributions to the historical discourse of public health, social justice and colonial power structures in Southeast Asia.

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