

THE PROBLEM OF MALARIA AND ITS ERADICATION IN THE EXTREME SALIENT OF JAVA DURING THE DUTCH COLONIAL ERA

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ABSTRACT

The extreme salient of Java has often been described as 'malarious land' and 'unheathy region'. Although it had a great consequences on the people's conditions of health and socio-economy, the problem of malaria has rarely been well-understood and fairly-treated in the existing historical studies. This paper is expected to fill in the existing gap in our knowledge on the issues. By using the available historical sources, the paper seeks to elaborate the problem of malaria and its eradication efforts in the extreme salient of Java during the Dutch colonial era. The major objectives of the paper are to examine the seriousness of malaria problem existing in the region and its causes, and to elaborate the ways in which the problem of malaria was contained by the colonial authorities. It is argued that there was a significant progress in the fight against malaria and the understanding of the malaria causes and the chosen methods of eradication reflected both scientific advances and economic considerations.

Keywords: Malaria, problem, control, colonial era, Besuki residency

ABSTRAK

Kawasan ujung timur Jawa sering digambarkan sebagai 'tanah malaria' dan 'wilayah yang tidak sehat'. Meskipun mempunyai konsekuensi besar pada kondisi kesehatan dan sosial ekonomi masyarakat, masalah ini jarang dipahami dengan baik dan dibahas secara memadai dalam studi sejarah yang ada. Tulisan ini diharapkan dapat mengisi kesenjangan yang ada dalam pengetahuan kita tentang isu-isu tersebut. Dengan menggunakan sumber-sumber sejarah yang tersedia, tulisan ini berusaha menguraikan problem malaria dan upaya-upaya pemberantasannya di ujung timur Jawa pada masa penjajahan Belanda. Tujuan utama tulisan ini adalah untuk mengkaji keseriusan masalah malaria dan sebab-sebabnya di wilayah tersebut dan menguraikan cara-cara di mana masalah ini diupayakan pemecahannya oleh otoritas kolonial. Diargumentasikan bahwa ada kemajuan yang signifikan dalam perang melawan malaria dan pemahaman tentang penyebab malaria dan metode yang dipilih untuk pemberantasan mencerminkan baik kemajuan ilmiah maupun pertimbangan ekonomi.

Kata kunci: malaria, problem, pemberantasan, residensi Besuki, era kolonial

INTRODUCTION

The development of the colonial estates from the 1870s radically reshaped the extreme salient of East Java, which was called as the residency of Besuki during the Dutch colonial period. A number of studies have provided valuable understandings of the socio-economic transformations of the region. One key explanation for the transformations was the development of export agriculture taking place in the region, especially from the liberal period (Mackie, 1985, Padmo, 1994; Nawiyanto, 2008). The establishment of export agriculture has changed the image of the region from a less important area to a leading centre of agricultural production, from a thinly populated region to more densely populated one.

The existing studies, however, tend to overlook the fact that the expansion process was not easy and smooth. There was a big problem of diseases arising from the surrounding environment that the planters and the Dutch colonial authorities had to overcome to secure their existence. In early colonial reports, the region was frequently described as 'unhealthy' or even 'one of the unhealthiest place in Java' (Schoute, 1937:105), and a 'malarious land' (Bosman, 1913:16). Similarly, traditional literatures of the region also clearly indicate the widespread of diseases the inhabitants encountered and the notorious effects of the diseases in the people's conditions of living (Arifin, 1995:262,282). The unhealthy environment undoubtedly impacted on the colonial development, but the issues have rarely been sufficiently treated in the earlier historical studies on the regional development of Besuki.

Drawing upon the available historical materials, the paper seeks to explore the problem of malaria and the colonial responses in the residency. In most of the period of its existence, it consisted of four regencies: Panarukan, Bondowoso, Jember, and Banyuwangi. The region was among the last parts of Java that the Dutch rule was able to pacify and it had long constituted a contested frontier among the major centres of political pow-

er in Java and Bali (Kumar, 1983:77; Lekkerkerker, 1923:1036-1040; Margana, 2012). After the colonial pacification, it was one of the few regions of Java experiencing a radical transformation in demographic, socio-economic and environmental terms. The major objectives of the paper are: 1) to examine the malaria problem existing in the region and its consequences in socio-economic terms; 2) to elaborate the ways in which the problem of malaria was contained by the colonial authorities. It is argued that the understanding of the malaria causes and the chosen methods of eradication reflected both scientific advances and economic considerations.

RESEARCH METHODS

The present article employed historical method, which consists of four major stages: source material collection, source criticism, interpretation, and historiography. A great variety of historical source materials were collected and consulted for this study. The primary sources used here included colonial archives, official publications, and contemporary newspapers. Among the colonial archives, there were memoranda of transfer of duties (*Memories van overgave*, 1913-1938) written by residents of Besuki for their period of administration. Part of these materials has been published as *Memori Serah Jabatan 1921-1930* edited by Sartono Kartodirdjo *et al* (1978). Large part of the archival materials were collected from the National Archives of the Republic of Indonesia (Arsip Nasional Republik Indonesia/ANRI), in Jakarta.

A number of official publications were collected from diverse places. Some materials came from the National Library of the Republic of Indonesia (PNRI) in Jakarta, including: *Mededeelingen van den Dienst der Volksgezondheid in Nederlandsch-Indië*, *Mededeelingen van den Burgerlijken Geneeskundigen Dienst in Nederlandsch-Indië* and *Geneeskundig Tijdschrift voor Nederlandsch-Indië*. These materials contain relevant and useful information relating to diseases issues and the ways to fight against the

problem. Also from the PNRI, contemporary newspapers and magazines were also obtained, including *Pewarta Soerabaia* and *Besoekisch Nieuwsblad*. Most of the secondary source materials, including journal articles and books used here came from PNRI as well.

RESULT AND DISCUSSION

The Problem of Malaria

A variety of diseases were reported to have attacked the inhabitants, but malaria was certainly the scourge of the Besuki region. Severe malarial epidemics were reported for example in 1901 and 1902, attacking more than 9 percent of the population in both years and caused around 2900 deaths in 1901 and 2800 deaths in 1902 (Onderzoek, 9/14, 1909:83). A number of the European planters running estates in the Besuki region also complained of suffering considerable losses from the frequent cases of malaria (Rapport, 1916:14-17). The unhealthy environment was blamed for the difficulty in persuading workers to stay longer in the estates (ANRI, Arsip Residensi 'Pasar Ikan', No. 923). About 40 per cent of the imported workers were said to have abandoned the estates before their work contract expired (Broersma, 1912:89). An investigation Commission noted in 1914 that among 43,000 migrant workers imported by the estates of Banyuwangi between 1911 and 1913, less than 6,000 workers were reported to remain in the estates by 1913 (Rapport, 1914:3).

The real causes of diseases were only gradually understood, but many Europeans believed that there was a link between the chronic diseases and unhealthy tropical environment (De Knecht-van Eekelen, 1989:58). One early nineteenth century belief claimed that the poor conditions of health in Banyuwangi were due to the oxygen-absorbing sulphurous vapors from the existing volcanoes (Schoute, 1937:105). Until the late nineteenth century, fevers were believed due to poisonous gases emanating from decomposed materials in muddy and swampy terrain (Taylor, 1945:13; Savage, 1984:154).

Commenting on Banyuwangi, Epp in 1849 attributed endemic fevers to a miasma resulting from swamps and decomposed organic materials from forests (Epp, 1849:245). Around 1900, J.H. Rering, a *controleur* and Mas Soemo Taroeno, *Patih Wedono* also blamed bad air (*hawa koerang baik*) for the chronic problems of health (ANRI, Arsip Residensi 'Pasar Ikan', No. 923). But, there were other beliefs linking fevers to swamp water consumption (Kuypers, 1937:11; Terburgh, 1902:7).

Around 1900, perceptions about malaria shifted remarkably, as the result of scientific findings by Ronald Ross in India and Giovanni Battista Grassi linking the spread of malaria to Anopheline mosquitoes (De Knecht-van Eekelen, 1989:62; Henley, 2002:5). Ronald Ross and Malcolm Watson contended that malaria parasites had nothing to do with "the water or air of marshes, nor decaying vegetation", but with anopheline mosquitoes acting as vectors (Ross and Watson, 1930:7). These findings soon influenced the government circle and were taken into consideration in formulating colonial policy and practical measures designed to contain the problem of malaria.

Parallel with these findings, there had been growing concerns about mosquito breeding grounds. A 1909 report on Besuki by the Prosperity Investigation Commission explicitly attributed chronic malaria to puddles and swamps (Onderzoek 9/14, 1909:78). In 1922, Resident Fessevier acknowledged the persistent malaria problem in areas near the coast (Kartodirdjo, et al ed., 1978:165). Meanwhile, commenting on the same area, Resident Neys in 1929 specifically blamed the brackish-water ponds for the chronic malaria and high death rates (Kartodirdjo, et al ed., 1978:173). Such views led to the creation of an image that brackish water ponds, as Snapper put it, were "dangerous hotbeds for malaria" (Snapper, 1945:312).

The transmission of malaria, however, was not linked to one anopheline species. The anopheline mosquitoes consisted of many different species with a

world-wide distribution (Webster and Swellengrebel, 1953:9). But investigations by W.F.R. Essed in Banyuwangi in 1927 and by J. Kuipers and W.J. Stoker in Lamongan, East Java in 1933, firmly established that *Anopheles sundaicus*, which bred in brackish water, played a prominent role in the transmission of malaria (Essed, 1928:583; Kuiper and Stoker, 1934:90). The role of other anopheline species was regarded as marginal.

The findings confirmed earlier local investigations by Swellengrebel in various places across the archipelago, but differed from Watson's observations on the Malay Peninsula, which suggested *A. umbrosus* and *A. maculatus* as the most dangerous and the chief malaria vector (Watson, 1938:53-54; Verhave, 1945:88-93. A more recent observation suggested that besides Indonesia's coastal areas of Java, Sumatra, North Kalimantan, and several others, *A. sundaicus* is observed in coastal areas stretching from northeastern India to southern Vietnam and has been blamed for the malaria epidemics in India between 1930 and 1940, and in Vietnam in 1965 (Dusfour et al., 2004:518-521).

Concerns about *sawah* (irrigated land) malaria also grew in Besuki. But only in the 1930s, this issue was first given adequate space in the resident's report (ANRI, MvO van Romondt, 1938:121-122). Despite its importance in rice pro-

duction, irrigated land was considered a problem as it provided ideal conditions for the breeding of the malaria vectors. This view seems to have been inseparable from observations by Swellengrebel in Mojowarno, East Java in 1919, and by Van Gorkom in 1912 and Mangkoewinoto in 1917, on the Cihea plain, Bandung (West Java) suggested irrigated lands as a breeding ground for *A. aconitus* (Swellengrebel, 1938:42; Mangkoewinoto, 1923:256; Overbeek and Stoker, 1938:189-190; Takken et al., 1991:112-113). The links between the two phenomena in Besuki were indicated by a report on Ambulu, Jember in 1941, describing the rice harvest season as the outbreak time of malaria and the disease was regionally called "harvest fever" (Swellengrebel, 1938:42).

The growing understanding of the nature of malaria further shifted the perceptions regarding the role of humans in malaria transmission. The disease seems to have long been regarded as being inherently present in particular natural environments, and the expanding human activities unavoidably increased their vulnerability to the disease. Humans were merely regarded as being victims, rather than agents in the spread of the disease. Pointing to the case of Banyuwangi, Essed stated that malaria was a "man-made disease" and was linked to *A. sundaicus* breeding on brackish water ponds (Essed,



Figure 1 'Kromo' Made Malaria, Fish Ponds in Banyuwangi (Essed, 1928).

1928:50). Other medical officials, E.W. Walch and R. Soesilo, shared the same view, and stated in 1935 that in the Dutch Indies “man-made malaria” was facilitated by human interventions creating anopheline breeding grounds, such as mangrove removal, water flow disruption, and brackish water pond culture (Walch and Soesilo, 1935:88; Soesilo, 1936:50). Swellengrebel (1938:38) stated that the label “man-made disease” was more frequently attached to malaria.

The Control of Malaria

The growing presence of Europeans brought about western-style responses. The estate enterprises in Besuki through the Netherlands Indies Estates Syndicate (*Nederlandsch-Indië Landbouw Syndicaat*) played a significant role in stimulating the adoption of measures for improving health conditions (Broersma, 1912: 90-91). On the estates in Java, there was an increasingly strong awareness that promoting the inhabitants' conditions of health was, in P.W.L. Penris' terms, “not luxury but imperative” to the estate interests (Penris, s.n.:18).

Until the last decade of the 19th century, the nature of malaria remained unanswered. Despite this fact, a notable progress in malaria cure had early been made. The use of cinchona bark for malaria treatment was discovered in 1630 by Jesuit priests in Peru, South America and by 1820 French chemists, Pelletier and Caventou, had discovered the isolation of quinine (De Jong, 1911:1). The two events were landmarks in the centuries-long process of uncovering the mysteries surrounding the malaria disease.

A number of Dutch botanists urged the government to establish cinchona cultivation in the Dutch Indies, but only around 1850 was there serious response from the government. Attempts were made to import cinchona plants from South America and developed them in the Bogor experiment gardens. Through a series of trials done by J.K. Hasskarl, F.W. Junghuhn, K.W. van Gorkom, and Bernelot Moens, cinchona eventually

spread in various places in Java (Honig, 1945:181-182; Taylor, 1945:35-40; Van Gorkom, 1945:182-190). In Besuki residency, cinchona cultivation was developed in Sukaraja, Banyuwangi regency in 1872 (ANRI, Arsip Banyuwangi 1691-1881, No. Inv. 31).

Parallel with this development, the use of quinine as remedy and prophylaxis grew and became a standard practice in the malaria medication. It is very likely that quinine might have been as a significant malaria medication treatment in the second half of nineteenth century. Besuki as it was in other parts of the colonial Indonesia. Until the late nineteenth century, the predominant response to malaria was basically medical. The introduction of quinine was apparently not always smooth. In some cases, the Indonesians of Besuki doubted western medicines and showed little interest in western medication to solve their problems of health (Kruyne, 1929:16).

Despite this fact, it was clear that quinine was increasingly in use and became the principal colonial response, especially during the major malaria outbreaks. The practice was observed in Probolinggo, west of Besuki in 1914 (Overbeek and Stoker, 1937:26; *Pewarta Soerabaia*, 7 April 1914:1). In 1929, an estate doctor working in Jember, H. Kruyne (1929:16) reported that anticipating the malaria outbreak, each estate coolie worker, whether sick or not, was subject to a two-week quinine treatment. In the Kendeng Lembu estates, Banyuwangi, to deal with a malaria explosion, quinine tablet was also reported to have been used (Vereeniging, 1936:6). Another report revealed that in Panarukan regency, quinine was distributed to villagers by the village heads (*Regentschapsverslagen*, n.d.:602). On Ambulu, Jember, it was reported in 1941 that quinine was sold in the local shops (*Pewarta Soerabaia*, 15 July 1941:3/1). In Grujugan Bondowoso, the malaria control was reported to have substantially reduced death rates (*Besoekisch Nieuwsblad*, 18 September 1914:1).

The medical response, however,



Figure 2. Brackish Fish Water Pond in Open Connection with the Sea (Banyuwangi) (1. Stranded Algae; 2. Floating Algae) (Walch and Schuurman, 1929).

was regarded as insufficient by those who were promoting malaria control through vector eradication. Prominent figures in this approach were Ross and Watson in the British empire, and Swellengrebel in colonial Indonesia (Swellengrebel, 1921:1-2; Worboys, 1928:21; Farley, 2004:107). C.D. de Langen (n.d.:25) shared much of the beliefs that preventive measures, rather than curative ones, served as the most effective way to control malaria. Key among the beliefs was sanitation aiming at eliminating mosquito breeding grounds. In the Malay Peninsula and Panama, this measure was already put into practice in the first decade of the twentieth century (Kuipers, 1937:15). In colonial Indonesia, it started in Jakarta in 1913 (Takken and Snellen, 1991:100). In 1918, studies were reported on draining large and small swamps in several places in the Besuki region (ANRI, MvO Schagen van Soelen, 1918). In 1922, Resident Fessevier stated that several marshes and swamps had been successfully drained, but economic considerations made sanitation plans hard to widely put into practice (Kartodirdjo, 1978:cxxvii).

As another alternative, rather than directed to all mosquito breeding grounds, sanitation measures were restricted to specific areas, where malaria vectors bred. Such a measure was called species sanitation, developed in colonial Indonesia by Swellengrebel on the basis of Watson's invention in Malaya (Knols and Takken,

1992-2-3). In 1928, species sanitation was carried out in Banyuwangi. A total of f 25,000 was allocated for this project, taking the form of constructing open connections with the sea to allow tidal movement which made the ponds unsuitable as breeding grounds for the malaria vector (Overbeek and Stoker, 1937:57; Kuipers, 1937:20). Despite the good results, the measure was considered costly due to the compensation payment made to the ponds' owners and canal construction (Takken and Snellen, et.al. 1991:106).

A different sanitation method was employed in Panarukan, taking the form of hygienic brackish pond exploitation. The method, involving a periodic drying of ponds to kill algae regarded as protecting mosquito larvae, was developed first by fisheries inspector Reijntjes in Pasuruan, East Java in 1922 (Reijntjes, 1922:250, Reijntjes 1938:114; Reijntjes 1929: 258-262; Walch and Schuurman, 1929:258-262). Resident A.H. Neys reported in 1929 that such a method was planned to be employed in the region (Kartodirdjo, 1978:cxxii). With financial support from the Panarukan regency, a f 29,000 hygienic fishpond exploitation project was undertaken in Alas Malang, Panarukan, and Besuki districts in the 1930s. The draining of brackish water areas in Bajulmati (Banyuwangi) and other sanitation measures in southeastern Panarukan were reported in 1938 (Assaineeringwerken, 1938:457).

With regards to irrigated land malaria, in the 1930s, in Besuki, irrigated land fish cultivation was promoted (ANRI, MvO Van Romondt, 1938:121-122). The larvae-eating fish, *Haplochilus panchax* and water plants-eating fish, *Puntius javanicus* were probably also promoted for fish farming in Besuki as observed elsewhere in Java and Sumatra (Soesilo, 1938:78-80; Walch and Soesilo, 1935:94). On irrigated lands, campaigns were also run to encourage farmers to undertake simultaneous planting and periodic draining (Mangkoewinoto, 1923: 258). In addition, the use of mosquito nets to protect against mosquito bites was also promoted (Dammerman, 1915:139, Terburgh, 1902:7). There is no historical evidence linking such measures directly to Besuki, but the same development must have taken place in the region. It was evident from the fact that during the Japanese military occupation period, some villagers in Jember were reported to have reused their mosquito nets for clothes due to the scarcity of clothing materials (Nawiyanto, 2005:143).

CONCLUSION

This paper has indicated that the fight against malaria was an integral part of the struggle for colonial development. The disease attacked the inhabitants of the region and claimed a significant number of victims both among the indigenous and European populations. Although the problem of malaria certainly had roots in the region's natural environment consisting of swamps, beaches and puddles, in several cases the escalation of the malaria was often caused by the influence of the expanding human activities. Besides offering socio-economic advantages to the population in the form of food products, the establishment of farm-irrigated lands (*sawah*), agricultural estates, and fish ponds (*tambak*) also brought about unexpected results as it also created more extensive fertile breeding grounds for malaria vectors. It is clear that the growing problem of malaria was partly induced by the human pursuit of material basis of liv-

ing through environment modification, rather than due exclusively to natural factors.

With regard to the malaria control, there are some evidences for a gradual process of improvement. The growing understanding of the nature of malaria and the scientific discoveries regarding the causes of malaria, especially the link between malaria and anopheline mosquitoes as vectors, steadily offered more well-developed tools to address the problem. The early response to the malaria was in the medical field. Quinine, medical facilities, and personnels became increasingly available. From around the 1920s, campaigns for improving public hygiene were also gradually run because the response in the medical field was regarded as insufficient. The colonial authorities had realized the importance of combining medical and hygienic measures in the fight against malaria, but the financial limitations caused the application of hygienic measures remained limited. The legacies of the colonial malaria control seem to have been remarkable and the issues would be an interesting topic for another research.

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