# Colonialism, Therapeutic Practices and Legitimacy: The Spanish Flu in Malabar

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Abstract: The colonial medical gaze saw India as a "disease laboratory" and medicine would serve as a tool to control and colonize the tropics. The process of living in the colonies was institutionalized to enforce the latent principles of royal medicine, and disease and health care formed the source of a new form of bondage between the state and the colony. Malabar, the northern British colony under the Madras Presidency, has long been unsettled with constant outbreaks of infectious diseases and famines that claim many lives each year. Colonial and missionary medical missions came as relief to local populations threatened by diseases such as cholera, malaria, and plague. The introduction of dispensaries and hospitals was used as a tool to legitimize and help the Britishto dominate the mentality of the people of Malabar.

**Keywords**: Hegemony, Plurality, Legitimacy, Topography, Objectivity, Institutionalisation

European colonisation of India required the development of theories to support imperialism and survival strategies to assure its continued presence in the region. As the protectors of the empire in India, the British successfully manipulated public opinion by utilising science and technology. They exploited India as an experimental laboratory in the fields of education and medicine while functioning as the guardians of "modern knowledge" without passing along its fundamental ideas and formula to the local population. The rapid dissemination of new scientific concepts across a sizable portion of the globe was motivated by colonial expansion. How the European societies displayed their power evolved over the years. Power was demonstrated in pre-modern Europe through ceremonial events like processions, coronations, royal entrances, funerals, and other rites. Modern Europeans produced virtuous and industrious citizens and exploited their technology and institutions of civilization to gain power and control over the ruled. European explorers and missionaries took pleasure in the superiority of their technology and their knowledge of the natural world throughout the early stages of their foreign expansion. According to Ashis

Nandy, the embrace and internalisation of science and modernity represent the authoritarian application of concepts and politics in the West.<sup>2</sup>

Extension of the ideologies of the Western 'liberal state' to the 'plural societies' of the East primarily linked with science and technology. By adhering to the philosophy of Mission Civilization, the British used medicine and education as a technique to gain access to the colonial people. Crosby explained this situation in a different way 'American Indian met for the first time his most hideous enemy: not the white men nor his black servant, but the invisible killer which these men brought in their blood and breath.' Western medical discourse had various purposes, according to Deepak Kumar, including as a tool of control that alternated between compulsion and persuasion depending on the situation and as a forum for interaction and resistance. Due to the imposition of this knowledge, a fear that India was unsafe for long-term habitation and full of "dirt and disease" developed.

While making lengthy and frequent trips to India, Europeans were always concerned for their health and made great attempts to study the country's landscapes, tropical diseases, medical practices, and indigenous knowledge systems as well as medicinal plants and hygiene. It is argued that tropical medicine is the "scientific stepchild of colonial domination and control" and was created as a cultural construct. The creation of medical topographies was given top priority along with botanical and cartographic surveys. It is asserted that medical topographies were founded on the notion that Europe's superior civilizational values had their origins in its geographical and climatic stability.

The English East India Company's circle recruited a significant number of scientists, physicians, geologists, and botanists on a large scale to illustrate it. Francis Buchanan carried out the first survey of the topography and natural history of south India in 1799. Thurston, Samuel Meteer, RH Beddome, and Buchanan conducted studies that indicated residents of the mountain region of Malabar, particularly the tribal people, had a wealth of knowledge regarding the use of local medicinal plants, the quality of the soil, and climatic variations, and that they required protection and care from "above." The British believed that proper development of technology, knowledge, and education would enable them to defeat tropical diseases and that medicine would be used as a tool for "colonizing the body." Foucault's comment on the interrelations between citizenship and control is related here. He saw the teaching control of the schools, work organizations, detainment facilities, healing centres, refuges and the multiplying talks of sexuality deliver subjectivity by bringing the person into see.<sup>7</sup> The British in India were continuously mindful that their control depended on the information proliferated through colonial discourses and Orientalist scholarship. The present paper looks at how the British utilized their therapeutic information to rule the attitude of the individuals within the

Malabar locale and serve as an instrument of legitimization.

## Topography, Garden and Medicinal Plants

The British vision of India in terms of topography is expeditiously characterized by David Arnold when he called, 'tropically' Asia an area of heat and humidity which possessed distinctive vegetation, flora and fauna, distinctive epidemiology and produced distinctive human and social characteristics.8 The conundrum is that, whereas treating the mountains as a place of slow-level accomplishment, distant from civilization and a 'disease laboratory,' the British officialdom took asylum within the coolness of mountain spots like Simla, Mussorie, Darjeeling, Ooty and Wayanad for administering the vast nation occupied by most 'abject slaves' within the world. The setting of colonial gardens within the sub-continent was begun with the appointment of John Sullivan as Collector of Coimbatore in 1821. Kavitha makes a note of the colonial change of Ooty as the colonial administrative centreand English vision of paradise by planting apple and peach trees, strawberries and to begin with seeds of blooms, vegetables and potatoes.<sup>9</sup> Its position as central command of the British in south India was secured by the opening of the Pasteur Institute for Medical Studies at Coonor. Mountains gave comfort to the British directors from the push and strain of urban life within the fields.

Therapeutic plants which had their roots within the remotest lands took quick extension within the thick Malabar timberlands with a cool climate. The common assets of tropical nations were a significant source of the raw materials that European royal powers of the 18th and 19th centuries turned into commodities. 10 Colonial practices in the tropics from the Renaissance onwards dictated the utilisation of local and indigenous systems of non-European knowledge. 11 As Richard Grove rightly says, the ideological and scientific content of early colonial conservation as it had developed under early British and French colonial rule amounted to a highly heterogeneous mixture of indigenous, romantic, Orientalist and other elements.<sup>12</sup> The disclosure of Cinchona trees which were a major source of quinine in southern parts of South America by Dr. Karsten, a famous German Botanist made much excitement among European researchers. Karsten went through twelve years travelling in South America and he spent twelve years travelling in South America during the latter part of that time he committed much consideration to an examination of the Cinchona species of Modern Granada. He found cinchona trees on the southern portion of the woodlandsecured mountain of Tovar, Caraccas at a stature of 5.500 feet over the ocean.<sup>13</sup> The British search for a perfect climatic zone for the development of Cinchona trees finished with the identification of Nilgiri slopes particularly of Wayanad in south India a climate affable to the plant. Cinchona was taken after by Eucalyptus. It was utilized for matchboxes, rayon, furniture and pharmaceuticals. It is benefitted by factories, plants and markets connected with various eucalyptus products. Eucalyptus was introduced in India in the 1840s from its cradle land, Australia.14

Malabar, the northern colony of the British within the Madras administration was uneasy for a long time with persistent appearance of infectious maladies and starvations. When the British built up their swing within the locale, endeavours were made to alter the traditional practices to involve the people in the new form of knowledge. Malabar was not an ideal site for the British with multiple interests. Within the first phase of colonialism, rather than investing much cash in medical investigations within the range, they looked for the assistance of local physicians for curing illnesses, accepting that they were likely to be better acquainted with the illnesses and cures. Repeating occurrences of jungle fever (malaria) and Cholera within the locale frightened the British and they took a sudden turn to allopathic hones at the slightest for sparing 'their citizens.' The new generation of Ayurveda physicians also responded positively to Western medical practices by introducing scientific methods in diagnosis and treatment. The new trend was illustrated by the induction of the 'Kottakkal model' (Ayurvedic treatment with utilization of allopathic devices) in Malabar. People expressed increasing faith in Western allopathic pharmaceuticals. Articles that appeared in the native newspapers deplored that, the introduction of Allopathic medicines provided a serious setback to the traditional medicine practiced by vaidyans (local healing practitioners) and that the people were intoxicated by the charms of Western medicine.<sup>15</sup> Even amid Western practices, the avarna and Dalit people of Malabar had carved out their claim space within the treatment of certain illnesses and in attending childbirth. There were well-known people all through Malabar known as vaidyan who practiced pharmaceutical and vishchikitsa (treatment for snake bites) as private specialists with no back from the government. In Malabar, the tribals like mavilans and karimbala's had accomplished capability in vishachikitsa and they were approached by snake-bitten people. People of Malabar rarely approached hospitals during pregnancy and delivery. Childbirth was regarded as a polluted task and was attended by Indigenous midwives colloquially known as malayis who were mostly members of lowercaste in the hierarchy of the Hindu society. There were certain experienced groups of ladies in Malabar who attended childbirth. They were in high demand and had a definitive part as childbirth specialists within the Malabar towns. <sup>16</sup> A letter from Tellicherry Municipal Chairman to the Madras government demonstrates the colonial process of making 'unskilled' Malayi-trained midwives attend childbirth. The Municipality proposed to train themalayis at Civil Hospital at Thalassery to attend childbirth in town.<sup>17</sup>

The colonial medical mission had solid back from Christian missionary enterprises. The pioneers of Christian Missionary work belonged to German, British and American medical missions. The annual report of Basel Mission gives a detailed explanation of their aims and objectives which were philanthropic, pedagogical, and financial. The philanthropic objective was

to 'extend health services and to provide honourable means of subsistence to many Christians as well as probationers, who otherwise could hardly know what to live upon.' Evangelist reports of the 19th century were continually talking about the diseases of rural folk and superstitions that prevailed in terms of diseases and medicine consumption. Another point of reference is the near nexus between Evangelist and colonial undertakings. A major portion of the money-related assets for running the mission institutions in India came from British residents of the locale. One of the Mission's reports said:

"We knew how to appreciate the benefits of a wise and tolerant government and though our missionary society is not an English society, we should prefer no rule to the tolerant and god-fearing government of Her Majesty the Queen of England and Empress of this land. We feel confident to say, that her majesty has no subjects in India more loyal and more thankful for the blessings of her just and impartial rule than the Christians of the Basel Mission." <sup>19</sup>

When the British set up their settlement in Malabar, they were aggravated by the climate of the locale and nonstop episodes of infectious infections. The British involvement in the control of diseases helped them to acquire the confidence of local people. There reported thirty cases of Cholera at Mananthody in Wayanad which soon became very prevalent and destructive in the adjoining villages situated in the vicinity of the Cauvery waterway in 1818.<sup>20</sup> A few cases of Cholera were reported from Kannur in 1819. It first affected the people who lived near Kannur and Thalassery Beach. It was reported that on 10th February 1819, a few of the detainees within the Kannur jail were suddenly assaulted by cholera. A great alarm was created among the inhabitants of Thalassery.<sup>21</sup> The British were not sure of the exact reasons connected with the disease and sometimes came to false conclusions. William Logan's enquiry report on Cholera in 1870 indicates how he was bound by colonial ethnological studies on natives and how clueless in the case of recurring diseases. The report said:

'We visited several of the houses where the disease had proved most fatal and instituted enquiries as to the origin of it. The first person attacked was a Moplah woman. The second was a Tiya woman and the third was a Polaya boy of six years old.' After enquiring family members, Logan reached a finding that 'all the three were taken sardine fish (mattimeen). The eating of oily sardine fish was provocative of the disease. The fish itself may not be poisonous, but its exceeding plentifulness in certain years certainly makes it very cheap, and in these years, it contains a large amount of fatty matter. Poor people buy it and eat it freely and the result in many cases is indigestion followed by vomiting and purging.'22 Logan and his generation were much influenced by utilitarian principles. It might be the 'Dracula fever' that made Logan assume that cannibalism as a practice had its presence in the tribal areas of Kerala.

After beginning mishaps with the remedy of cholera infection, the

British came up with workable arrangements. For the anticipation of Cholera and its treatment, it was proposed by Dr. C. J. Duke in 1906 that, 'taking brandy and egg mixture, milk and soda water and chicken broth give a few alleviations to the infection. Coffee was favoured over tea.'23 Plague a shocking illness had its presence in a few parts of Malabar. The whole Calicut locale was affected by the plague in 1920. Joint endeavours of Calicut municipality and British officials helped to eradicate the disease in the region and in 1921 Calicut was evacuated from the list of plagueinfected areas.<sup>24</sup> The plague broke out in Palghat in November 1921.<sup>25</sup> When the plague ravaged Thalassery, government-sanctioned plague sheds in the Malabar region and measures were taken to purchase plague prophylactic from provincial funds.<sup>26</sup> It provided funding to the rural people for the removal of thatching of plague-infected houses.<sup>27</sup> General cleaning, disinfection, chlorination of water sources and occultation were carried on vigorously. Malaria was a disease that followed the British from Europe. In the 1860s, there was debate over the conceivable relationship between Kumri cultivation and Malaria. It was judged that the first disturbance of the surface soil for kumri (sic) cultivation was often followed by outbursts of fever in the Malabar region.<sup>28</sup> It was then suggested that the practice of clearing forests carried out by tribals such as kurumbras was an unhealthy practice and might breed malaria. Agricultural Pests and Diseases Act of 1919 attempted to study the cause of Malaria in the Malabar region. The plant known as Water Hyacinth (Eichhornia Specio Sa kenth) was announced as a harmful weed. The Act was enforced in eleven villages in the Ponnani Taluk in 1919. In Palghat, the weed appeared in several water tanks.<sup>29</sup> As malaria controlling measures, treatment of all pools and puddles with pestering, putting fish into tanks and wells, filing of hollows and low grounds, improvement of drains and gullies and of the general conservancy, examination of all species of mosquitoes found at different times of the year were suggested.30 The Indian Sanitary Policy Resolution recognized quinine to be of great value both as a prophylactic and as a preventive and recommended that children should be given it during the season as a practical measure.31 Medical practitioners made house-to-house visits and provided advice and proper care to the people.

#### Spanish flu

The Spanish flu or flu of 1918 ravaged the Malabar and Coorg regions of present-day Karnataka. The flu has killed more than 40 million people, including 20 million in the Indian subcontinent alone. The figure amounted to 2% of the global population and 64% of the Indian population at the time.<sup>32</sup> In Madras Presidency, this coincides with a second flu wave that began in mid-September and according to government sources the pandemic had infected nearly a million people and killed two million. The administration swung into action with the cooperation of the private medical fraternity, Hakims and Vaidya and collected daily reports and

messages from the ground staff.<sup>33</sup> Its impact on the economy was devastating. 1918-19 stands as the worst year for India in micro-economic terms or real GDP contracted by 10% and inflation surged to 30%. Agriculture output plummeted by over 20%. 40% to 60% of the Indian population contracted the flu in 1918.

The flu of 1918 was first reported from the town of Virajpet in south Coorg and was introduced from the Malabar Coast in June. The disease spread very quickly to all the neighbouring towns and villages and from there to the whole of South Coorg.<sup>34</sup> Then the disease was spreading with great rapidity to all neighbouring towns and villages. In the town of Fraserpet (Kushalnagar) the disease first made its appearance in July 1918 and was introduced from Mysore. The first wave was moderate in Malabar, especially in Coorg, lasting almost three weeks. The second wave came in October 1918 and was very serious.

Madikkeri was another town that caused many harshnesses. This was the main coffee production area. They were coffee workers living in the highlands, and most of the coolies in the area were affected by the disease, which caused great death and almost interrupted work on the plantations. In Madikkeri, young adults between the ages of 20 and 40 were mostly attacked, and infants under one year of age were rarely attacked. The incubation period was short, from a few hours to two days. In many cases, the onset of the disease was very sudden, with no warning symptoms. Those who had gone to bed quite well in the morning woke up sick and sore. Usually, the first symptoms were chills or chills, feeling weak, headache and fever, followed by a feeling of stuffy nose, mild runny nose, sore throat or headache, feeling of tightness in the stomach, larynx and cough. Severe pain in the head, back and extremities, sometimes almost unbearable.35 The appetite was completely gone and thirst increased. The tongue was covered with thick grey-white hair. The throat was very characteristic. The left lung was affected more than the right lung, with signs of congestion, but in many cases, both lungs developed pneumonia. Regarding fever, there were two types: 3 days or 6 days, in mild form, rarely exceeded 10 F to 102.50 F.36 In the gastrointestinal type, there was persistent abdominal pain, often vomiting and diarrhea, elevated temperature, possibly mild jaundice and mild catarrhal symptoms. In case of severe miscarriage, the disease occurs often during menstruation. In mild cases, the most common form of lung disease was confined to the larynx, trachea, and larger bronchi, causing bronchiolitis and plaque pneumonia. Bronchitis was more common in children. In infants and young children, the illness usually beginswith a mild runny nose or mild cold, dry vomiting, diarrhea, headache, etc.

People affected by the flu have received special treatment. The patient was isolated in a well-ventilated room. All waste was disinfected with carbolic, phenyl or other disinfectant. Those affected were advised to stay outdoors as much as possible and avoid all crowded places such as halls and entertainment venues, buses, trains and close contact with people with

catarrhal colds. Many mouthwashes and sprays have been recommended for the mouth, throat, and nose. The diet consists of milk with alkaline water. Homemade lemonade and orange juice were provided to quench the thirst. After the first cleanse with Calomel followed by seidlitz or mistura alba powder in the morning, take sodium salicylate, salicin or aspirin preferably in an alkaline mix, three times a day for the first two days or in severe cases accompanied. For high fever, one vial containing 10 to fifteen seeds of aspirin in 1/2 to 1 ounce of good spirits and two to three drachmas of ammonium acetate in 1.5 ounces of distilled water<sup>37</sup> were recommended. These alleviated all symptoms and lowered the temperature. Various mouthwashes and sprays had been recommended for mouth, throat and nose prophylaxis, such as thymol, omum water, hydrogen peroxide, listerine, mercury-formaldehyde perchloride solution.<sup>38</sup> Patients were advised to lie down immediately until fever and symptoms were gone. The diet mainly consisted of milk and alkaline water. Topical treatments include applying mustard, turpentine liniment, iodine tincture, and liniment, or spraying or gargling with Listerine into the mouth, throat, or nasal passages. Inhaling glycerin and carbolic acid with camphor alcohol, co-benzion tincture, and half an ounce of chloroform alcohol for 30 to 60 minutes in a pitcher of hot water was very soothing and soothing to a cough.<sup>39</sup> All waste had been disinfected with carbolic solution or other suitable disinfectant especially handkerchiefs etc. used by the patient. In case of vomiting, warm milk with an equal amount of alkaline water and one -to three teaspoons of brandy will work were suggested.

### Clinics Medical Care

As mentioned at the outset, the British tried to institutionalize every process of human life to enforce their civilizational and administrative decisions in the colonial world. In this process, they were accompanied by well-trained officials, scientists, medical surgeons and technocrats. Hospitals were the prime institutions that helped to extend colonial 'benign,' and 'security' to the natives of India. 40 One of the main objectives behind these moves was to present colonial rule as beneficent so that the population would be 'controlled not only by military force' but tied to the benefits of civilization. As stated by Grove, the British in the initial stage of colonialism were inspired principally by Benthamite ideas about control and state power rather than by reformist altruism and that elimination of the misery of poverty was not its principal objective. 41 Kavitha provides a note of the British forest department's health services among the Chenchu tribes in the Nallamalai forests in the northern part of Madras Presidency. The forest department had started schools for tribal children and provided health services that conveyed free quinine, free dinners, and clothing. 42 This was because; the dissemination of Western medicine through the institution of the hospital was a process of accommodation with local, nonwestern maternities and traditions. The first hospital established by the English East

India Company in India opened in Madras in 1664, Bombay in 1676 and Calcutta in 1707. By the 1840s there was a formal health service, including hospitals and dispensaries for the use of the local population. From the 1880s, the lying in hospitals and missionary institutions for women were supplanted by hospitals staffed by female doctors. In addition to health service, 'Lying in Hospitals' was formed to inculcate Western values, especially the principle of hygiene among women. Hospital wards, the presence of doctors, modern devices like stethoscopes, and clean white and green sheets, all made the patients self-disciplined and loyal to the British.

Dispensaries and Healing centres became a reality within the Malabar locale with the joint efforts of the British government and the missionaries. The pioneers of Christian missionary work belonged to both British and American medical missions. Basel Missionaries built a small hospital in Calicut with a grant from the home Committee and liberal local contributions from men and women. Women missionaries came to Malabar in the late 19th century. Their activities were largely limited to providing maternity and child health services. The Basel Mission Hospital at Calicut developed rapidly and two branch stations were established at Codacal and Vanyankulam. A new dispensary was opened in Payyannur. It was reported in 1897 that missionaries had treated 28,915 outpatients and 221 inpatients with 31 operations.43 Under the British, a hospital was launched at Thalassery. In north Malabar, the Civil Hospital at Thalassery and the government dispensary near Chalil were very useful and populous institutions that mainly resorted to bringing the poor inhabitants of the locality. Dispensaries were opened at Kuttiyadi and Payyoli in 1925. People in the region still remember the commendable works done by medical practitioners in these dispensaries in the meanwhile Kizhur cattle fair, Vatakara. Valluvanad Taluk Board opened dispensaries at Kolathur, Palaghat, Kalikkavu, Alanallur, Kadambazhippuram, Perambra and Balussery.<sup>44</sup> The government sanctioned a rural dispensary at Meppadi. However, no medical practitioner was willing to open the dispensary at Wayanad as it was an unhealthy locality.<sup>45</sup> Amid Allopathic dispensaries, some prestigious indigenous institutions also received financial assistance from the government. The Malabar District Board in 1928 sanctioned funds to the Malabar Visha Vaidya Sala at Tirur. The Sala was opened in 1926 for the treatment of snake bites and other poisons. The institution was started with the object of treating snake bites and imparting instruction to students aspiring to become vishavaidyans.46

This paper aims to explore the ideas and purposes of the British as they carried out their "medical mission" in the Malabar region. The British built their power in India around the two crucial pillars of medicine and education. The British desire to impose Western values like objectivity and logic over Eastern ones like freedom and compassion had far-reaching effects on society. The perspectives of numerous academic streams that thrived in England and the viewpoints of British administrators are

blatantly influenced by colonial motives about the Indian knowledge system. When the British arrived on the subcontinent, they were misinformed about the locals and their environment and were directed by phobias. Official reports and ethnographic research from British times suggest that harnessing the potential of indigenous peoples, especially tribal peoples, was essential to the expansion of imperialism in the region. The British usurped native territory to grow commercial and medicinal plants from foreign lands. They could easily overcome the superstitions and prejudices prevalent in the Malabar region by controlling the attitudes of the indigenous people. Indigenous knowledge systems were marginalized as Western medicine prevailed in the region.

#### Notes and References (End Notes)

- 1 Bernard S. Cohn (1996), Colonialism and its Forms of Knowledge: The British in India, New Jersey: Princeton University Press, p.3
- 2 Ashis Nandi (1987), *Traditions, Tyranny and Utopians*, New Delhi: Oxford University Press, p.113
- 3 Alfred W. Crosby (2003) *The Colonial Exchange: Biological and Cultural Consequences of* 1492, West Port: Praeger Publishers, p.31
- 4 Deepak Kumar (2010) "Probing History of Medicine and Public Health in India", *Indian Historical Review*, vol.37, no:2, pp.259-273
- 5 Lenore Manderson (1996) Sickness and the state: Health and Illness in Colonial Malaya, 1870-1940, London: Cambridge University Press, pp. 10-14 Delhi:Primus Books, p.29 7Michael Foucault (2008), Discipline and Punish: The Birth of the Prison, New Delhi: Penguin Books.
- 8 David Arnold (1988), Imperial Medicine and Indigenous Societies, Manchester University Press.
- 9 Kavitha Philip (2004) *Civilizing Natures*, New Jersey: Rutgers University Press, p.32
- 10 Ibid., p.194
- 11 Richard Grove. H (1995), *Green Imperialism*, New York:Cambridge University Press, p.14
- 12 Ibid, p.12
- 13 Markham Clements R, Cinchona Species of New Granada: The Botanical Description of the Species Examined by Drs Mutis and Karsten, London, 1867, C/170, Madras Files, Board Proceedings, Regional Archives Kozhikode, p.43
- 14 Mahesvetha Devi (2015) 'Eucalyptus: Why', in Environment, Technology and Development, ed. Rohan DSouza, New Delhi: Orient Black Swan, p.86
- 15 M.D, "Nattu Vaidyatinte Punaruddaranam", Kerala Keasri, vol. 3, no.3, September-October 1918(ME 1093, Kanni), p.55
- 16 M Mukundan, (1992), Mayyazhi Puzhayude Theerangalil, Kottayam,DC Books, pp.26-27

- 17 Letter from Municipal Chairman, Tellicherry to the Secretary, The Government of Madras, B&A, SL NO 9, Go No 864, Local Self Government, Regional Archives Kozhikode, p. 3
- 18 40th BGEM Report for 1879, Mangalore, 1880, p.213
- 19 58th BGEM Report for 1897, Mangalore, p.17
- 20 Cornish W.R, Cholera in South India: A Record: The Progress of Cholera in 1870, Government Gazetteer Press, Madras, 1871, Correspondence Files, C/ 170, Regional Archives Kozhikode, p. 11
- 21 Ibid.
- 22 Report of William Logan dated 15th December 1870 in Cholera in South India: A Record: The Progress of Cholera in 1870, Government Gazetteer Press, Madras, 1871, Correspondence Files, C/170, Regional Archives Kozhikode, p. 77
- 23 C.l. J Duke, The prevention of Cholera and its Treatment, Sprink & Co, Calcutta 1906. Correspondence files, C/173, Regional Archives Kozhikode, p. 25
- 24 GO NO 4771 dated 25th February 1921, Public Health, Local Self Government File, 1921 Regional Archives Kozhikode.
- 25 GO NO 808 dated 14th July 1921, Public Health, Local Self Government File, 1921, Regional Archives Kozhikode.
- 26 GO NO 1604 dated 5th August 1925 and GO NO 2081 dated 21st October 1927, Public Health, Local Self Government File, 1927, Regional Archives Kozhikode.
- 27 Report on imported case of cholera vaccine, GO NO 434 dated 27th February 1928 and GO NO 1188 dated 6th May 1929, Public Health, Local Self Government File, Regional Archives Kozhikode
- 28 Kavitha Philip, Op.cit., p.50
- 29 GO NO 688 dated 26th April 1921, Public Health, Local Self Government File, 1921, Regional Archives Kozhikode.
- 30 GO NO 1188 dated 6th May 1929, Public Health, Local Self Government File, 1929, Regional Archives Kozhikode
- 31 Raj Sekhar Basu (2013), 'Healing the Sick and the Destitute: Protestant Missionaries and Medical Missions in 19th and 20th c Travancore', in *Medical encounters in British India*, ed. Deepak Kumar and Raj Sekhar Basu,New Delhi: Oxford University press, 2013, pp. 192- 195
- 32 ChimayTumbe (2020), The Age of Pandemics (1817-1920), Harper and Collins, Noida, 2020, p.131
- 33 Ibid, 163
- 34 E Hasell Wright, Report on the Pandemic of Influenza in the Province of Coorg During the Year 1918, vol 54(8) August, p.281
- 35 Ibid,p. 282
- 36 Ibid
- 37 Ibid, p.283
- 38 Ibid

- 39 Ibid
- 40 Mark Harrison (2009), 'Introduction'in from Western medicine to Global Medicine, ed. Mark Harrison and Margaret Jones Helen Sweet, New Delhi: Orient Black Swan, 2009, p. 12
- 41 Richard Grove. H, Op.cit., p. 451.
- 42 Kavitha Philip, Op.cit., p.64
- 43 BGEM Report, Mangalore,1898, p.57 quoted in Ibid, p.178
- 44 GO NO 1522 dated 22nd October 1924 and GO NO 102 dated 15th January1925, Public Health, Local Self Government File, 1924&1925, Regional Archives Kozhikode
- 45 GO NO 406 dated 7th March1927, Public Health, Local Self Government File, 1927, Regional Archives Kozhikode
- 46 GO NO 2117 dated 6th October1928, Local Self Government File, 1928, Regional Archives Kozhikode