CHAPTER III
PREVENTION AND CONTROL OF EPIDEMICS: A STUDY OF SMALLPOX AND CHOLERA

Diseases like smallpox and cholera assumed a virulent nature in the nineteenth century. The diseases were viewed from two different perspectives: firstly, the native views deeply enshrined in the religious and cultural practices of the people and secondly, the explanations from the colonial medical establishment. Accordingly, the treatment of the diseases through the indigenous and Western systems often varied. While these views are discussed in chapter 2, the focus of the chapter is to analyse the measures made by the British government to cope with the outbreak of these diseases. It was the highly contagious and infectious nature of the epidemics that made it a constant scourge. While some of these were invaders and stayed on, some others were part of the epidemic constitution of that region. The examination of the incidence of the epidemics and their mortality were of fundamental importance. Control over smallpox was attempted through the extension of vaccination and that of cholera was implemented through improvement of water supply, sanitary control of pilgrimage, inspecting trade, and formation of Cholera Parties in rural areas.

A Study of Smallpox

The British physicians in the nineteenth century India ranked smallpox amongst the most prevalent and destructive of all epidemic diseases. Smallpox is a serious, communicable, febrile disease characterised by rapid onset of constitutional symptoms followed by an eruption most marked on the face and extremities and often involving the mucous membranes. The incubation period is usually ten to fourteen
Two viruses of the genus Orthopoxvirus cause smallpox among human beings. One of these, the *variola minor* poxvirus causes a relatively mild form of the disease which is rare in India. The other is *variola major* which causes exceptionally high mortality in India. The “scourge of India,” smallpox repeatedly claimed more victims than all diseases combined, its “tenacity and malignity” making it one of the most violent and severe diseases to which the human race is liable.

The word smallpox appeared in English lexicon only in 1518 (Webster’s dictionary), though its occurrence was known since the millennia. Tracing the earliest incidence of smallpox in India, Ralph Nicholas refers to the compilations of Charaka and Sushruta (put into their final forms in the 4th century A.D) containing the word **masurika** referring to trivial skin disease. Though it was not traced beyond this and was believed to be the earliest reference, in the recent years, Y.L.Nene has disputed the view tracing the disease to the Rig-Veda (C. 8000 BC). According to him, in Book 7, Chapter 50, the verse 4 contains a prayer to waters of rivers seeking to keep humans free from a disease called **Shipada**. Another word **Simida** appears in the same verse, which according to Ralph Griffith is apparently a female demon, or a disease, attributed to her malevolence. Sanskrit dictionary by V.L.Apte indicates that **shipa** could mean skin. It can therefore be conjectured that **shipada** is a reference to smallpox (a skin disease) that is believed to occur due to the malevolence of female demon **Simida**. Smallpox attributed even today by most folks in India to the

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displeasure of the “goddess” substantiates the conjecture. It is also said to have been mentioned in the Atharvaveda.⁵

In the works of Vagbatta, a physician writing in the early 7th century A.D., it is said to be a severe and a fatal disease. Nidana of Madhavakara which was produced a century later included an extensive chapter on masurika treating smallpox, chickenpox, and measles together. The Bhava-prakasha an early sixteenth century medical text compiled by Bhava Misra greatly elaborated the discussion on smallpox. He has added a detailed section on the therapy appropriate to different types of pustules.⁶ Jean-Baptiste Tavernier (mid-17th century) mentioned “offering silver eye to goddess for sparing eyes”.⁷ This has reference to the fact that blindness was often a consequence of smallpox and was dreaded most.

Native Etiologies of smallpox

The indigenous practitioners of Ayurveda perceived smallpox as a result of the diet. Accordingly, foods consisted of such inharmonious ingredients, such as milk and fish, food that is vitiated, that are pungent, sour, or saline, or consist of alkaline ashes, loading the stomach with food before the food last taken has been digested, and other causes of similar nature lead to the appearance of smallpox. The disease was called masurika, because the shape and size of the eruptions resemble those of masura, or the seeds of Cicer lens. The premonitory symptoms were fever, itching, pain in the body, restlessness of the mind, vertigo, swelling of the skin, redness of the complexion, and redness of the eyes. The preventive suggested was the seed of the

Chebulic myrobalans. Women were to wear it on the left arm and men on the right arm. The efficacy of these seeds had been tested during many epidemics.\(^9\) For many others, smallpox epidemic was usually believed as the sign of disorder caused by the divine wrath. The village gods were deemed to be the guardian deities who protected the people of the respective villages from contagious diseases. Whitehead writes, “When calamity overtakes the village, it is to the village deity that the whole body of the villager turns for protection. They propitiate the village deity to avert her wrath.”\(^9\) The onset of the disaster causes the special worship or a festival of the goddess. There were regional variations in the performance of these rites in South India. In the Tamil region goddess Mariamma was worshipped to get rid of smallpox.\(^10\) The Tamil folk etiology defines Mari as rain, which cools down the heat of the land and cures smallpox, which is considered to be a heat originated epidemic. If someone contracted smallpox, a person used to say that “Mariāṭhal has come” that is she is in bloom, she has “adorned” the affected person with “pearls”. Mariamman Talattu is a collection of songs sung by women to soothe children from ammai or pox. In the house of any person affected with smallpox, neem leaves were hung at the entrance of the patient’s room both as an indication of their faith and to warn others of the disease and to avoid infection by a method of isolation. This particular leaf was believed to cure smallpox. It is ground into a paste and put on the boils in order to treat the patient. Various festivals were celebrated in her honour. She was offered

\(^{10}\) The same goddess was known in different names. In the Andhra country, she was called Gangamma and polaramma and in Malayalam country, was known as Vasurimala. For more details see Peter J. Claus, Sarah Diamond, Margaret Ann Mills, *South Asian folklore: An Encyclopedia : Afghanistan, Bangladesh, India, Nepal, Pakistan, Sri Lanka* (New York: Routledge, 2003), 381.
with mavilakku i.e., rice flour mixed with jaggery.\textsuperscript{11} Sometimes a combination of rice, jaggery, coconut and neem leaves called ariyarchi was offered. Also cooked sweet rice known as pongal with green coconuts, live goats were also sacrificed.\textsuperscript{12}

To counter smallpox, inoculation had long been in use in South India prior to the introduction of vaccination. The practice continued till the late nineteenth century when it was made illegal by the British in 1870.\textsuperscript{13} It involved the insertion of a small amount of vaccine matter from the pustule of a smallpox patient into the skin of a healthy subject. It produced a mild attack of the disease, and gave a lasting immunity. But during this mild attack the inoculated subjects were themselves infectious and so the disease could spread further.\textsuperscript{14} Edward Jenner, an English doctor had established in 1798 that Vaccination (the Latin word for cow being vacca and cow pox, Vacci\textsuperscript{a}) protected the person from getting smallpox, even though he was exposed to it. Four years after the discovery, vaccination was introduced to India under the auspices of Lord Clive in 1802. It was Dr. James Anderson, Physician General at Madras who undertook the task of vaccination in Madras.\textsuperscript{15}

Vaccination was a new technology introduced in India during the nineteenth century. The administrators believed that it would prove popular and demonstrate the benevolence of British rule and prove the superiority of Western civilisation. On the contrary, it was not easily recognised by the people. There were objections to the

\textsuperscript{11} Rice flour is placed on a leaf in the form of dough, ghee is poured into it and a wick is inserted.
\textsuperscript{12} Saraswati Venugopal, Folkloristic Refractions in Tamil World (Madurai: Tamarai publishers, 1996), 72.
\textsuperscript{13} Fenner, 253.
\textsuperscript{14} Ian & Jenifer Glynn, The Life and Death of Smallpox (New York: Cambridge University Press, 2004), 4–5.
\textsuperscript{15} O.P. Jaggi, Western Medicine in India: Epidemics and other Tropical Diseases in History of Science, Technology and Medicine in India 12 (Delhi: Atma ram & Sons, 1979), 128.
technique from the religious point of view. The chief objections of the people was that Mariamma, the goddess of smallpox would be offended if artificial means were brought to avert the malady and hence different methods had to be adopted to popularise them. The vaccine department compiled treatises explaining Jenner’s discovery in vernacular languages and circulated them at the expense of the government. In 1827, a scheme for vaccinating the rural areas of Bombay presidency was devised by Lord Elphinston, the then governor. According to historians David Arnold and Anil Kumar, it was this method which became a success in other parts of British India. However, Sanjoy Bhattacharya argues it was modified to suit the local contexts of the provinces. With all positive approach to vaccination, it did not receive popularity amidst the general masses.

Adoption of Animal Vaccination

Till the late nineteenth century, vaccination in South India was carried out by arm-to-arm method, with the lymph obtained from a human vesicle of a vaccinated child. But there were several drawbacks. It was resisted if vaccinees belonged to lower castes. Further the parents of the children often refused the collection of lymph from their children even though the authorities paid a fee for the purpose. Extraction of lymph was thought to weaken the child and that it was the reason for the high level of infantile mortality. Moreover, arm-to-arm system was thoroughly discredited and shown to be futile as a preventive of small-pox and fertile as a disseminator of eczema, syphilis, and leprosy.

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To overcome these difficulties associated with human lymph based vaccination, animal vaccination with calves as vaccinees was introduced. Animal vaccination is the process of admitting vaccine virus into bulls or cows endermically for the purpose of obtaining vaccine matter in a larger quantity.\textsuperscript{19} For the first time the method was introduced by Dr. Laing, the then Sanitary Commissioner of Madras in 1879. By this method, the lymph was collected from calves which had been inoculated and from them vaccinated into the children.\textsuperscript{20} Every district had its own system of procuring lymph. In some districts inoculated calves were sent out with Deputy Inspectors throughout the year, and thus a fresh generation of lymph was at the disposal of each vaccinator at the time of inspection of his division; in others a calf was retained in a vaccinator’s division for a certain number of months in the year, and then passed on to others in the district. A staff varying in number from month to month was employed on vaccination solely by animal lymph.\textsuperscript{21}

Within less than ten years of its introduction in various districts its advantages became apparent. For instance, in Kurnool in the year 1889-90, it was found that when each vaccinator was supplied with a calf, a total of 17,852 (this number is in addition to the total performed by the ordinary staff of the district) cases were performed at a total cost of rupees 1,300 including all charges, except the pay of hospital assistants who did 1,175 cases. The experiment showed that if possessed of a large store of lymph available when using calves as vaccinees, a fairly energetic man could perform five hundred cases per month. A scheme was thus consequently placed

\textsuperscript{19} A.P. Balaram, Handbook of Vaccination, 1906, n.p. 75.
\textsuperscript{21} Vaccination Report, 1889–90, 9.
before the District Board for abolition of the large staff necessary when employing humanised lymph, and for limiting them to one man per tāluk, on the increased pay of rupees 20 as against rupees 10 plus a fixed traveling allowance. The satisfactory feature of the experiment was that instead of the former ignorant classes of men, those newly entertained have passed a matriculation test. Kurnool was the first district in the presidency to abolish in toto the use of humanised lymph.  

Moreover, the cost of each successful case by this method was considerably lower than that of the humanised lymph; thus a further reason was afforded in addition to the already recognised advantages for adopting animal vaccination. Though the method succeeded, it did not immediately displace arm-to-arm vaccination. As attributed by Sanjoy Bhattacharya, there were three important reasons to this. The foremost being the financial burden of including animal vaccination in the vaccination programme, criticism from the members of the scientific community, and finally training vaccinators in the effective use of animal-lymph vaccine.  

By 1890, vaccination by means of animal lymph was practiced in all the districts of Colonial South except Anantapur, Coimbatore, Ganjam, Godavari, Kistna, and South Canara. The total number of operations performed was 101,153 of which 94,361 were successful. Irrespective of certain difficulties associated with the method (like moving cattle from one locality to another), vaccination with animal lymph was successfully established in Madras and in 1891–92 it was used in 64 per cent of the vaccinations and in 1894–95 in 97 per cent. To implement it throughout South India, the government by an order dated 12 July 1889 directed the speedy abolition of

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22 Vaccination Report, 1889–90, 9.
25 S.P. James, Smallpox and Vaccination, 38.
humanised lymph and more general use of animal vaccination. It led to the search for new animals to substitute calves.  

Meanwhile, W.G.King, the Sanitary Commissioner of Madras stressed the government to enforce animal vaccination throughout the presidency. However, he suggested that, without there being a Central Vaccine Institute to effect careful investigations of animal lymph and accomplish its preservation; it was a serious blot in the administration of vaccination. Hence, he invited the government’s attention to the necessity for a Vaccine Institute. In November 1899, a Central Vaccine Institute was approved for Colonial South India. The Institute situated at Guindy was opened in 1905 by Lord Ampthill, then Governor of Madras. Originally designed to serve as a lymph-depot to supply vaccine lymph to the whole province, its activities have, however, extended enormously since that time. These research centres as Deepak Kumar asserts served as “little factories for the production of vaccine and sera.” Not only this, it was also a bacteriological laboratory and the provincial public health laboratory. It is claimed by Radhika Ramasubban that in order to avoid its commitment on public health reforms, the government chose to escape into medical research.  

While experiments on other animals as vaccinees were on the way, a recommendation was made by Surgeon Major O’Hara as to the employment of donkeys. Since this animal was treated with scant courtesy by mankind, it seemed unlikely that natives would receive the suggested mode with favour. Brigade Surgeon

26 Vaccination Report, 1889–90, 10.
27 G.O. No. 2259, Local [hereafter Local.] dated 7.11.1899.
Fox of Trichinopoly, however, at the request of the municipality, put the matter to the
test of practice, and found that it was more likely to excite ridicule than to prove a
factor in the advance of vaccination.”\(^{31}\) Surgeon Major Lancaster brought to the
notice that if an animal were required to take the place of the calf, it would be
advisable to use the goat. He apparently made no experiments on this subject himself,
whilst all recorded evidence showed that this animal, if susceptible to vaccination at
all, was very feebly so. “I accordingly inoculated a goat and the use of the lymph
upon human being was followed by no result.”\(^{32}\) Indeed so far as the investigations
were done, it was concluded that there was no animal which so effectually performs
this function as the cow.

**Preservation of Vaccine**

Along with these experiments on the one side, the search for new preservation
techniques also intensified. When animal lymph was transmitted in the ordinary
capillary tube, it was found that the life of the vaccine virus is limited to a period
varying from twenty four hours to ten days in exceptional instances, according to the
heat of the weather and mode of transport. Under these circumstances, with reference
to the proposed substitution of humanised lymph throughout the South, it was
necessary to employ complicated apparatus for the transmission, either calves were
sent with vaccinators whilst on their tours, or depots were established at such frequent
intervals in districts. Under the former mode, a certain amount of lymph was wasted
while waiting for cases which might not be forthcoming; in the latter, the expenditure
required was found to be very heavy. In this connection, the government made a small

\(^{31}\) Vaccination Report, 1889–90, 10.
\(^{32}\) Vaccination Report, 1889–90, 11.
money grant for the purpose of experimenting a suitable method. Ultimately a simple method was devised by which the vaccine product was retained in an efficient condition without the aid of any extraneous mechanism.\textsuperscript{33}

Also glycerine was experimented as a preserving medium.\textsuperscript{34} Surgeon Major Nailer and Surgeon Major Dymott, reported to have obtained considerable success using glycerine in the late nineteenth century. This method consisted in the intimate admixture of a given amount of lymph, or rather vesicle pulp, with a sterilised 50 per cent solution of chemically pure glycerine in distilled water, and in subsequent storage of the resultant emulsion, in sealed capillary tubes, for several weeks. The government is also said to have recommended them to the districts. However, the drawbacks were brought to the forefront by Surgeon Major Bannerman. He reported that “In careful hands this method undoubtedly works well in the cold weather, but further and more extended experience has demonstrated that virus preserved in this way cannot be depended on for more than five days, under the conditions of rough handling to which it is necessarily subjected in transit. As an example of the failure of this medium, I would cite the case of Coimbatore district, where for two years in succession the lymph has failed during the hot months, and this in spite of the great personal interest taken in the manufacture of the glycerinated paste by the District Medical and Sanitary Officer.”\textsuperscript{35} There was a marked fall in the measures of success

\textsuperscript{33} Vaccination Report, 1889–90, 12.
\textsuperscript{34} The matter that has been uniformly broken was rubbed with good glycerine or equal quantity of good glycerine and distilled water mixed up. This process is to be continued for a sufficient time until the resulting homogenous emulsion assumes a syrupy consistence. The quantity of glycerine required for the preparation of the paste is roughly to be one to six times the scrapped matter. The colour of the paste thus formed thus depends on the colour and tenderness of the ski of the calf from which the matter is extracted. Ordinarily it is yellowish grey, but if the calf be black, emulsion will be dark and if tender rather reddish. See A.P. Balaram, Handbook of Vaccination, 1906, 84.
\textsuperscript{35} Vaccination Report, 1895–96, 1.
obtained with glycerinated lymph as it was not possible to have a supply of uniform and reliable quality of lymph.\textsuperscript{36}

Simultaneously, lanoline was also tried with. In the preparation of lanoline paste, the method adopted is the same as in preparing glycerine paste, with the difference, that Lanoline is used instead of glycerine. Surgeon General W.G. King was put on a special duty in November 1890 to experiment with lanoline vaccine and during the year introduced into 12 districts. In the beginning of the year 1891, W.G. King performed 202,435 vaccinations with lanoline paste and successful results were obtained in 89.3 percent of the cases. However orders were passed by the Government in September 1891 that, with a due regard to economy, fresh animal lymph should be employed in all vaccine operations and that Dr. Kings lanoline paste should be utilised only when the use of stored lymph could not be avoided.\textsuperscript{37} The Deputy Inspector of Vaccination, trained vaccinators, in the most backward districts in the proper use of the paste. In 1895, on its partial reintroduction in two districts, 27,540 cases were vaccinated with 94.3 per cent success as against 89.4 per cent for glycerinated paste in other districts.\textsuperscript{38} With the exception of Madras, all district Boards and municipalities in the South obtained their supply of lymph from the King Institute\textsuperscript{39}. But in the Madras city, although lymph was obtained from there for a part of the year, the Corporation decided towards the close of the year to revert to the old system of calf to arm vaccination.\textsuperscript{40} The percentage of success obtained by the use of different kinds of lymph in Primary and Secondary vaccinations (re-vaccination omitted) is compared in the following Table 3.1.

\begin{thebibliography}{99}
\bibitem{36} G.O. Nos. 715, 716, Local, dated 25.7.1902.
\bibitem{38} W.G.King, “Lanoline Vaccine”, British Medical Journal [hereafter BMJ], November 1896, 1376.
\bibitem{39} G.O. No. 2259, Local, dated 7.11.1899.
\bibitem{40} G.O. Nos. 1044, 1045 Local, dated 29.7.1907.
\end{thebibliography}
Table 3.1: Percentage of success obtained from different kinds of lymph, 1907-08.

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<tr>
<td>1,337,941*</td>
<td>Local Fund</td>
<td>Lanoline lymph</td>
<td>Supplied by the King Institute of Preventive Medicine. do</td>
<td>95.4</td>
</tr>
<tr>
<td>87,082</td>
<td>Municipalities</td>
<td>do</td>
<td>do</td>
<td>97.0</td>
</tr>
<tr>
<td>11,631†</td>
<td>do</td>
<td>Calf-to-arm</td>
<td>Locally.</td>
<td>99.7</td>
</tr>
<tr>
<td>10,381†</td>
<td>do</td>
<td>Glycerinated lymph</td>
<td>Locally.</td>
<td>99.5</td>
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* Includes cases in the Madras Municipality.
† Cases performed in the Madras Municipality.

The lanoline paste from the King Institute of Preventive Medicine was used in all the Local Fund districts. The percentage of success in this area rose from 94.0 in the past year to 95.4 and in the municipal area from 95.9 to 97.0. Some cases were alone done with glycerinated lymph in the Madras municipality which yielded a percentage of 99.7 and 99.5 respectively.

Re-Vaccination

The research on vaccination revealed that a number of factors like the quality of vaccination, the nature of operation and individual physiologies determined the vaccinal immunity. However, the results from vaccination in urban areas were not being reflected in rural areas. This was evident from the percentage of unsuccessful primary vaccinations in the villages. In this context, a great controversy arose in

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41 Bhattacharya, 156.
the 1880’s on the protection afforded by a single vaccination. The original theory was that a single vaccination would suffice to keep a man immune from this disease for life; but when it was found that vaccinated persons were attacked by the disease, a new theory came into being that the vaccination should be renewed after a certain period and this led to re-vaccination. A great impetus was given to it was by the prevalence of smallpox in 1884.

The Government of Madras was involved in a serious campaign in favour of re-vaccination. It stressed that vaccination should be done when the child is six months old, or earlier after consultation with a doctor, if there is infection in the house or immediate neighbourhood. A Public health pamphlet from Travancore reads, “The protection offered by vaccination wears off in a few years and a re-vaccination should be done between the sixth and twelfth years. This is sufficient protection against the individual, but in exceptional circumstances such as when there is close proximity to infection, vaccination should be performed again. The first vaccination causes a little fever, swelling ulceration etc. but the subsequent vaccinations cause no such inconveniences.” Further “Only thorough and complete vaccination will drive out smallpox from the community. Vaccination is a duty which every man should secure for all those who are dependant on him. If he neglects this simple procedure the consequence may be disastrous which will make him regret for whole life. Get your children vaccinated and revaccinated and protect your family from the danger of smallpox infection. Vaccination is done free by the state, but in order that its benefits may be available to all your co-operation is needed. Get it done by applying to the nearest Sanitary Inspector”. (Figure 3.1)

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42 Ethirajulu Naidu, “Smallpox and the Importance”, 111.
Figure 3.1: Illustration by the Public Health Department of Madras campaigning in favor of Revaccination.

Source: Published in Public Health Pamphlets: Travancore (Trivandrum: Government Press, 1932)
The following tables shows the primary vaccinations and re-vaccination work performed during 1888–89 with the preceding year and the work done by different establishments.

Table 3.2: Primary vaccination and Re-vaccination statistics, 1888-89

<table>
<thead>
<tr>
<th></th>
<th>1887–1888</th>
<th>Percentage of success</th>
<th>1888–1889</th>
<th>Percentage of success</th>
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<tr>
<td>Primary Vaccinations</td>
<td>724,225</td>
<td>95.0</td>
<td>796,362</td>
<td>95.4</td>
</tr>
<tr>
<td>Re-vaccinations</td>
<td>14,255</td>
<td>59.9</td>
<td>13,055</td>
<td>71.9</td>
</tr>
<tr>
<td>Total</td>
<td>738,480</td>
<td>94.3</td>
<td>809,417</td>
<td>95.0</td>
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Of the total number vaccinated (primary and re-vaccination) 809,417 or 95.0 per cent proved successful, against 94.3 per cent in 1887–88. Primary vaccination yielded a percentage of 95.4 success against 95.0 in the previous year and re-vaccination 71.9 against 59.9. Of the total primary vaccinations, 164,675 were among children under one year of age, 423,057 between one and under six, and 172,611 above six years, against 148,895, 392,652 and 146,504, respectively, in 1887–88.

Though re-vaccination was carried out, the policy of the Sanitary Department and of the local bodies with regards to re-vaccination was nebulous. No information was given in their reports as to whether re-vaccination is insisted on admission into schools or into public service, or whether any effort was made to educate public opinion as to the need for re-vaccination.\textsuperscript{44} Though the local bodies and municipalities was asked to report on the steps taken to extend re-vaccination in 1922, no action

\textsuperscript{44} G.O. No. 80, Public Health [hereafter P.H.,] dated 26.1.1921.
were taken.⁴⁵ Along with the discussions on re-vaccination, there was also the discussion on making vaccination compulsory.

Compulsory Vaccination

The unusual malignancy exhibited by smallpox during the year 1884 raised the question of compulsory vaccination. The deaths numbered 61,247 against 37,975 in the previous year. Though the deaths occurred at various ages, it was observed that it proved most destructive amongst children. Out of the total deaths in the year nearly 64 per cent were children under 12 years of age. In Madras town, as much as 74 per cent of the total deaths occurred in children under three, and over 21 percent in children above three and under 12 years of age, the reason being the low rate of infantile vaccination in the districts as a whole.⁴⁶

The large decrease in the successful vaccination on children less than one year was attributed to the inferiority of the lanoline paste supplied from the local depot, absence of vaccinators without substitute, inert lymph and unwillingness of the people to get their children vaccinated. To remedy the problem of unwillingness, a monetary incentive of Rupees two was given for every child that was vaccinated.⁴⁷ Dr. Liang, the inspectional staff remarked: “that in many parts of the presidency it is a common practice for the parents to hide their children when the vaccinator appears, and this will continue as long as the registration of births is not compulsory.”⁴⁸ This was so serious that the government deemed it necessary to appoint a Special Health Officer

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⁴⁵ G.O. No. 765, P.H., dated 1.6.1922.
⁴⁷ Sanitary Commissioners Report, 1923, 22. Even women vaccinators were employed for the sake of orthodox Hindu and Purdah women. Madras was the first in India to do so.
⁴⁸ Sanitary Commissioners Report, 1884, 22.
as a temporary measure, and to render the vaccination of children above three and under twelve years of age compulsory. This legislation was expected to result in greater vaccination coverage in the South.\textsuperscript{49}

The next question that lay before the government was the place where it had to be introduced. As the first step, government thought it ideal to introduce compulsory vaccination in schools. An enquiry was ordered and various suggestions were received. Mr. Thomson, Principal of the Presidency College stated that all but a very small proportion of students attending those institutions are shown by annual returns to have been either vaccinated or to have had smallpox. He opined that there would be no difficulty in making it compulsory. Mr. Gopal Row, Principal of the Kumbakonam College said that the proportion of unprotected students is small and decreasing and considered that compulsory vaccination is impolitic as well as objectionable in principle. Mr. Metcalf, Principal of Rajamundry College was in favour of it and urged all to undergo the operation. Mr. James Bradshaw, Acting Inspector of Schools was on the whole not supportive. He was of the opinion that local fund bodies and municipalities might exert pressure to bring in this direction. Mr. Grigg, the Director of Public Instruction believed that such a restriction will have a very beneficial effect in spreading the practice of vaccination among the juvenile population.\textsuperscript{50}

Native newspapers also involved themselves in these discussions and expressed their opinion that it must not be made compulsory. The editor of the newspaper \textit{Vaidya Kalanidhi} dated 3 November 1883 on the subject said that “though the provisions of the bill are generally calculated to do good to the people, it is premature now to make it compulsory, as a majority of the people are so steeped in

\textsuperscript{49} Administration Report, 1884, 38.
\textsuperscript{50} Proceedings of the Public Department, Madras dated 30.8.1882.
superstitions that they regard smallpox as a divinity. He opined that the people should be more enlightened before passing such a bill into law.”\(^5^1\) The Swadesamitran dated 17 November 1883 read “Though the system of vaccination is salutary, yet it is hardly fair to make vaccination compulsory. It seems incumbent on the municipality only to appoint proper officers, whose duty it will be to set forth the advantages of vaccination to the people and to vaccinate those who are willing to be vaccinated.”\(^5^2\) Sunmargadarsini, a Telugu newspaper dated 17 November 1883 remarked that “compulsory vaccinations to become law for the reason that the people are not sufficiently advanced to submit voluntarily to the operation of their good. It hopes however that with the spread of education the prejudices of the people will be dissipated and if high caste vaccinators are entertained this desirable end will be soon reached.”\(^5^3\) The Tatvavīvechīni dated 19 April 1884 opined “even if the action contemplated i.e. Vaccination is good; it should not be carried out against the will and consent of the party concerned. The editor further remarked that it brings as yet an unsettled question whether vaccination is beneficial or otherwise, it is more incumbent not to make it compulsory.”\(^5^4\) A correspondent of Kērāla Sanchāri dated 9 January 1907 observes that it is high time for vaccination to be made compulsory in Malabar which would benefit the public.\(^5^5\)

     With all the discussions, compulsory vaccination of children less than 12 years was brought into force in the city of Madras on the 23 May 1884.\(^5^6\) And penalty was also awarded on those subjects who did not get vaccinated. The Government

\(^5^1\) ‘Vaidya Kalanidhi’, 3.11.1883, Naive Newspaper Report (hereafter NNPR), Madras, 1883. All NNPR collected from TNA, Madras.
\(^5^2\) ‘Swadesamitran’, 17.11.1883, NNPR, Madras, 1883.
\(^5^3\) ‘Sunmargadarsini’, 17.11.1883, NNPR, Madras, 1883.
\(^5^4\) ‘Tatvavīvechīni’, 19.4.1884, NNPR, Madras, 1884.
\(^5^5\) ‘Kērāla Sanchāri’, 9.1.1907, NNPR, Madras, 1907.
\(^5^6\) Sanitary Commissioners Report, 1884, 22.
concluded that vaccination be made a condition precedent for holding a government scholarship or stipend or free scholarship and that it be required that all students in Government schools be vaccinated. Eight vaccine depots were opened in various parts of the town to give the people the necessary facilities for complying with the terms of the Act. Under compulsory vaccination regulation, there was apparently more infants vaccinated than the number born, but this is no doubt due to the fact that children from outside municipal limits were brought into Madras to be operated on.

The total number of towns in the province of Madras was sixty and the numbers of towns with compulsory vaccination of children increase from eleven in 1884 to sixty in 1906. In gauging the immediate effect of compulsory vaccination, as far as the city of Madras was concerned, there has been a marked diminution in the smallpox mortality since the vaccination of children under twelve years of age was made compulsory, the number of deaths from the cause in 1885, being only 25 in all against 3,997 in 1884 and 1,937 in 1883.

Meanwhile as a great setback to efforts on compulsory vaccination, a memorandum of the "Army Sanitary Commission," published in the Bombay Government Gazette, 17 December 1885, in vol. xix. Page 113, statements degrading the practice of vaccination against smallpox and stressing the necessity of improving sanitation. It reads: "Ten years’ statistics afford no evidence that vaccination affects the usual epidemic course of the disease, and hence-this fact, in the face of the

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57 Sanitary Commissioners Report, 1884, 22. Even since 1860s all candidates appearing for examinations were required to produce a certificate that they have either been vaccinated or had had smallpox. Not only for examinations, even for government employment, claimants to hereditary village offices and all police recruits. For covenanted service examination, every candidate was required to produce a medical certificate of physical fitness and subsequently a special clause was added into the effect that the certificate should state that he has been vaccinated or had had smallpox. It was stated that no inconvenience have been raised to this. See Proceedings of the Home Department (Sanitary–A), January 1886, Nos. 60–89. NAI
58 Administration Report, 1885–86, 186.
extensive vaccination work of the present and past years, appears to lead to the conclusion that in its epidemic form small-pox must be met by improving the sanitary condition of the people." Yet another statement published in vol. xviii of "Sanitary Measures in India," page 203, in reference to the smallpox epidemic of 1884, it is stated:" We are thus brought face to face with the fact that, notwithstanding the existence of an active vaccination service, small-pox swept over the provinces just as if there had been none". This increase of small-pox, co-incident with the rapid extension of vaccination, shows that it is a disease governed by causes entirely outside and independent of vaccination. And this opinion is confirmed by the highest authorities. According to Sir Edwin Chadwick, Dr.B.W.Richardson, and all other sanitarians of repute, “small-pox is a disease due to insanitary conditions, impure water, bad drainage, dirty living, and particularly to overcrowding; and, instead of removing these conditions, the Governments of India during the past thirty years have been spending their, energies, and large sums of money, in extending vaccination”.59

With the exception of the above mentioned criticisms, the change from option to compulsion had been received well, the people being fully alive to the benefits of a properly conducted system of this nature.60 The overall decline in smallpox in Madras and Malabar during 1912 was considered satisfactory features and was due to their appreciation by the resident people, especially the Māpillās, of the efficacy of the prophylactic operation of the vaccinator.61 The following table illustrates the amount of protection conferred by vaccinated over unvaccinated in the city of Madras in 1920. Out of 240 attacks amongst the vaccinated, 71 or 29.58 per cent, died, whereas

60 Vaccination Report, 1889–90, 7.
there were 65 attacks and 38 deaths amongst the unvaccinated, the percentage of
deaths being 58.46.

Table 3.3: Protection conferred on Vaccinated over Unvaccinated in the city of
Madras in 1920.

<table>
<thead>
<tr>
<th>Age Periods</th>
<th>Vaccinated</th>
<th>Unvaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attacks</td>
<td>Deaths</td>
</tr>
<tr>
<td>Under one year</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>One and under 5 years</td>
<td>38</td>
<td>22</td>
</tr>
<tr>
<td>5 and under 10</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>10 and under 15</td>
<td>29</td>
<td>4</td>
</tr>
<tr>
<td>15 and under 20</td>
<td>36</td>
<td>4</td>
</tr>
<tr>
<td>20 and under 25</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>25 years and above</td>
<td>82</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>240</td>
<td>71</td>
</tr>
</tbody>
</table>

Source: Annual Report of the Health Officer of the City of Madras, 1920, 40.

On the working of compulsory vaccination, it is to be noted that the term
“compulsory” could hardly be legitimately employed. More than half of the children
escaped it. By 1889–90, out of the total number of children available for vaccination,
more than 50 per cent escaped vaccination in the municipalities of Bellary,
Cannanore, Chingleput, Coimbatore, Cuddapah, Nellore and Tanjore. Out of 55
Mofussil Municipalities in the presidency, 25 had enforced compulsory vaccination,
this indicates that the provisions of the compulsory vaccination have been neglected
in these towns.  

G.O. No. 1275 Local, dated 7.8.1901.
In analysing the obstacles in the way of its working, defective registration of births and careless maintenance of “unprotected lists” were the major stumbling blocks.\textsuperscript{63} Jayant Banthia and Tim Dyson have not given enough attention to their relation with smallpox mortality.\textsuperscript{64} The municipalities refrained from serving notices and magistrates in interpreting the provisions of the law were so ridiculously lenient that the fines inflicted are willingly paid by the parents. Along with these laxities, it was the attitude of the parents to seek temporary shelter in a neighboring village or hiding the child with no other object than that of escaping vaccination.\textsuperscript{65} It also showed the neglect of the Councils concerned to enforce effectively the compulsory provisions of the District Municipalities Act.\textsuperscript{66}

**Vaccination in Rural South India**

With regard to the rural areas of colonial South India, the large number of smallpox mortality, especially that of children under the age of ten engaged the attention of the government for the reorganisation of the vaccination department. This was thought to be the most valuable reform capable of showing much life saving power.\textsuperscript{67} Suggestions were invited from the various District surgeons of the presidency on the question of extension of vaccination in the rural tracts of South India. In reply to the circular of 21 April 1890 regarding methods to be adopted, the suggestions suggested included the following i) Vaccination should be introduced in all head quarters of *tahsildars* in all subjects; ii) Rewards might be given to village *munsifs* who had promoted the cause of vaccination; iii) Vaccinators should pass in

\textsuperscript{63} Vaccination Report, 1904–05, 9.
\textsuperscript{65} Vaccination Report, 1905–06, 5.
\textsuperscript{66} G.O. Nos. 803, Local, dated 8.7.1904.
\textsuperscript{67} G.O. No. 1558, Local, dated 7.12.1903.
the Vaccination Code and Dr. Shortt’s Manual of Vaccination. A small bonus to be
given to those who pass; iv) A thorough reorganisation of the entire vaccine
department should be made, and educated men be employed as vaccinators; v) Daily
reports of smallpox should be introduced as that of cholera; vi) Vaccination to be
made compulsory and animal vaccination to be introduced; vii) Districts surgeons
should have power to furnish vaccinators and also to promote them, subject to
sanction of the President; viii) Deputy Inspectors should note in their monthly returns,
the numbers vaccinated in corresponding months of the previous year, and the total up
to date for the year as compared with the same period of previous year; ix) More than
one or two calves as at present should be inoculated every week. Each first class
vaccinator should have inoculated a calf once a week. Vaccinators should be
prohibited under a population of 3000, where medical subordinates are stationed, thus
making the latter responsible for the state of vaccination in their respective towns or
villages; x) Daily batta should be given to vaccinators for distances above five miles
from headquarters; xi) Karnams and Mirasdars should supply vaccinators with
monthly lists of births in each village; xii) Karnams and Mirasdars should report
outbreak of smallpox directly to vaccinators, who should proceed forthwith to the
affected localities and prosecute vaccination; xiii) Vaccination should be made
compulsory in all the unions; and xiv) Better man should be appointed as Deputy
Inspectors by the head office. Each district should appoint its deputy Inspector from
among its own vaccinators.68

Further the Superintendents of vaccination suggested that new depots should
be opened and that as an encouragement, a small money payment of one or two annas
should be offered to each child brought to vaccination by parents and friends in lieu of

the customary issue of rice.\textsuperscript{69} This was to overcome the religious objections. It was well known that no classes of population will hesitate to receive the trifling gratuity of one anna on vaccination, an additional half anna on bringing the child for inspection on the fifth day and another half anna for the children brought on the eighth day. From the hundreds of children brought for vaccination, it was obvious that there was nothing at all when only insignificant money was spent by the government. This was of great value in dealing the vaccination extension.\textsuperscript{70}

Compulsory vaccination was optional in villages. Although a large section of the population appreciated its benefits, there were some repugnance in submitting to the operation. Even where the mothers had no objection to the operation, it was difficult to convince them that infants under one year of age can successfully bear the operation. Hence, the risk to infantile life was considerable more especially as a Hindu mother considered it necessary to respect the goddess of smallpox by joining in where, in the presence of the smallpox patient, ceremonies were performed to the deity. Further prejudice was encountered in some when opinion existed that plague was being spread amongst the people by inoculation under the guise of vaccination.\textsuperscript{71}

Stuart however wrote in 1898 that the preventive measures met with no difficulty ‘save that arising from the apathy of the people and even of officials’.\textsuperscript{72} The importance of vaccination was also stressed in schools. The school text books contained a few chapters written in the form of story with pictures in order to educate the children on the importance of vaccination. it was portrayed in the form of a story.

\textsuperscript{69} Before the introduction of the payment of a token money to the vaccinated, it was the issue of rice that was in practice. For details see, \textit{Administration Report}, 1871–72, 194–95.
\textsuperscript{70} \textit{Administration Report}, 1871–72, 194–95.
\textsuperscript{71} \textit{Sanitary Commissioners Report}, 1889, 48.
To overcome the wrong notions about vaccination and explain its significance in saving lives, the government circulated illustrations depicted the case of the German empire. (See Figure 3.3) It read: “With the introduction of vaccination, these epidemics had become less frequent and less severe. But the disease had not disappeared as in the case of Germany and other Western Countries where also smallpox was common in the pre-vaccination days. In Germany which was the best vaccinated country, vaccination against smallpox in infancy as well as re-vaccination at about 12 years of age were compulsory and enforced by law. The population of that country is therefore well protected against this infection and any case of smallpox introduced there, can be treated in any ordinary General Hospital like any other
disease and does not require isolation in a separate hospital. In our country, it is only a small percentage of children that are vaccinated and re-vaccination is very rare”.

Figure 3.3: Illustration by the Public Health Department of Madras explaining the significance of Vaccination.

Source: Published in Public Health Pamphlets: Travancore (Trivandrum: Government Press, 1932), 1.

Such propaganda did bear fruit when villagers of some district like Kurnool seemed to have altered their views as to the futility of vaccination. In 1889, as a result there were over 17,000 cases vaccinated in addition to those performed regularly. The district Medical and Sanitary officer of Kurnool in his annual report observes “A most severe epidemic of smallpox swept the district. No less than 2913 deaths occurred. This was nothing but what was to be expected in a district where government had refused though twice asked by the district Board to do so, to sanction compulsory

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vaccination. A grant of Rs. 1000 having been made by the Board, I organise a “Special Vaccination Depot” to deal with the epidemic. They vaccinated over 17000 cases in addition to those performed by regular staff during the year villagers have, as a result of this epidemic, altered their views as to the futility of vaccination.\textsuperscript{74}

An immense improvement in both the quantity and quality of vaccination in rural areas occurred consequent to the introduction of the complete district Health Scheme in 1922. The Vaccination Department was merged into the wider Public Health Department. A conference of the officers of the public health department held at the end of March 1923 recommended the implementation of compulsory vaccination in entire South India. The governments delegated to Presidents of District Boards the power to declare vaccination compulsory in the area under their jurisdiction.\textsuperscript{75} However, it was later restricted to only those villages which have facilities for the trial of vaccination offences that is the existence of Village Panchayat Courts constituted under the village Panchayat Act.\textsuperscript{76}

In analysing the impact of vaccination measures in the rural areas, it was honoured more in breach than in their observance. Various reasons can be attributed. First, the indifference of the village munsifs in making prompt reports about outbreaks of smallpox, so much so, the disease, is often widespread before the health staff gets any information. In certain cases, the outbreaks are not reported at all, and the health staff comes to hear about them during their usual visits to the affected villages. Moreover, munsif refused in writing, to render any help to the Health Inspector on inspection duty or to produce the vaccination register for his inspection.

\textsuperscript{74} Sanitary Commissioners Report, 1889, 29.
\textsuperscript{75} G.O. No. 789, P.H., dated 11.5.1923.
\textsuperscript{76} G.O. No. 1226, P.H., dated 21.7.1923.
Second, the practice of assembling children either for vaccination or for inspection at a central place, although required, under the rules were seldom observed anywhere even in the areas where vaccination is compulsory. The health staff in consequence is much handicapped in their administration and discharging their duties by their having to go from door-to-door. Third, being the indifference of the village officers in the proper maintenance of the village registers. There were numerous omissions of unprotected cases in the registers. Complaints on this account are not taken notice of. Fourth, the kits of vaccinators in certain districts were either not promptly supplied or were very unsatisfactory. A circular detailing the list of articles to be supplied to vaccinators was issued to all local bodies during the year and they were requested to see that the supply was made promptly. Fifth, the great majority of the tālūk boards show disinclination to sanction prosecutions. This hampered the work of vaccination a good deal and afforded every convenience to the villagers to slight the rules and render the compulsory system practically a misnomer. Sixth, a correct registration of births goes hand in hand with vaccination and unless birth registers are maintained properly, the lists of unprotected children cannot be maintained accurately. Finally doing away with unqualified vaccinators and a steady propaganda is another important factor needed for the progress of vaccination. It is to be noted that it was only in urban areas where the medical profession is adequately represented that any scientific treatment of the disease was possible. In the mofussil, the general ignorance of the masses combined with the absence of suitable medial organisation largely contributed to the abnormal death rates in those tracts.
Cholera

As put forth by David Arnold, cholera was “the most formidable disease to have visited India in modern times”.\(^{77}\) Commonly known as haiza (from the Arabic word hachaizia), this disease was assigned different names like marysey, mirtirissa, vizucega, mordeyin and mordechien etc., in different parts and different languages of India. Mordechien was derived from the French Mort-de-chien literally meaning dog’s death.\(^{78}\) In the Tamil regions of South India, this infectious and fearful disease was referred as “Oozhikāṭṟu” caused by the contamination of air. It was believed that prevention of cholera can be effected “by covering the head using camphor for breathing in to keep the air antiseptic”.\(^{79}\)

The earliest presence of cholera in South India is recorded by the Jesuit missionaries. Père Martin met with the disease between Madura and Trichinopoly. In a letter of 1702, he mentions an attack of violent gastric disturbances with convulsions and records its cure by the application of the actual cautery to the soles of the feet followed by the violent slippering, an invaluable remedy.\(^{80}\) Further Dr. Arbuthnott in his book on air, published in 1733, records the prevalence of cholera morbus at the Fort St. George. Orme mentions the presence of an epidemic at Tinnevelly in 1757.\(^{81}\) Mr. Scott notes the prevalence of cholera in Madras in the year 1769 which is said to have attacked thousands of people in the peninsula up to 1790. The malignant or Asiatic form appears to have first shown itself in India, at Madras, in 1774.\(^{82}\) However it appeared with great severity in June 1814, in the first battalion, ninth

\(^{77}\) David Arnold, Colonizing the Body: State Medicine and epidemic disease in Nineteenth century India (Berkeley: University of California Press, 1993), 159.


\(^{82}\) W.J. Moore, Health in the Tropics; or Sanitary Art Applied to Europeans in India (London: John Churchill, 1862), 175.
regiment, on its march from Jaulnah to Trichinopoly; while another battalion, which accompanied it, did not suffer, although it had been exposed to exactly the same circumstances.

Indian Perceptions

The disease was not new to India and was described as Vishuchī is ancient Sanskrit literature. It is mentioned in the works of Sushruta and Charāka. The disease. Sushruta Samhita mentions it as Vishuchika and expressly states was a sporadic affliction. Chapter 6 Sloka 11 of the same mentions the fundamental principal of the spread of the water borne epidemics. It runs “Tatra varshaswos shadhayastarunyo alpa, veerya, Apascha prashantah, Kshiti mala Prayah” The sloka elucidates the idea that soil gets contaminated with faecal material and gets washed in the rainy season, and thus the filth may be carried by the water. In the rainy season, the water must be boiled and cooled before consuming the water for drinking purposes is mentioned.

Cholera according to Ayurveda attacked those who are timid or immoderate in their living. It took different forms like Vidhuman Visuchi and Sitanga Soniput both of which resulted in death. Cautery to the ankles was considered to be the best treatment. Sushruta recommended compound preparation made of Myrobalan. Orris

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85 Myrobalan is a flowering evergreen tree called in English the Myrobalan or sometimes the Chebulic Myrobalan. It is native to the Indian subcontinent and the adjacent areas such as Pakistan, Nepal and the South-West of China stretching as far South as Kerala or even Sri Lanka where is called Aralu. This tree yields smallish, ribbed and nut-like fruits which are picked up when still green and then pickled, boiled with a little added sugar in their own syrup or used in preserves or concotions. The seed of the fruit, which has an elliptical shape, is an abrasive pit enveloped by a fleshy and firm pulp. Chebulic Myrobalan can reach heights of 20 meters.
root,\textsuperscript{86} Asafoetida, the seeds of Wrightia anti dysenterica,\textsuperscript{87} red garlic, rock salt and atees,\textsuperscript{88} each of equal parts was said to cure cholera. These were reduced to powder and mixed with warm water for use. Charaka, a later writer added opium and black pepper to the mixture.\textsuperscript{89}

However the popularly believed notion was that cholera like that of smallpox is the direct visitation of an offended deity. As David Arnold illustrates, the disease was a representation of the manifestations of powers of an existing deity.\textsuperscript{90} The village gods were deemed to be the guardian deities who protected the people of the respective villages from contagious diseases. In Tamil regions, it was thought to be the visitation of goddesses Mariamma.\textsuperscript{91} The onset of the disaster causes the special worship or a festival of the goddess which was said to pacify her. There were regional variations of these rites.\textsuperscript{92} Generally, the goddess was invoked three times a year to protect the community from disease and death. The ceremony included the preparation of an elaborately decorated pot (Karagam) containing water coconut, lemon, flowers etc., which was paraded through the village and honoured as a representation of the deity. These rites performed by a non- Brahmin priest were often

\textsuperscript{86}Orris root is a term used for the roots \textit{Iris germanica}, \textit{Iris florentina}, and \textit{Iris pallida}. Once important in Western herbal medicine, it is now used mainly as a fixative and base note in perfumery, as well as an ingredient in many brands of gin.

\textsuperscript{87}A small compact and bushy shrub that blooms nonstop year-round. The plant all covered with 1" white flowers that look like little stars from a distance. It is a perfect specimen for limited space garden or patio. Can be easily grown as a houseplant. Doesn't require additional pruning. It is a medicinal plant in India. The bark possesses anti-microbial and anti-inflammatory properties and therefore the juice extracted from it is administered for mouth sores. The leaves are used in treating several skin disorders, psoriasis, nonspecific dermatitis etc. The bark is used as an adulterant for the well known drug, Holarrhena antidysenterica

\textsuperscript{88}This herb is found in hills of India. The roots are bitter, acrid thermogenic, expectorant, stomachic, digestive, antiperiodic and tonic. They are highly recommended for diseases in children. It reduces arrhythmia and hypertension. This is useful for a cute inflammations, chronic fevers, convalescing after fever, cough, debility, diarrhea, dysentery, edema, Hemorrhoids, indigestion, liver disorders, vomiting.

\textsuperscript{89}MacPherson, Annals of Cholera, 117–123.

\textsuperscript{90}Arnold, Colonizing the Body, 171–78.

\textsuperscript{91}C.M.E. Matthews and Benjamin, Changing Health Beliefs and Practices in Rural Tamil Nadu (New Delhi: Indian Social Institute, 1981), 9.

\textsuperscript{92}For details see Henry Whitehead, The village gods of South India (New Delhi: Asian Educational Services, 1988), 16.
accompanied by the sacrifice of a goat or a buffalo. A blood sacrifice was thought to withdraw the goddess of her anger, symbolised as the heat of the disease. The blood of the sacrificed animal was then sprinkled on the rice and offered to the deity before being distributed among villagers or scattered around the boundaries of the villages to protect it from the disease.  

Cholera since 1880

Cholera in Colonial in South India according to M.C. Furnell was an invasion from the North and North-East, and the epidemic commencing in 1881 was no exception to the rule. It took what Dr. Bryden has so well called the “Great Epidemic Highway,” across the Central Provinces and Southward through the Deccan and Bombay Presidencies towards Madras. The actual outbreak in the South began at the great festival at Upper Tirupati, about 2 October, 1881, where the pilgrims had assembled from the Bombay presidency where Cholera was rife. Prior to 1880s cholera received less attention from the government. It was habitual for the government to let the epidemic happen and then follow it with preventive measures to check all further outbreaks. Hence there is a wide gap in statistics related to the number of attacks.

In 1882, for the first time, an attempt was made to map cholera mortality in South India. The Sanitary Commissioner’s Report of 1882 for the Madras Presidency illustrated cholera mortality with a map showing the geography of the disease, with six types of classification based on different shading from dark to light brown. The shadings of the area in dark, light and black areas were a cartographic representation

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Civil Hospitals and Dispensaries Report, 1881, vi.
of the problem to be investigated. The high and highly variable mortality represented severe epidemic conditions, and severe endemic conditions were confirmed by high mortality and low variability rates. The study of geographical pattern provided better understanding of the environmental factors which provoked it. The cholera map showed high death rates in some districts, with relatively constant rates in the great endemic homes of the disease in most East coast deltas. It was also scattered in some interior districts which had been of major influence in the spread, in spite of sanitary arrangements that were made by health authorities at those places. (See Map 3.1)

Certain parts of South India were considered to be the endemic foci of cholera infection. One such permanent seat of infection existed at Tanjore in the kaveri delta in South India. It served as the means of water supply for the people of the district. The map for Tanjore district shows the villages which were repeatedly infected during the last fourteen years, makes it evident that these cholera foci were practically without exception situated on the banks of one or other of the irrigation canals and channels which intersected the deltaic tract.

The long continuance of the disease in Tanjore and the heavy mortality caused much anxiety to government. Accordingly they invited the special attention of Dr. Furnell, the Sanitary Commissioner of Madras. He paid a special visit to the district and after his inspection stated that the cause of the continued prevalence of cholera in Tanjore district owed much to the peculiarity of contaminated water supply

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97 In nineteenth century England such maps of health and disease were made. For more details see Gilbert, E.W., “Pioneer maps of Health and Disease in England”, The Geographical Journal 124, 2, 1958.
98 Nirmal, A History of Public Health, 42.
99 As regards the distribution the sacred river Kaveri is obviously and active agent.
upon which the people were dependant. In describing the sources of water he remarked, “But the peculiarity of the water supply and the habits of the people favor in every possible way the propagation and retention of the disease. The beds of these water courses in the dry weather months are used as places d’aisances; but when they contain water, the banks are used, and the individual proceeds at once to wash his person in the water. These water courses feed the tanks, and on these tanks, the people of all the towns and villages of Tanjore depend for their drinking water. Moreover not only are these tanks filled with water thus open to contamination, but they are themselves still more polluted in every possible way. The women bathe, wash their cloths and the cloths taken from the sick people and take home large, bright, clean chatties of the filthy fluid to drink and cook with. These observations of the Chief Medical Sanitary Authorities explains why cholera should be so severe and persistent in Tanjore.”

(See Map 3.2). Hence, he was convinced that uncontaminated water was the only way to prevent cholera.

In order to remedy this situation, Furnell proposed that in every one of these villages a good deep well be sunk, properly made of brickwork and masonry, with parapet, sloping sides, etc., under the superintendence of the Local Fund Engineer. It would be of great advantage to draw water from such wells than from open and contaminated tanks. He also suggested that in large villages, it was necessary to have a pump to raise the water into reservoirs to keep the well from the possibility of being contaminated by dirty ropes and chatties, etc. However, at times cholera also showed tendencies to locate itself in areas outside the water supply. For instance the cholera

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100 Proceedings of the Home Department (Sanitary), August 1888, Nos. 17–26. NAI.
101 G.O 197, Public, dated 28.1.1886. In Pondicherry, cholera was practically unknown, even when raging in English tahsils around. Its artesian well supply, and a fine lake, Montirepoleon, some miles outside, from whence the water was led by pipes into the town and distributed from hydrants, were, no doubt, the secret of its immunity. For, again, it is absurd at least it seems so to me to suppose "atmospheric" or "telluric" or "local" influences should suddenly become benign in a small spot in the midst of an infected area. Furnell, M.C. Cholera and Water in India (London: J & A Churchill, 1887), 34.
MAP 3.2
CHOLERA SPOT MAP OF TANJORE DISTRICT

REFERENCE

discharge when mixed with ordinary rubbish was utilised for filling up ground levels was recognised as a dangerous practice. The government urged that no time should be lost in giving effect to the urgent recommendation of W.G. King, a special sanitary officer who had investigated the outbreak in 1882. Moreover, the international implications of cholera and its appearance became a concern to all the ports. Madras was notified about the steps being taken to form the Boards of Health to deal with all epidemics. It was decided that Boards of Health should be formed at ports to inspect all shipping, in order to secure the minimum of sanitary interference with the trade and commerce.

Further, the geography of certain areas provided congenial surroundings for cholera to spread and ravage. The houses were so built which enabled filth of all kinds to accumulate. With all favouring conditions like no drainage, overcrowding, poor ventilation and water supply cholera had everything in its favour. The situation was worsened by the refusal of people to undergo treatment using Western medicine which was thought to contain alcohol. However in the Nellore district, people seem to have appreciated the medical and sanitary arrangements that were adapted to encounter the epidemic. The zeal, energy, and perseverance displayed by the medical subordinates and senior students in the conduct of their arduous and continuous duty, had become a matter of public appreciation which paid for establishing the confidence of the people.

The epidemic cholera ceased to be a mystery with the discovery of the cholera bacillus in 1883 by Robert Koch. Being a major event in the history of medicine, it was a turning point in the conquest of deadly diseases. Koch proved beyond doubt

\[\text{\textsuperscript{102}}\text{G.O. No. 171, Public dated 7.3.1882.}\]
\[\text{\textsuperscript{103}}\text{Katherine Mayo, Mother India (New York: Blue Ribbon Books, 1931), 382.}\]
\[\text{\textsuperscript{104}}\text{G.O.2057, Public, dated 18.10.1883.}\]
that small unicellular organisms of the genus bacteria can cause diseases and opened a new field of medical science namely bacteriology. At the memorable meeting of the Berlin Physiological Society on 24 March 1882, he reported the detection of the tuberculosis bacillus, which was the greatest success in his life. In 1883, Koch headed a German cholera commission in Egypt where he isolated the cholera vibrio, the organism responsible for causing cholera. In 1884, he came to Calcutta and found the bacillus in the stools of all the cholera patients then examined. These vibrios once they found their way into the human intestine were capable of producing an acute disease which if untreated, killed roughly half of those unfortunate enough to contrast it. This was true of India and even Russia as late as 1921 which registered a mortality of 44.8 per cent.\footnote{Richard P. Strong, \textit{Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases}, 2 vols. (Philadelphia: The Blakiston Company, 1943), 2: 592.}

Like few other diseases, it spread along the pathway leading to the human digestive tract. The prevalence of cholera at the beginning of the year is ascribed to the consumption of new grain, lentils and roots that are generally gathered at that season.\footnote{At the pongal season the indigestible Kuruvai rice harvested a month or two before, as well as fresh vegetables (especially pumpkins) are largely consumed. These are believed by natives to render the system liable to cholera.} In general, the scarcity of grain and usual articles of food caused the poorer classes to resort to extraordinary means of providing themselves with sustenance. Also uncooked fruits and vegetables and unwashed hands transmitted the disease. It spread along the lines of human intercourse particularly lines of communication by river, road, rail or ship.\footnote{G.O.525, Public, dated 2.7.1891.}

The spread of cholera is intimately connected with the great religious festivals and pilgrimages. The cholera conference held at Constantinople in 1886 regarded it as the most powerful of all the causes which tend to the origination and diffusion of
epidemic cholera. The districts of Salem, Vaniambadi, and Tirupatur were caught in the grip of cholera imported by the local pilgrims from Tirupati. Further a number of fairs and festivals at some Hindu pilgrim centers like Srirangam, Tiruvanamalai, Chidambaram, and Narrattalai became dangerous due to unsatisfactory sanitary arrangement and crowd control. Serious mortality occurred in 1897, when the crowded Mahamakham festival was celebrated at Kumbakonam. Indeed the ratio of deaths from cholera per thousand of population in that year was three points higher in the municipality than in the district as a whole. (See Map 3.3). The colonial government decided to institute, in concert with local governments, comprehensive enquiry into the possibility of improving the sanitary arrangements along pilgrim routs and at pilgrim centers. It was only in the first half of the twentieth century, the sanitary control of these festivals on an extensive scale was undertaken by the provincial health authorities with a considerable measure of success.

Indeed, it was not the pilgrimage alone but the bad state of the food and water at the pilgrim centers proved very conducive to its spread. The pilgrims depended almost entirely for their meals on the temple prasadam. This sacred meal, which is offered for sale at a very cheap rate, was unhygienic. It was obligatory on the part of every pilgrim to eat a portion at least of this sacred prasadam on account of its being an offering to the deity; and it was considered as a sacrilege on the part of anyone even to examine the same whether it is good, or bad. Similarly the water from temple

108 Madras Quarterly Journal of Medical Science, N.D, 208, TNA.
109 F.R. Hemingway, Madras District Gazetteers: Tanjore (Madras: Cosmo, 2000), 2: 155. Every taluk of the district was marked as a cholera zone through which the march of troops to Bangalore was avoided.
MAP 3.3
DISTRIBUTION OF CHOLERA
IN SOUTH INDIA, 1897

REFERENCE

tanks used by the majority of the pilgrims was contaminated and turned out to become very injurious to the health of the pilgrims.\footnote{Papers relating to cholera, Madras, N.D, 4–5,TNA.}

The Governor General in Council considered it advisable to instruct the civil and medical officers on the causes and prevention of the disease. The government impressed upon them the necessity of exercising greatest care in investigating the facts connected with the outbreak and progress of disease. Further, guidelines that were suggested by a special Cholera committee in Punjab were communicated by the Home government.\footnote{Letter from Home Department Nos. 199–202, dated 19.9.1881.} The following aspects were emphasised: i) History of cholera in the locality; ii) Date on which first case appeared; the number of towns and villages attacked and the number that escaped; and the relative proportion between the two; the distribution of the disease of localities and by time as shown by the daily number of attacks; the relation that existed between rise and fall of the outbreak in adjoining places, particularly in municipalities and cantonments; iii) The circumstances connected with the rise, subsistence and disappearance of the diseases in the place or different parts of the same place and also those connected with the escape or comparative exemption of other places in the neighbourhood; and iv) Endeavour should be made to ascertain what the exact meteorological phenomenons of the year were and whether they appeared to have had any relation to the outbreaks. However, it was obvious that these theoretical discussions were kept at a minimum, if the enquiries were to be of any pragmatic value.

The appearance of cholera in South India was indeed traumatic. In the state of scientific knowledge, there was no specific remedy.\footnote{Hehir, Patrick, \textit{Hygiene and Diseases of India} (Madras: Higginbotham, 1913), 614.} In England, anti-cholera measures were introduced by then. All breeding pods were filled with earth, piped
water supply made available to every city, proper sewage disposal implemented and hygienic conditions were taken care of. Finance was never a problem in England. But in India, finance was a never ending problem. For the officials at Calcutta and London, a cheap way of tackling cholera was to invite a bacteriologist. Hence, Haffkine, a bacteriologist who developed his anti-cholera vaccine in 1892 was invited by the Indian government. During April 1893 to July 1895 anti-cholera vaccine was given to 294 British officers, 3,206 British soldiers, 6,629 Indian soldiers, 869 civil Europeans and 31, 056 natives of India from North Western Provinces to the tea gardens in Assam. But the results were mixed and varied when doses differed or when it was administered before the cholera outbreak or during the outbreak. The second attack of cholera even on an inoculated person was often fatal. His second phase of experiments from 1893 to 1895 proved favourable. In 1893, his inoculation scheme was introduced in Bengal at Kattal Began, proved the effectiveness of inoculation as not a single person who had been inoculated by Haffkine contracted the disease. His two and a half years of work in India was published at Calcutta. The vaccination against cholera had undoubtedly justified the hopes that had been placed in it. It was true that immunity did not follow, but death as a rule was prevented.

The government of Madras programmed for the introduction and demonstration his anti-cholera inoculation. Haffkine in writing to the Government read: “in giving this programmes I must add that the plan of my movements is obviously subject to constant modifications in connection, with the prevalence of cholera and the willingness or otherwise of the people to adopt inoculation, as the

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object of my personal work is to demonstrate, wherever possible, the effect of the
method, and therefore, to endeavour to take timely advantage of epidemiological and
other circumstances appearing unexpectedly and favouring this demonstration”.  

But the plague in Bombay claimed his attention.  

As an alternative to check the problem, in 1896, the Government laid down a
set of rules to be observed with an outbreak of cholera and these were in force in
thirty-two municipalities. Under these, each town was divided into certain well-
defined circles each with a complement of sanitary inspectors and staff with the
necessary stock of medicines and disinfectants. The establishment was formed as soon
as need arose. Its duty was to search for cases, treat them with medicine, see to the
removal and safe disposal of all infected matter, hankinise wells and tanks etc.  

At the close of the year 1912, Government sanctioned the creation of a small
reserve of two cholera parties of ten sanitary inspectors each under the direct charge
of an assistant surgeon for cholera prevention work. These parties were gradually
increased and in 1922, eight parties were working with their headquarters at Madras.
Owing to the delay on the part of the officers responsible for the registration of vital
statistics in making prompt records of outbreaks of cholera and the time required for
the transfer of a party from one district to another, the preventive staff was not able to
do real preventive work under the system which was then on force.  

However within two years, a broader basis for the District Health Organisation came to be envisaged. In 1914, the Government of India formulated a comprehensive sanitary policy in which it stressed to eradicate epidemic disease including cholera. But the outbreak of

the Great War made it impossible for the Government to initiate any such health scheme.\textsuperscript{122} However inoculation as a preventive measure proved its value as a means of protection during the period. In spite of the doubts both official and professional, inoculation was gradually accepted as a preventive measure.

Cholera struck in an epidemic form in 1918. It appeared in every district of the presidency and throughout the year in all but four districts. See Map 3.4). The deaths numbered 1, 22,263 which represented 7.1 per cent of the total mortality in the Colonial South for the year and a death rate of 3.0 per 1000 according to the census of 1911 as against 1.5 per 1000 in 1917 and 0.4 in 1916 and far above the quinquennial average of 101 per 1000. Cuddapah and Nellore returned the highest death rates. The incidence of cholera was highest during January and February, June and July, November and December. In the rural areas, the Cholera Parties were employed for preventive work. The knowledge resulting from the investigations enabled the Public Health staff to be on alert and the epidemic of 1925 resulted in considerable fewer deaths in South India.\textsuperscript{123}

In the next year, the Government of India Act of 1919 made sanitation and public health a transferred subject under the minister-in-charge of the local self Government. Since then a few changes were brought out which amalgamated services of the Sanitary Inspectors of vaccination and cholera parties. Some of the cholera parties were disbanded and sanitary inspectors of these parties were distributed among important districts like Tirucharapalli and Tanjore. Each was provided with a District Health Officer and a staff consisting partly of the old deputy inspectors of vaccination and partly of cholera parties. And this experiment proved a complete success. Since then relief measures were carried with greater effectiveness.

\textsuperscript{122} B.S Baliga, Studies in Madras Administration, 2 vols. (Madras: Government of Madras, 1960), 1: 211.

\textsuperscript{123} Administration Report, 1925, 161.
MAP 3.4
DISTRIBUTION OF CHOLERA
IN SOUTH INDIA, 1918

REFERENCE

Not only the government, but a voluntary organisation namely Indian Red Cross Society was actively involved in cholera prevention. Since its inception in 1920, one of the commendable works of the society was in educating the people towards prevention of diseases. The organisation disseminated information by way of producing and issuing publicity materials on hygiene, sanitation, and preventive and curative aspects of diseases. (See Appendix IV)

In 1922 the government directed the amalgamation of the services of Deputy Inspectors of vaccination and sanitary inspectors belonging to cholera parties. Subsequently, they disbanded three of the cholera parties and as a tentative measure distributed the sanitary inspectors among five selected districts, each of which was provided with a trained health officer and a staff consisting partly of deputy inspectors of vaccination and partly of sanitary inspectors from the cholera parties. The results was most encouraging and with effect from 1April 1923 the government abolished the remaining cholera parties and sanctioned the employment of a health staff in each district which would deal with all epidemic diseases and would be responsible for public health in general.

Each district since then had a trained district health officer with eight to fifteen inspectors who would be concentrating at any portion of the district in case of necessity. The establishment of a complete self-contained public health staff working under the district board was a great advance. The lines on which the campaign against disease was to be conducted had been well laid down and the scheme which was completed in April 1923 marked a distinct stage in the development of the Public Heath department.124

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124 Boag, The Madras Presidency, 123.
Similar organised action was attempted in villages. As an experiment, two reserve cholera parties, each consisting of ten sanitary inspectors with an assistant surgeon in-charge was formed to work under the Sanitary Commissioner to combat cholera. They formed a combat force of trained men who can be dispatched to any rural centre of infection at a moment's notice to fight the epidemic in a systematic manner. The first two parties formed were successful and later two more were constituted. When not engaged in combating cholera these parties were sent in batches of five to tour into selected villages, to remove the most crying sanitary defects found therein, and generally by example and percept, to familiarise the people with the principles of sanitation.\textsuperscript{125}

Special Arrangements in Rural South India

With regard to rural areas, special arrangements were resorted to by the health authorities to prevent the spread of the disease. On cholera making its appearance in any town or village, steps were at once taken to improve the surface conservancy and to conserve; as far as possible, the water supply. In some cases people were prevented from taking water from supplies which were thought bad. These measures although they had some effect, could be looked upon as palliative. The real remedy being the introduction of cleanliness into every village at all times irrespective of epidemic times or season and not confined to periods when sickness was prevailing. Hundreds of cholera pills were from time to time sent out to the 
tahsildars,\textsuperscript{125} and he reported that their good effects were abundant and pretty well appreciated. This official was also instructed through the collector to remove all filth and public nuisances in his villages and to instruct the villagers to remove and destroy as quickly as possible, all alvine

\textsuperscript{125} Boag, The Madras Presidency, 123.
discharges of cholera patients and to cleanse their houses well after a visitation of cholera. Every effort was made to arrest its progress. Charcoal and quick lime were strewed on the ground in the immediate neighbourhood of all houses in which cases occurred and the walls of such houses well white washed and their floor scraped. Medicines were distributed to the several villages where the disease was prevailing as well as to the police, and a supply was always kept ready at the dispensary, and notice given that such could be obtained at any hour of the day or night. Very few however as shown by the return applied for medicines and none were brought to the hospitals for treatment; and there is reason to assume that several cases for which medicines were procured were either extremely mild cases of cholera or simply diarrhoea.

Among the other preventive measures the most important included protective water supply, proper disposal of night soil and sanitary wastes and control over the preparation and sale of food. Among control measures, prompt notification of the outbreak of cholera, treatment of the affected people, disinfection of infected material, chlorination of water supplies, and immunisation of people by anti cholera inoculation were most important. These measures were enforced by Public Health authorities to a great extent with good results. However the press always remained a critic of the governmental measures.

Cholera Preventive Work and Press

The press always remained critic of the improper arrangements of cholera prevention particularly in the city of Madras. pointing to the improper arrangements, the Tamil newspaper Swadeshmitran of 28 July 1905 stated that in order to check the spread of cholera in the city of Madras, proper arrangements should be made to purify the water before it reached the city, that people should be warned to boil the water...
before drinking; that the sanitation of Chingalpet and adjoining districts should be
carefully looked after; that the poor people of these districts should not be allowed to
enter the city, labour being provided for them in their native places and that
emigration depots in the city should be daily inspected by the sanitary officers.\textsuperscript{126}

The Tamil newspaper \textit{Hindu Nesan} opined that the various causes for the
outbreak of cholera in the city were the stinking and muddy water now supplied to the
people, the absence of proper drains, overcrowding of houses, the wholesome nature
of the food supplied in hotels and coffee houses, and large number of poor emigrants
who had come from the outlying districts to beg in the city. This paper suggested that
the following preventive measures should be taken by the government and the
corporation, like the suitable drains should be constructed in the said portion of the
city, that overcrowding should be abated, rubbish should not be allowed to
accumulate, starving and houseless poor should be take to feeding houses and work
houses which should be established, water should be purified and that hotels and
coffee houses should be periodically visited by sanitary inspectors.\textsuperscript{127}

The \textit{Andhra Patrika} of 26 July 1905 stated that as the poor people of the
famine affected districts had come down to Madras in large numbers to find measures
of subsistence, the city is becoming more and more unsanitary. The relief afforded by
the government was hardly sufficient. It requested the government to avoid the
“charge of merciless” by opening relief kitchen in villages outside Madras and by
affording relief to the poor as long as distress lasts.\textsuperscript{128}

The \textit{Dravida Varthamani}, a Tamil newspaper of 3 August 1905 observed that
the officers of the government were to be blamed for the prevalence of cholera in the

\textsuperscript{126}Swadesesamitran", 28.7.1905, \textit{NNPR}, Madras.
\textsuperscript{127}“Hindu Nesan”, 28.7.1905, \textit{NNPR}, Madras.
\textsuperscript{128}“Andhra Patrika”, 26.7.1905, \textit{NNPR}, Madras.
city because they were asserting that there was no famine in the upcountry and took no action even though it was pointed out to them that labour was not procurable and relief works should be opened, that in consequence of this, the poor people began to come to Madras and were the first victims to this epidemic and that if necessary measures had been taken at the outset, there would have been neither expenditure nor anxiety nor deaths as at present.¹²⁹

During the period under study, the British made extensive efforts to control the epidemics of smallpox and cholera. The scope of smallpox vaccination increased gradually in spite of a variety of factors opposing it. The official policy on vaccination was influenced largely by social and religious factors along with the effectiveness of the vaccine operation and the financial constraints. The introduction of animal lymph based vaccination led to the removal of a major obstacle in extending vaccination. The scope of the vaccine operation was widened by means of legislative measures like compulsory vaccination. While the benefits of animal vaccination were appreciated when compared to the human lymph based vaccination, the native population also exhibited repugnance to submit to the operation because of the fact that they were never convinced that infants could bear the operation successfully. The success of the operation of compulsory vaccination was evident from the decreasing smallpox mortality.

Rural South India witnessed special reforms towards the expansion of vaccination. In spite of this, vaccination made little impact. The official reports on vaccination highlighted the religious opposition as the cause for the decreased vaccination during many years. If control measures were considered as intrusion into the native society, the fear of an outbreak mitigated the official enthusiasm for

¹²⁹ 'Dravida varthamani', 3.8.1905, NNPR, Madras.
implementing control measures, though it never remained a prime cause for the failure of vaccination. The lower qualification of vaccinators coupled with improper knowledge of the use of the techniques was a further setback. The indifference of the local workers, the political and infrastructural constraints also had their share of responsibility in the lack of enthusiasm for smallpox vaccination in rural South India. Although vaccination encountered these practical difficulties, the decline of mortality was apparent after 1920.

Figure 3.4: Comparative mortality of Smallpox and Cholera, 1921-1931.

Source: Report on the Administration of the Madras presidency for various years from 1921-1931.

Recent works have concluded that the gradual decline in mortality was not due to the public health policy, but due to various other factors. Ira Klein argues that the mortality decline came about as a result of biological immunisation and the reduced malignancy of infectious diseases after intensive periods of exposure. Sumit Guha emphasizes on the climatic factors as the reason for the reduced mortality. He argues

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that the life expectancy of the Indians increased because of the suitable climatic conditions which enabled the maintenance of a stable level of moderate nutrition.\textsuperscript{131} However, these factors accounted for the reduction of mortality only after 1920s. During the period of study, there was no other factor than the public health measures that led to the gradual reduction of mortality from the deadly diseases.

The study of the distribution of cholera since the 1880s demonstrates that mortality had been the highest in the four districts of Tanjore, Trichinopoly, South Arcot and Tinnevelly. The Tanjore district showed a long persistence of the disease and not a single year passed without attack. Water played an important role in the propagation of the disease. The native population lived in the midst of irrigated lands took very little care of the source of their drinking supplies. While the district was a wealthy one as regards its agricultural productions, the labourers were very poor, and live in wretched hovels built on a damp and porous soil. The habits and mode of life of the people further aggravated the spread of the disease. On the other hand, in the Godavari and Krishna deltaic tracts where wells and tank water were used suffered far less. This difference probably explains the fact that the Godavai and Krishna deltaic tracts suffered less intensely from the disease, and at much longer intervals than the Cauvery delta. The district of Vizagapatam, Godavari, Krishna, Nellore, Bellary Anantapur, Kurnool and Cuddapah which had all been absolutely free from cholera for over one year, at a time, was safely excluded from the possible endemic foci. In Salem and Malabar, the maximum period of freedom from cholera at any one time was for five years. These two centres recognise that fairs and festivals played a major role in the dissemination. Both these centres were infected from the great festival centre at Palni, in Madura district.

The indigenous medicines though successful in treating individual cases affected by the disease, mass deaths were controlled only by the improvement of sanitation along with strict measures in the control of pilgrims, trade, fairs and festivals. The yearly cholera rates per mille for the whole of British India from 1875 to 1907 showed the lack of diminution in the cholera incidence. It is interesting to note that in the urban areas where the sanitary and health conservation was greatly exhibited, the death rates were also higher as compared with the rural. For instance, in the year 1884, one of the severe in south India, showed the urban death to be 3.3 per million of population as against 1.9 per million among the rural population. Similarly, in the year 1897 urban deaths amounted to 5.0 per million of population as against 4.3 in the rural areas.\textsuperscript{132} The possible explanation to this would be the overcrowding of the urban areas in comparison with the rural.

In spite of the repeated attention drawn by the public health department towards cholera control, different factors stood in the way of proper implementation. Even when various strategies were formulated to provide the best sanitary condition, the local boards never gave the required attention to its implementation. Further, any interference of the government into the life of the masses was opposed by the native population. There was a universal belief that it was quite useless, if not impious, to attempt to prevent epidemics, which are regarded as God's chastisements of sin and vice.

On the whole, the success of the efforts to cope up with epidemic diseases was apparent in the decreasing death rates from these killer diseases. While in the urban areas, a vigorous policy was followed whereas in rural areas, lack of funds and lack of interest of the local bodies to implement regulatory measures always hindered the

\textsuperscript{132} Administration Report, 1897-98, 131.
possibility for progress. Not only that, Western medicine had to face the antipathy of
the native population as against the indigenous systems which were deeply rooted in
the culture of the people. In spite of this, due to the enormous preventive measures
against the epidemics carried on during the period under study, a large amount of
sufferings and deaths were prevented.