



The History of Health in Kedu Residency 1930–1940

Wahyu Setyaningsih^(✉)

Sejarah Peradaban Islam, Universitas Islam Negeri Salatiga, Salatiga, Indonesia
wahyusetyaningsih@iainsalatiga.ac.id

Abstract. This article aims, firstly, to give details on the health condition of the people in Kedu during 1930–1940. Secondly, to explore the policies of the Dutch colonial government in the health sector, pin pointing the effort to overcome various diseases that developed in Kedu during 1930–1940. The research method uses the critical historical method. The results of this study shows that Kedu people during 1930–1940 enduring various kinds of epidemics. The plague outbreak was infected 60% of the population with 3.675 victims in total, the typhoid fever outbreak infected 27% equals to 1.660 people, the diphtheria was 6% or 358 victims, the bacillary dysentery epidemic was 5% or 278 victims, the paratyphoid fever A outbreak was 2% or 102 victims, and the smallpox outbreak as much as 0% with 11 cases. In Kedu, there were one private hospital and one civil hospital. The other, was a military hospital that was built in 1874 and located on the east side of the military complex which is known as Rumah Sakit dr. Soedjono Magelang. There was also a prison hospital and a psychiatric hospital (Krankzinnigenverpleging). The psychiatric hospital was built in 1920 in groote weg noord (now Kramat area) which is now named Rumah Sakit Jiwa Prof. Dr Soerojo. Besides, Kedu had ten polyclinics.

Keywords: disease · health · people of Kedu

1 Introduction

The death rate in Central Java has relatively increased. In 1912, the number of deaths increased although in 1915 to 1917 there was a decrease. However, it did not last long. In fact, in 1919, there was a spike in death cases persisting until 1928. The peak of the death rate was in 1928 with nearly 9000 victims. For almost 9 years the number of deaths per year was beyond a thousand people. In 1929, the number of deaths fell below a thousand people, but in the following years it increased over again. This evidenced that welfare in the health sector had not been implemented properly. Because low mortality rate indicates high prosperity rate [1].

An epidemic of a deadly disease once hit the Dutch East Indies. These were caused by epidemic and endemic. A pandemic is a disease outbreak that occurs simultaneously everywhere, covering a large geographic area. For example, influenza, cholera, malaria, and plague. Endemic is a disease that appears and becomes characteristic in a certain

area. For example, dysentery and hookworm disease [2]. Various factors that caused the Dutch East Indies area to be infested with many outbreaks were due to the tropical climate, the existence of trade contacts with outsiders and high mobility, the low level of public knowledge about health such as cleanliness, the poor sanitation and drainage, and the drinking water pollution. These were what causes the death rate in Central Java was relatively high.

Health is one of the elements in the ethical policy yet it was implemented poorly. This can be seen from the various diseases that cross the Dutch East Indies region. Kedu was no exception. Various diseases struck Kedu were malaria, plague, typhus fever, paratyphoid fever, smallpox, diphtheria, influenza, dengue, cholera, leprosy, beriberi, tetanus, pneumonia, diabetes, and so on [3]. Malaria is a fever disease caused by the protozoan parasite plasmodium. The plague was transmitted by the Burmese rice ship sailed to the Dutch East Indies in 1901. Chickenpox was transmitted by trade contact with Eurasians [4]. Many of these diseases cause a relatively high mortality rate.

Various treatment efforts were carried out by the colonial government. One of them is the establishment of a hospital that is adapted to the type of disease that develops in the Dutch Hindi region. The hospitals include central government-owned hospitals in Batavia, Surabaya, and Semarang. One psychiatric hospital was established in Kedu Residency, located in Temanggung. Sanatorium for lung patients was established in Salatiga, Malang, Sukabumi, Baja (East Coast of Sumatra). Hospitals for people with leprosy/leprosy in Donorejo (Central Java), Singkawang (Kalimantan), Poeloe Poamat (Aceh), Amboina (Maluku), Hoetsalem (Tapanuli), Lao Si Momo (East Coast of Sumatra), Batoe Hitam, and Sitoemba. On the other hand, government establish some polyclinics and also provide pharmacists [5].

Siddharth Chandra in his writing in Mortality Form the Influenza Pandemic Of 1918–19 In Indonesia published in *Population Studies A Journal Of Demography*, 2013 Vol. 67, No. 2, 185–193, <http://dx.doi.org/10.1080/00324728.2012zz.754486> stated The 1918–19 influenza pandemic was the single deadliest short-term epidemic of the twentieth century. The new estimates show that, for Java alone, population deaths are in the range of 4.26–4.37 million, or more than twice the estimate set for deaths across Indonesia. We conclude that the approximation of deaths from influenza in Java and Indonesia need to be revised upwards significantly. We also present new findings on population geographic patterns across Java and its pre-pandemic and post-pandemic population growth rates [6].

Mumuh Muhsin Z in Bibliography of Health History During the Dutch East Indies Government. *Paramita* vol.22 no. 2 July 2012 (ISSN: 0854–0039) pp. 186–197 stated that health history is useful in studying change, continuity, parallelism, and comparison of various health problems. Thus, the importance of bibliographic sources of health history in Indonesia can be used as data in reconstructing the health history of the colonial period.

Nur Aini Setiawati in Residents in the Kedu Village in the XIX-Early Century XX: *Socio-Economic Overview. History Sheet* Vol. 1, No 22, 1997/1998 stated that the majority of the population in Kedu village make a living as farmers. Their situation was exacerbated by various policies from the colonial government, such as coffee crop tax obligation, and requirement for farmers to grow export crops such as tobacco, coffee,

and tea so that farmers could not cultivate food crops. In addition, extortions were rooted and instigated to the farmers from various parties. Therefore, the farmers of the Kedu Residency become less prosperous [7].

Kedu was one of place of exploitation by the colonial government, especially during the forced cultivation period as an exporter of coffee, tobacco, and tea. Thus, trade mobility and contacts with businessmen both European and other nations were relatively high. In addition, Kedu Residency is a tropical region. How was the health condition of the people of Kedu in 1930–1940? The public health condition in Kedu residency is low, therefore deaths took place prevalently due to the epidemic. Then, what are the policies of the Dutch colonial government in the health sector, especially as an effort to mitigate various diseases spread in Kedu during 1930–1940? Therefore, the purpose of this paper, first, is to find out the health condition of the Kedu people in 1930–1940. Second, is to explain the policies of the Dutch colonial government in the health sector, especially in their effort to overcome various diseases that developed in Kedu in 1930–1940.

2 Research Method

This study employs the critical history method which consists of four steps of activities, namely heuristics, verification, interpretation, and historiography [8]. This method implementation is expected to promote an objective writing, although subjectivity in historical writing cannot be avoided. Heuristics are carried out in various libraries, especially online libraries. The sources used are: kolonial verslag and indisch verslag statistisch, staatsblad, old advertisements, contemporary colonial magazines, etc. After the source is found, the next step is the verification of the source analysis both externally and internally. This aims to obtain authentic, valid, and credible historical facts [9]. After the facts are obtained, the next step is interpretation. Historical interpretation is often referred to as historical analysis. Analysis means to describe, and in terminology it is different from synthetic which means to unite [10]. The last step is the way of writing, presenting, or reporting the results of historical research that has been carried out (historiography). In this historiography, the author presents a historical fact related to the public health history in Kedu Residency in 1920–1940.

3 Results and Discussion

3.1 Public Health in Kedu 1930–1940

In 1807, Kedu was the part of the Dutch territory since the Dutch won confrontation over Sultan Hamangkubuwono II. Therefore, Magelang became an independent area in 1812. Previously, Magelang was designated as the center of government equivalents to a district level position by the British government in 1811. Its first regent was Mas Ngabehi Danoekromo and was recognized by the Colonial government with the title Raden Tumenggung Danoeningrat [11]. This confirmation was stated in the Besluit Gubernemen on November 30, 1813 [12].

On March 14, 1817 the Commissioner General issued Decree No. 24 which states that the Kedu area is an independent residency. Magelang was chosen as the residency

capital in 1818 [13]. In 1903, the Decentralization Law was issued to grant autonomy rights and forming Regional Councils in each residency (gewest) chaired by a resident; major cities (gemeente) chaired by an assistant resident who served as mayor; and districts (afdeeling). In 1905, the Decentralisatie Besluit Staatsblad No. 137 of 1905 which contains the formation of autonomous cities in Indonesia was issued. Kedu in 1907 as contained in Staatsblad 1908 No. 177 [14].

Kedu was one of the residencies in Central Java and was the only area that was not surrounded by the sea. Administratively, it was bordered by the Residency of Semarang in the north; by the Residency of Yogyakarta in the south, in the east by the Residency of Bagelen, and in the west was by the Residency of Surakarta. This area is surrounded by mountains. In the north are Mount Prahua and Mount Ungaran; in the west area are Mount Prahoe, Sindoro, and Soembing; in the east are Mount Oenganan, Telomojo, Merbaboe, and Merapi. Elo River and Progo River are the main rivers that divide Kedu into north and south [15].

In the nineteenth century Kedu area administratively covered Magelang and Temanggung Regencies. However, since August 1, 1901 the area of the Kedu Residency became bigger due to the unification with the Bagelan Residency. Thus, Kedu Residency has five regencies, namely Magelang Regency, Temanggung Regency, Wonosobo Regency, Purworejo Regency, and Kebumen Regency. The area of Magelang Regency includes Salaman, Salam, Muntilan, Tegalrejo, Grabag, and the City of Magelang. Temanggung Regency area includes Temanggung, Paraan, and Tjandirototo. Wonosobo Regency includes Wonosobo, Garoeng, Sapoerang, Kaliwiro. The area of Purworejo Regency includes Purworejo, Loano, Kutoardjo, Kemiri, Purwodadi. The district of Kebumen consists of Kebumen, Kutowinangun, Prembun, Karanganyar, Gombong, and Penjagon [16].

Many people in Kedu are infected with various diseases, both communicable and non-communicable. Various outbreaks diseases in Kedu were typhoid fever, paratyphoid fever A, smallpox, bacillary dysentery, diphtheria, and plague outbreaks. From the picture above, it can be seen that the health condition of Kedu people in 1930–1940 was affected by the plague as much as 60% with a total of 3675 sufferers; Typhoid fever outbreaks was 27% with a total of 1660 people; diphtheria outbreaks was 6% with a total of 358 people, Bacillary dysentery outbreaks were 5% with 278 people, paratyphoid fever A outbreaks were 2% with 102 people, and the smallpox outbreaks were 0% with 11 patients [17].

Oriental plague, plague, black death are a zoonotic disease caused by rodents such as rats as the reservoir and fleas as the transmission vector. The *X cheopis* is the main flea causes bacterial infections in animals or humans. Transmission to humans occurs through flea bites or direct contact with infected rodents with *Yersinia pestis* bacterium [18]. The initial entry of this disease was due to the crop failure of the rice so that the Dutch government imported Burmese rice where many rats were infected by fleas on the transport ship. The spread of the plague originated from ports in Dutch East Indies. First, the port of Surabaya in 1910 spread to Malang, Kediri, Madiun, Surakarta, and Yogyakarta. Second, the port of Semarang in 1919 spread to Ambarawa, Salatiga, Magelang, Wonosobo, Banyumas, Pekalongan, and Dieng. Third, the port of Tegal in 1922 spread to Bumiayu. Fourth, the port of Cirebon in 1924 spread to Kuningan, Majalengka, Bandung, Plumbon [19].

The number of plague victims in Kedu has gradually increased. Due to the increasing price of rice in Java, the number of imports to meet the needs of the Dutch East Indies population increased. The percentage between sufferers and those who died from the plague was 56% compared 44%. Thus, only about 12% recovered from the plague, while the majority of the victims were died. The plague is increasing due to poor environmental conditions and people living in slum areas. This shows that the health condition of the people in Kedu tends to be low due to the plague [17].

In 1920 there were 521.311 houses in Kedu. The comparison percentage of the houses that already used modern and traditional materials were 49.58% of all the existing houses. This showed that about 50.42% of the houses were not livable. Houses with wooden walls without tiles were 0.28%. Houses with wooden walls and tiles were 42.23%, while houses with brick walls were 7.91% [20]. These showed that the housings in Kedu community were generally unfit to be lived. Consequently, it eased rats carrying the plague to slip in and out the residential areas. Therefore, Kedu became more susceptible for the plague outbreak.

Housings in 1930 experienced growth in line with the increasing population. The total number of European houses in Kedu Residency were 1.388, consisting of 960 houses with brick walls, 388 houses other than brick walls, while other types were 40 houses. Bumiputra's houses in Kedu Residency were 454,286 consisting of 16,049 houses with brick walls, 434,936 non-brick walls, and 3,301 others. The total number of Chinese houses in Kedu Residency were 4,062, consisting 1,460 houses with brick walls, 2,545 non-brick walls, and 57 others. 123 other were Eastern Foreign houses, with 30 houses with stone walls, 89 houses with non-brick walls, and 4 with other types [5].

In 1930–1940 the people of Kedu were infected by typhoid fever. This disease is caused by the bacterium *Salmonella thyphi* which is found in contaminated water or food or is transmitted from an infected person [21]. The percentage of deaths from this epidemic from 1930–1940 reached 3% from various other diseases that spread in Kedu. The typhoid fever disease is increasing annually in 1930–1940 the people of Kedu. This disease happened due to poor food or water hygiene, and poor nutrition faced by the residents. The percentage between the infected and the dead victims due to this epidemic was relatively low at 94% compared to 6%. This indicates that 88% of the infected recovered [17].

Bacillary dysentery is an intestinal infection caused by a group of *Shigella* bacteria that can be found in the human intestine. Symptoms of dysentery will appear 1–3 days after infection from bacteria or parasites [22]. This disease is caused by the low level of community hygiene. The percentage of patients who died from this epidemic from 1930–1940 was 90% compared to 10%. All in all, 80% of the victims recovered from this epidemic [17].

Diphtheria is an infectious disease caused by the bacterium *Corynebacterium diphtheriae* that attacks the tonsils, pharynx, larynx, nose, and sometimes mucous membranes or skin and conjunctiva or vagina. The period of transmission of diphtheria from patients is 2–4 weeks by air. Population density and population mobility are factors promoting transmission. The second highest diphtheria case for the community was in 1938 with 86 sufferers. However, the death rate from this epidemic tends to be low because it is under 10 people per year. The percentage between patients and those who died from this

epidemic from 1930–1940 was 92% compared to 8%, resulting the percentage of those who recovered reached 84%. This shows that the diphtheria outbreak in Kedu during the period was not as malignant as the plague [17].

Smallpox is a contagious infection caused by the variola virus with an incubation period of 7–19 days and is easily transmitted from human to human through droplets or direct contact with the body of an infected person [23]. This epidemic was also experienced by the people of Kedu in 1930–1940 with 11 recorded cases with no death [24].

The health condition in Kedu can be assume from the number of people being hospitalized, both in public hospitals and in special hospitals. From 1932 to 1940, 103 people were hospitalized in public hospital in Kedu Residency, while 9 people were in the special hospital. Based on the graph above, it can be seen that from 1932 to 1937 there was an increase in the number of patients in that year since the epidemic that occurred in Kedu increased. However, at the following year, the number of patients decreased [24].

Thus, the condition of public health in the 1930s and 1940s tend to be unstable due to some the epidemics. Disease outbreaks happened include Typhoid fever, Paratyphoid fever A, Smallpox, Bacillary dysentery, Diphtheria, and Plague. Plague is an outbreak that caused many deaths in Kedu. The number of deaths per year was more than 100 people. Even in 1931 it reached 1,239 death cases. The total number of patients from 1930–1940 for the Typhoid fever epidemic was 1,660 people, Paratyphoid fever A 102 people, Smallpox 11 people, Bacillary dysentery 278 people, Diphtheria 358 people, and Plague 3,675 people. In 1930–1940 the number of death cases from the Typhoid fever epidemic was 138 people, Paratyphoid fever A was 7 people, Smallpox was zero, Bacillary dysentery was 32 people, Diphtheria was 33 people, and Plague was 4,632 people. This situation happened due to the crop failure so rice was getting difficult to get. Rice price was almost equivalent to the cost of living index. This situation created problems to body's immune system. The import of rice from Burma has initiated many rats to be infected with *Yersinia pestis* bacteria which caused plague. In addition, lots of unlivable housings were used to live in.

3.2 Dutch Colonial Government Policies in the Health Sector

The existence of ethical policy provides fresh air for the health sector. Although it is undeniable that the Europeans get better facilities than the natives and foreigners. Various efforts were made by the Dutch colonial government in implementing the goals of ethical policy. After the 1911 disease outbreak, expenditures were used for public health. The given fund increased annually. The graph below shows that Dutch spending is increasing every year. The expenditure is used for hospital and medical expenses; immunization; housing improvement and health propaganda [25].

In dealing with the plague, the Dutch government carried out various vaccination efforts. Initially, vaccination was carried out using the Haffkin vaccine, but the results were not satisfactory. Dr. Otten discovered the Ciwidey vaccine which is an avirulent type. Then, a live vaccine with immunity span for 8 months to 1 year was made. In 1935 a large-scale vaccination was held resulting the reduction in the number of sufferers, but the disease was not eradicated [26].

Housing repairs for residents were also carried out in order to overcome the plague that was growing rapidly in Central Java. This repair aims to prevent rats from entering people's homes. In addition, the effort to catch rats is carried out through building mouse traps installed by each house [27]. The plague entered Central Java through the port of Semarang in 1911 causing 41 deaths. Efforts to repair housings in Central Java during 1911–1914 resulting 75,399 houses repairment. This improvement has increased every year along with the number of deaths due to the plague.

The increasing plague the Dutch government's efforts to improve housings. The percentage comparison between cases of death and housings repairs due to the plague was 12% compared 88%. From the graph, efforts to improve housing have a significant impact on reducing the number of deaths. The peak of the highest death cases was in 1920 which reached 8,879 cases. However, at the following year, cases decreased, to the point of 141 cases of death in 1940 [24]. This indicated that housing improvements suppressed the plague outbreak.

Smallpox virus also hit Central Java, including Kedu Residency. Mitigation was done by vaccination. Initially, it was opposed by the people [28]. The number of the participants raised every year. The number of vaccines available was increasing every year followed by the number of vaccines participation rate.

Vaccination effort was considered to be successful. The percentage of success was above 90% each year. Based on the graph above, in 1920 the percentage of success reached 98%, the year and the vaccine participants recorded were also increased by the year. In 1925 it reached 93.6%, in 1930 it reached 98.5%, in 1931 it reached 98.7%, in 1932 it reached 98.9%, in 1933 it reached 98.9%, in 1934 it reached 98.1%, in 1935 it reached 98.8%, in 1936 it reached 98%, in 1937 it reached 98.4%, in 1938 it reached 98.7%, in 1939 it reached 97.4%, and in 1940 it reached 98.2%. However, the government also did re-vaccination in those years. The repeats were mostly done in 1938 as much as 5060559 people [17].

In dealing with this disease outbreak, the colonial government issued a policy to establish various hospitals that were adapted to the type of disease. In Kedu, there are three types of hospitals i.e. government hospitals, private hospitals, and private hospitals that receive subsidies from the government. Government hospitals include civil hospitals, military hospitals, prison hospitals, psychiatric hospitals, and polyclinics. In Kedu, there were one private hospital and one civil hospital. The other, was a military hospital that was built in 1874 and located on the east side of the military complex which is known as Rumah Sakit dr. Soedjono Magelang. There was also a prison hospital and a psychiatric hospital (*Krankzinnigenverpleging*). The psychiatric hospital was built in 1920 in *groote weg noord* (now Kramat area) which is now named Rumah Sakit Jiwa Prof. Dr Soerojo. Besides, Kedu had ten polyclinics [17].

In Kedu Residency, the medical personnel consist of community health services, local resorts, and private doctors. Medical personnel for public health services consist of doctors, nurses, vaccinators, potential vaccinators, midwives, and technical personnel. This shows that for public health services the type of personnel was in accordance with their respective fields of expertise.

Health personnel for local resorts in Kedu Residency consist of doctors, nurses, midwives, vaccinators, and potential vaccinators. The number of personnel for this local

resort in 1930–1940 consisted of 22 doctors, 34 nurses, 17 midwives, a vaccinator, and a candidate for vaccinator. Vaccinations and potential vaccinators existed in 1940, while in previous years there were none [29].

Private physician personnel include doctors, dentists, chemists, and chemists' assistant and midwives. The number of personnel for doctors from 1930–1940 was 128 doctors, 23 dentists, 9 chemists, 28 chemist's assistant, and 230 midwives. The number of personnel of private doctors was always increasing annually, and the composition of the number can be evenly distributed every year [29].

Different personnel between public health services, local resorts, and private doctors, among others, are that for public health services there are technical personnel, while for others were not. In private doctors there were dentists, chemists, and chemists' assistant, while others were not. In private doctors there were no vaccinators and potential vaccinators, while others did. In addition, the number of personnel is more than the others. Therefore, because the personnel in each services were different, the available facilities are adjusted according to the personnel. So, the people of Kedu could be adjustable in utilizing these health services according to their needs.

In the effort to improve the people's health, Dutch government increases the number of nurses every day. The addition of hospitals occurred either in general hospitals and special hospitals. This addition exceeds the maximum number of nurses per day. This was done to support a better health condition in Kedu. Given the number of deaths in Kedu, the highest number was due to disease outbreak. The ratio between the maximum number of nurses per day with the addition of nurses per day was above 50% for general hospitals. As for special hospitals, the ratio was in the range of 100% [17].

Financial assistance was also carried out by the Dutch Government. For the Bumiputra community, the support was in several forms i.e. Bumiputra nurses who graduated from Europe received f 600; Bumiputra's assistants received f 960; treatment and care received f 2,500; building maintenance received f 281.95; for maintenance received f 255 in 1920, while in 1921 and 1922 it was f 420. In addition, this financial assistance was also given to military retirees who happened to have low rank in the military. This aid is adjusted according to the rank. This financial assistance was also use for the improvement of their living environment [17].

Thus the various policies carried out by Dutch government in order to overcome the various diseases outbreaks in Kedu Residency include: the establishment of various hospitals adapted to the type of disease, vaccinations, housing repairs, financial assistance, additional medical personnel, and additional beds in the hospital. This efforts could minimize the number of deaths caused by the outbreak that occur in Kedu.

4 Conclusions

Many people in Kedu were infected with various diseases, both communicable and non-communicable. Various outbreaks of infectious diseases in Kedu varies including typhoid fever, paratyphoid fever A, smallpox, bacillary dysentery, diphtheria, and plague outbreak. The health condition of the people in Kedu during 1930–1940 was disturbed due to the plague as much as 60% equivalent to 3675 total sufferers, typhoid fever outbreaks as much as 27% or 1.660 sufferers, diphtheria outbreaks in 6% or 358, bacillary

dysentery outbreaks in 5% or 278 sufferers, paratyphoid fever A outbreak as much as 2% or 102 sufferers, and smallpox outbreak was 0% with 11 victims.

Various policies carried out by the Dutch colonial government in the effort to overcome various diseases spread in Kedu during 1930s-1940s included: the establishment of various hospitals, improvement of slum housing, improvement of sanitation and irrigation, vaccination, and health subsidies. There are three types of hospitals i.e. government hospitals, private hospitals, and private hospitals that receive subsidies from the government. Government hospitals include civil hospitals, military hospitals, prison hospitals, psychiatric hospitals, and polyclinics. In Kedu, there were one private hospital and one civil hospital. The other, was a military hospital that was built in 1874 and located on the east side of the military complex which is known as Rumah Sakit dr. Soedjono Magelang. There was also a prison hospital and a psychiatric hospital (*Krankzinnigenverpleging*). The psychiatric hospital was built in 1920 in *groote weg noord* (now Kramat area) which is now named Rumah Sakit Jiwa Prof. Dr Soerojo. Besides, Kedu had ten polyclinics.

References

1. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1911–1931*. Landsdrukkerij.
2. *Departemen van Binnenlandsch Bestuur*, m1991; 5; Peter Boomgaard, 1993; 80 dalam Baha'udin. Pelayanan kesehatan rumah sakit di jawa abad ke-19 dan awal abad ke-20. *Lembar sejarah*, (Vol. 7. No 1. p. 102) (2004).
3. For Books of Interest to the Sanskirt Department. *Tijdschrift Voor Nederlandsch*. Barbar college library. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1911–1931*. Landsdrukkerij.
4. Robert Crib Dan Audery Kahin. (2012). *Kamus Sejarah Indonesia* (pp. 92 & 284).
5. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1930*. Batavia: Landsdrukkerij.
6. Chandra, S. (2013). Mortality form the Influenza Pandemic of 1918–19 in Indonesia yang diterbitkan di *Population Studies a Journal of Demography*, 67(2), 185–193. <http://dx.doi.org/10.1080/00324728.2012.754486>
7. Setiawati, A. (1998). Penduduk Di Pedesaan Kedu Pada Abad XIX –Awal Abad XX: Tinjauan Sosial Ekonomi. *Lembar Sejarah*, 1(2), 107–108 (1997/1998), 123–124 (1998)
8. Notosusanto, N. (1971). *Norma-Norma Dasar Penelitian Penulisan Sejarah* (p. 35). Dephankam.
9. Suhartono. (2010). *Teori dan Metodologi Sejarah* (pp. 36–37). Graha Ilmu.
10. Abdurrahman, D. (1999). *Metode Penelitian Sejarah* (p. 64). Logos Wacana Ilmu.
11. Haryadi, et al. (2001). *Suaka Peninggalan Sejarah dan Purbakala Jawa Tengah Pendataan Bangunan Indis Kota Magelang* (p. 4). Tidak terbit.
12. Van Lisa. (1935). *Magelang Vooruit*
13. Adiwiratmoko, S. (1984). *Magelang Kota Harapan* (p. 7). Tidak diterbitkan.
14. Sumartono. (1988). *Sekilas Menelusuri Sejarah Magelang*. Kantor Pendidikan dan Kebudayaan
15. *Encyclopedie Van Nederlandsch-Indie*. 's Gravenhage: Martinus Nijhoff (p. 209). (1896).
16. *Staatsblad* tahun 1901 no 235; *Encyclopedie Van Nederlandsch-Indie*. 'S Gravenhage: Martinus Nijhoff, p. 293 (1918) dalam Aini Setiawati, Penduduk Di Pedesaan Kedu Pada Abad XIX –Awal Abad XX: Tinjauan Sosial Ekonomi. *Lembar Sejarah Vol. 1, No 2, 1997/1998*, pp. 107–108 (1998).

17. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1930–1940*. Landsdrukkerij.
18. Ramadhani, D. T. & Raharjo, J. (2010). *Rekonfirmasi Rattus Sp. Sebagai Reservoir Pes Di Kabupaten Boyolali* (p. 1). Kementrian Kesehatan Republik Indonesia.
19. Departemen Kesehatan RI. (1980). *Sejarah Kesehatan Nasional Indonesia Jilid 2* (pp. 43–44). Departemen Kesehatan RI.
20. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1920*. Landsdrukkerij.
21. <https://rs.unud.ac.id/tipes-demam-tifoid/> diakses pada 30 Juli 2021 pukul 03.00 WIB.
22. <https://www.chp.gov.hk/en/healthtopics/content/24/14.html> diakses pada 30 Juli 2021 pukul 04.00 WIB
23. <https://www.klikdokter.com/info-sehat/read/3614404/apa-bedanya-cacar-dan-cacar-monyet>. diakses pada 30 Juli 2021 pukul 05.00 WIB.
24. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1931–1941*. Landsdrukkerij.
25. Furnivall. (2009). *Hindia Belanda Studi Tentang Ekonomi Majemuk* (p. 385). Freedom Institut.
26. Departemen Kesehatan RI. (1980). *Sejarah Kesehatan Nasional Indonesia Jilid 2* (p. 44). Departemen Kesehatan RI.
27. Departemen Kesehatan RI. (1980). *Sejarah Kesehatan Nasional Indonesia Jilid 2* (p. 45). Departemen Kesehatan RI.
28. Jan Breman. (2014). *Keuntungan Kolonial Dari Kerja Paksa Sistem Priangan Dari Tanam Paksa Kopi Di Jawa 17229–1870* (p. 84). Yayasan Obor.
29. Samengesteld Door Het Central Kantoor De Statistiek Van Het Departemen Van Landbouw Nijverheid En Handel. *Indisch Verslag 1930–1941*. Landsdrukkerij.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

