Chapter IV
Disease and Epidemics in the Baroda State

This Chapter contains a detail information about the Disease and Epidemic prevalent and visited the Baroda State from 1850 to 1948. The reasons of illness including environmental causes, way of living including poverty and related social conditions like poor sanitation, which are the major causes of ill health and history of the sporadic disease which effecting the mass in bulk not only today but from the centuries, is need to be attempted carefully. Therefore to provide insight into the health and social problems faced subject and State of Baroda and the methods adopted by the State Government to control it are the major issues discusses and elaborated in this Chapter.

It is a well known fact that where there is eases, there is dis-ease. Since the time man has evolved on earth the dis-ease/ disease are a part of his/her life. Generally, health is understood as the absence of disease or infirmity. In this way disease can be define as an abnormal condition of the body or mind that causes discomfort. Disease affects all humanity. Socio-economics and disease are intertwined and affect one another , both directly and indirectly through a number of issues including basic and fundamental human rights, poverty, disease control, antibiotic resistance, diplomacy, and corporate profits etc. The substantial solutions is necessary to achieve by using several measures like historical research, health policy, surveying and adopting awareness and sanitary programme etc. As the health play a direct impact over the socio-economic development of society it cannot neglected or tolerable to neglect it.

Disease can be understood as a condition in human, plants, or animals that results in pathological symptom and is not the direct of physical injury. It can also be explained as a disorder in humans, animals, or plants with recognizable signs and often having a known cause. Disease is an old French word of *"desaise"* 14th century, which means lack of ease < *asie* "ease". Disease are generally classified into three category; infectious, acute and sporadic.

The study of the incidence and spread of disease in large population is called epidemiology. To control a disease, it is important to understand its source and how it spreads[1].

Further to control the spread of disease and epidemics among the subjects, is the foremost assignment of the State Government for maintaining and sustaining social stability. After all a healthy mind can work better in healthy body and this is possible through both precautionary and remedial measures.

Epidemic is an outbreak of contagious disease affecting an unusually large number of people or involving an extensive geographical area[2].

Prevalent Disease and Epidemic in the Baroda State

Prevailing disease were those common disease which emerged and treated in the several medical institutions of the Baroda State. The proper record of those

[1] Microsoft ® Encarta ® 2009. © 1993-2008 Microsoft Corporation. All rights reserved., Sidebar, Encarta Historical Article, Chasing the Through centuries, by Christopher King.
[2] The Gazetteer of the Baroda State, Vol II Administration 1923, p. 354

maintained and published in the annual report of Baroda Administration, section of Medical Department from 1902 to 1948.

Looking into the Baroda Administration Reports[3] it is found that the most common disease for which patients were treated at the civil and military hospitals and dispensaries during this time span were malarial fevers, infection of the respiratory organs and alimentary canal, syphilis, cutaneous disease and rheumatic infections[4]. Apart from this venereal disease, disease of nervous system, of eye skin, ear, lungs, worms, dysentery infections etc were also reported regularly.[5] These were the disease commonly found throughout the British India, varying in its intensity.

Though in general the health of the city of Baroda State was satisfactory during the hot and the early part of the rainy season, but during the later portion of the later and the greater part of the cold season there is a general prevalence of malarial fevers, bowls complaints, and infections of the lungs.

While looking from the territorial division of the State, the most prevalent disease in the Kadi district were malarial fevers, diarrhoea, bronchitis, disease of the alimentary canal, rheumatic infections and skin diseases[6].

The most prevalent disease in the Navsari district were malarial fevers, during the rainy and cold season and bronchitis, diarrhoea and skin diseased.[7]

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[3] B.A.R.S. 1901-02 to 1947-48
[4] Ibid
[5] The Gazetteer of the Baroda State, Vol II Administration 1923P. 354-375
[6] Ibid
[7] Ibid

The diseases which were most prevalent in Vadodara district during late nineteenth and early twentieth centuries were malarial fevers, infection of respiratory organs and elementary canal, syphilis, cutaneous disease, rheumatic infections.[8]

In the Amreli district the common diseases during the monsoon months were fever, bowel complaints, rheumatic infections, and eye diseases in the hot weather and Lung disease in the cold weather.

In Okhamandal there were few incidents of malaria and epidemics. A few isolated cases of smallpox and cholera were imported occasionally by pilgrims.[9]

The chief causes of the diseases prevalent can be attributed to the climate, habits and the customs of the people. As stated earlier, climate played a major role in spreading malarial fever which was widely prevalent in Baroda and Navsari districts, where infections of the liver and spleen were its main side effects. Habits and pattern of living of the people in Baroda and Navsari and other districts led to the rise of various diseases of the alimentary canal to rheumatic infections and syphilitic and cutaneous diseases.[10]

Following table is shows the details about the various disease and number of patients treated in the various medical institution of the State from 1905-1948.

[8] The Gazetteer of Baroda State, Vol II Adminstration 1923P. 354-360
[9] Ibid
[10] Ibid

Table showing the number of patients treated from1905-1909

Disease	No of Patients , every Year			
	1905-06	**1906-07**	**1907-08**	**1908-09**
Malarial Fever	69,259	75,895	69,495	69,070
Worms	10,053	9,643	9,309	9,214
Dysentery	4,844	4,859	4,941	5,493
Diarrhoea	6,678	5,695	6,059	6,994
Venereal Disease	7,425	6,626	5,246	7,245
Rheumatic Infections	9,316	9,430	9,416	9,922
Disease of the Nervous System	7,317	7,520	8,978	8,646
Disease of Eye	33,575	31,741	42,382	41,352
Disease of Ear	17,380	18,239	18,310	18,552
Disease of Skin	28,578	32,249	38,406	35,577
Disease of Lungs	1,649	802	1,374	1,394
Disease of Respiratory System	13,868	16,016	16,341	16,099

Out of total 12 prevalent disease Malarial Fever was the most effected disease and disease of lungs was lowest appeared in the territory from 1905 to 1909.

Table showing the number of patients treated from1909-1914

Disease	No of Patients , every Year				
	1909-10	**1910-11**	**1911-12**	**1912-13**	**1913-14**
Malarial Fever	69,070	71,166	57,032	71,816	89,068
Worms	10,996	11,624	9,334	9,555	8,757
Dysentery	6,211	5,689	6,929	8,447	6,247
Diarrhoea	1,293	7,221	7,663	10,333	7,978
Venereal Disease	6,412	6,032	6,306	5,255	5,482
Rheumatic Infections	9,824	10,314	9,617	10,165	10,472
Disease of the Nervous System	9,187	8,923	9,423	9,943	10,185
Disease of Eye	43,387	43,274	38,651	49,479	45,101
Disease of Ear	20,964	21,123	20,664	22,526	23,567
Disease of Skin	32,456	31,213	28,590	49,818	54,958
Disease of Respiratory System	19,770	18,117	18,563	19,827	23,158
Injuries	11,150	11,603	11,150	12,354	11,689
Dyspepsia	7,552	7,465	7,838	8,748	8,779
Disease of the nose	1,463	1,443	1,352	1,364	1,349
Tubercular	579	732	868	1,005	895

Out of total 15 prevalent disease Malarial Fever was the most effected disease and disease of Tubercular was lowest affecting disease in the territory from 1909 to 1914.

Table showing the number of patients treated from19014-1919

Disease	No of Patients , every Year				
	1914-15	**1915-16**	**1916-17**	**1917-18**	**1918-19**
Malarial Fever	78,497	69,918	77,976	80,482	52,509
Worms	10,115	10,373	11,716	9,426	7,894
Dysentery	5,999	6,675	7,157	5,862	6,890
Diarrhoea	8,059	9,749	9,368	8,904	9,468
Venereal Disease	5,669	5,990	5,981	5,093	4,251
Rheumatic Infections	10,188	10,192	9,723	9,145	8,787
Disease of the Nervous System	10,429	11,489	10,664	10,033	9,381
Disease of Eye	48,460	56,842	58,411	48,953	49,852
Disease of Ear	26,356	27,369	27,798	24,342	24,631
Disease of Skin	63,504	34,913	35,221	67,802	32,570
Disease of Respiratory System	23,147	23,575	20,600	19,111	22,716
Injuries	15,378	13,214	14,115	14,279	15,519
Dyspepsia	8,429	11,201	11,894	10,690	11,823
Disease of the nose	1,371	1,553	1,593	1,567	1,486
Tubercular	1,055	1,250	1,009	1,021	1,188

Out of total 15 prevalent disease Malarial Fever was the most effected disease and disease of Tubercular was lowest affecting disease in the territory from 1914 to 1919.

Table showing the number of patients treated from1919-1924

Disease	No of Patients , every Year				
	1919-20	**1920-21**	**1921-22**	**1922-23**	**1923-24**
Malarial Fever	81,028	73,788	1,11,087	1,15,848	1,05,116
Worms	7,929	7,342	6,648	6,757	8,231
Dysentery	8,411	5,804	6,855	6,419	8,291
Diarrhoea	11,998	9,682	10,652	10,112	11,626
Venereal Disease	8,393	6,260	6,107	5,507	4,497
Rheumatic Infections	9,503	10,628	11,109	11,640	12,490
Disease of the Nervous System	9,665	12,116	12,864	13,452	14,601
Disease of Eye	49,985	50,457	65,352	63,657	71,776
Disease of Ear	21,913	25,278	17,377	31,872	30,528
Disease of Skin	38,747	39,760	53,933	43,055	46,616
Disease of Respiratory System	26,355	23,653	25,686	32,535	30,414
Injuries	15,117	17,243	18,168	18,277	18,766
Dyspepsia	13,244	12,504	14,348	15,235	16,866
Disease of the nose	1,855	2,043	2,882	2,872	3,069
Tubercular	1,438	1,262	1,476	1,395	1,639

Out of total 15 prevalent disease Malarial Fever was the most effected disease and disease of Tuberculosis was lowest affecting disease in the territory from 1919 to 1924.

Note : 1925-26 Data not available

Table showing the number of patients treated from19026-1931

Disease	No of Patients , every Year				
	1926-27	**1927-28**	**1928-29**	**1929-30**	**1930-31**
Malarial Fever	1,07,192	1,75,287	1,35,351	1,29,701	1,41,693
Worms	6,416	9,276	7,783	7,477	8,115
Dysentery	9,886	9,873	7,988	9,976	11,004
Diarrhoea	13,222	13,597	-	-	14,368
Venereal Disease	4,763	5,976	4,992	6,628	6,918
Rheumatic Infections	12,664	13,805	12,998	14,762	15,006
Disease of the Nervous System	13,487	15,576	14,504	16,609	16,236
Disease of Eye	71,722	71,876	64,696	72,141	78,972
Disease of Ear	36,369	34,639	39,059	38,849	41,564
Disease of Skin	42,557	49,517	51,374	52,350	56,623
Disease of Respiratory System	33,057	37,320	36,111	32,321	36,818
Injuries	22,863	25,542	22,355	25,337	27,461
Dyspepsia	20,646	24,155	19,881	23,676	25,777
Disease of the nose	2,829	2,911	2,679	2,823	3,265
Tubercular	2,233	2,239	1,808	2,824	2,668

Out of total 15 prevalent disease Malarial Fever was the most effected disease and disease of Tubercular was lowest affecting disease in the territory from 1926 to 1931.

Table showing the number of patients treated from1931-1936

Disease	No of Patients , every Year				
	1931-32	**1932-33**	**1933-34**	**1934-35**	**1935-36**
Malarial Fever	2,11,592	1,74,674	1,74,050	1,81,016	1,52,119
Worms	7,773	8,316	8,699	8,450	10,420
Dysentery	14,222	11,869	20,537	12,303	14,252
Diarrhoea	18,757	17,413	16,838	17,732	20,421
Venereal Disease	7,505	5,330	7,073	6,529	6,946
Rheumatic Infections	15,045	14,903	16,738	16,740	17,969
Disease of the Nervous System	17,056	17,876	18,629	18,274	18,589
Disease of Eye	85,309	97,027	97,117	81,950	88,330
Disease of Ear	51,871	49,204	49,694	48,617	50,710
Disease of Skin	62,165	65,018	60,774	67,583	74,995
Disease of Respiratory System	48,728	49,745	52,706	54,469	67,447
Injuries	31,664	29,902	28,692	43,879	36,316
Dyspepsia	28,624	29,336	31,768	34,962	39,884
Disease of the nose	4,141	2,109	4,664	5,187	7,205
Tubercular	2,119	2,570	1,681	2,544	2,736

Out of total 15 prevalent diseases Malarial Fever was the most effected disease and disease of Tubercular was lowest affecting disease in the territory from 1931 to 1936.

Note: The data of the prevalent disease from 1936 to 1939 is not available

Table showing the number of patients treated from1939-1944

Disease	No of Patients , every Year				
	1939-40	**1940-41**	**1941-42**	**1942-43**	**1943-44**
Malarial Fever	1,89,000	1,08,000	2,35,538	2,62,541	2,59236
Worms	DNA	DNA	4,919	4,597	5,369
Dysentery	DNA	DNA	18,582	24,507	20,985
Diarrhoea	27,000	31,000	31,347	33,178	34,147
Venereal Disease	DNA	DNA	6,820	10,169	6,215
Rheumatic Infections	DNA	DNA	18,026	16,088	15,957
Disease of the Nervous System	DNA	DNA	17,917	15,500	14,542
Disease of Eye	91,000	86,000	1,07,523	1,07,410	86,195
Disease of Ear	60,000	76,000	60,589	55,120	52,593
Disease of Skin	1,89,000	2,57,000	1,88,441	1,90,792	2,11,280
Disease of Respiratory System	91,000	77,000	90,192	85,670	83,509
Injuries	DNA	DNA	1,77,466	2,45,721	1,86,462
Dyspepsia	50,000	51,000	43,068	48,262	40,460
Disease of the nose	DNA	DNA	10,247	9,146	9,110
Tubercular	4,000	4,000	3,408	3,166	2,635

Out of total 15 prevalent diseases Malarial Fever was the most effected disease and disease of Tubercular was lowest affecting disease in the territory from 1939 to 1944.

In 1939-40, 1940-41 no systematic records of prevailing diseases were maintained and instead of that an approx numbering of the patients were given in the Baroda

administrative records. It might be possible due to the political upheaval which took place due to death of Sayaji Rao III.

Table showing the number of patients treated from19044 -1948

Disease	No of Patients , every Year			
	1944-45	**1945-46**	**1946-47**	**1947-48**
Malarial Fever	2,17,000	2,23,654	2,35,011	1,89,657
Worms	DNA	DNA	DNA	DNA
Dysentery	DNA	DNA	DNA	DNA
Diarrhoea	28,000	29,490	28,339	31,162
Venereal Disease	5,000	2,001	4,099	2,355
Rheumatic Infections	DNA	2,879	3,544	13,454
Disease of the Nervous System	DNA	DNA	DNA	DNA
Disease of Eye	71,000	83,440	64,425	65,281
Disease of Ear	54,000	48,827	48,376	49,317
Disease of Skin	1,92,000	2,51,250	2,42318	219967
Tuberculosis	23,00	2,979	3,544	3028
Dyspepsus	38,000	34751	29255	32136

Out of total 15 prevalent disease Diseases of skin was the most effected disease and disease of Tubercular was lowest affecting disease in the territory from 1944 to 1948.

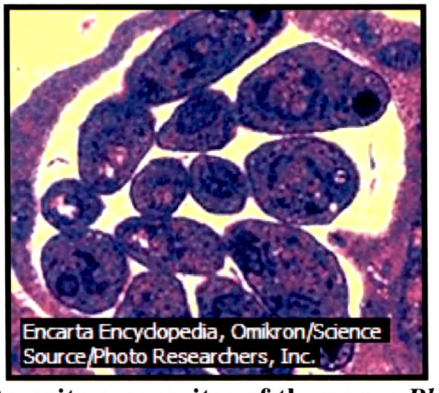
Malaria

Malaria, a disease caused by infection with single-celled parasites of the genus *Plasmodium. Anopheles* mosquitoes transmit these parasites from one person to another in their bites. Malaria is characterized by periodic bouts of severe chills and

high fever. Serious cases of malaria can result in death if left untreated. More than a million people die of the disease each year, most of them in Africa, according to the World Health Organization (WHO).[11]

History of Disease

Malaria is one of the oldest recorded disease in the world. In the 18th century Italy , people associated malaria with "bad air"- *mal'air* from which the name malaria is derived. In 1880, Laveran a French Army Surgeon discovered the malaria parasitein Algiers, North Africa. Throughout the ages suspicion fell on the part played by the insectsand the mosquitoes was incriminated in folklore in Africa, Asia and Europe. The main credit goes to Ronald Ross who while working in Sikandrabad, Andhra Pradesh India discovered the transmission of malaria by Anopheline mosquitoes in 1897. Ross found malaria parasites growing as cysts on the stomach wall of an Anopheline mosquitoes which had previously fed on malaria patient. DDT which was synthesized as long as 1874 remained obscure until 1939 , when Paul Muller in Switzerland discovered its insecticidal properties., an observation for which he received a Nobel prize. [12]



Malaria Parasites; parasites of the genus *Plasmodium*

[11] Microsoft Encarta,2009
[12] K Park, Preventive and social medicine seventh **Edtn.**, Banarsidas Bhanot publishers, Jabalpur,,1997,P 188

Causes of Prevalent Diseases.

The chief causes of the diseases prevalent may be found in the climate, the habits, and the customs of the people. To the climate must be ascribed the malarial fevers which are extremely prevalent in Baroda and Navsari, especially specifically in the Rani-mahals of the Navsari district, where these fevers give rise to infections of the liver and spleen.[13] In Songadh and Vyara every individual met with has an enlarged spleen, sometimes giving rise to splenetic ascites.

Next in importance stand diseases of the respiratory organs which are prevalent especially in the Baroda and Navsari district, and, to a less extent, in the Kadi district. The habit and the modes of living of the people give rise to the various disease of alimentary canal, to rheumatic infections, and to syphilitic and coetaneous disease. At Baroda Dracunculus was very common; entozoa were very common in Navasarai and Dwarka, while leprosy and scrofula were throughout the Gaikwad district.[14]

Preventive measures for Diseases

Whenever any epidemic diseases break out, such as cholera, fever, smallpox, etc., the Government took special preventive and curative measures. For instance, additional medical men were sent off for acting in the locality concerned. Distribution of Medicines to make it available to the people concerned. The Medical Department also proposed the necessary measures, and those were promptly sanctioned.[15]

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[13] H.P.O., D. No. 479, F.No.199/25- CMO Reports to Dewan, p, 12
[14] The Gazetteer of Baroda State, Vol II Adminstration 1923P. 354-360
[15] Daftar no 481, file no, 199/52 and 53, see also the ideology in relation to preventive disease from Minor Hints, page no. 189

Epidemics

Epidemic diseases can be defined as the same disease affecting many people at the same time because of similar causes, which include varying atmospheric conditions, poor hygiene and sanitation or strong exposure to highly contagious diseases etc. It was Fracastorius (1483-1553), an Italian physician enunciated the "theory of contagion" i.e. theory of infections. He envisaged the transfer of infection via minute invisible particles and explained the cause of epidemics[16]. He recognised that syphilis was transmitted from person to person during sexual relations. He became the founder of epidemiology[17].

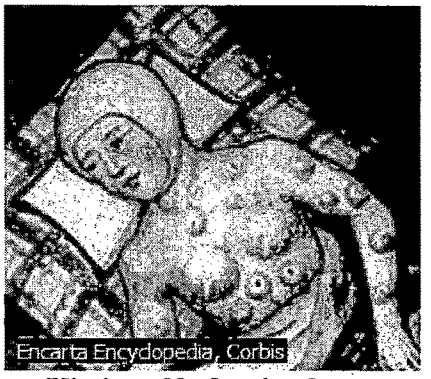
The dominion of His Highness the Gaikwad were in the past, from time to time, prone to the epidemics of greater or lesser magnitude but until modern times no records were kept before 1875, except for some events of extraordinary and exceptional occurrences.

For the centuries India as well Baroda is visited by the epidemic like Cholera, Maleria, |Plague and Smallpox etc. These epidemics are not external invasion on any political system but on mass at a large scale. The details of Plague, Cholera and Smallpox is as follow:

[16] K Park, Prevative and Social Medicine 7th Edtn. Bnarsidas Bhanot publishers, Jabalpur, 2002, pp. 4-10
[17] Ibid

Plague

Plague is primarily and basically a zoonoses, caused by Y. *pestis* involving rodent and fleas. It exist in natural foci and is transmitted by infected flea bites to humans living or introducing into the same ecological environment.[18]



Victim of bubonic plague

History of Plague

Epidemic of plague are mentioned in Bible.[19] The association of plague with rats were known to the ancients and its even mentioned in Bhagvat Puran that *as soon as the dead rates are seen, the residence should be immediately abandoned.* The plague also nicknamed as *Mahamari* or Black Death or the Great Death. The first recorded outbreak of plague in India from Central Asia following invasion by Sultan Mohammad (Arabian Choniocal).[20] The next out break of plague was in the year 1325- the plague in Malabar following invasion by Mohhamad- bin-Tughlaq and again Timur ,1403,[21] Sultan Ahmad's army was destroyed by the plague epidemic in Malwa. In 1617 plague was reported during Mughal Emperor Jahangir's reign from

[18] K Park, Preventive and Social Medicine 7th Edtn., Banarsidas Bhanot Publishers, Jabalpur,2002, p.221
[19] Ibid
[20] Ibid
[21] Ibid

Punjab, Ahamedabad, Surat and Deccan. In 1812-21 hit Kathiawad, Gujarat and Kutch suppose to have been imported from Persia.[22] In recent History India got involved in the pandemic of 1895-96, Calcutta got infected in the 1895 and Bombay in 1896 and then the infection spread to the other parts of the country. Plague reached its peak in India in 1907 and continued thereafter for another 11 years till 1918. In the early years of twentith century. Plague constituted serious problem in India. The Annual mortality was over 5,00,000 deaths between 1898 and 1908. The disease continued to be major problem until the mid-1940s. Thereafter it began to decline speedily as a result of the large scale application of DDT for the purpose of malaria control.[23] The declining trend of plague in India is shown in the table.

Table Plague mortality in India from 1898-1950

Period/Year	Annual Mortality
1898-1908	5,48,427
1909-1918	4,22,153
1919-1928	1,70,272
1939-1948	42,288
1950	21,797

In Baroda State, plague which first appeared in Navsari, had spread over the whole state with varying force by 1899. It occurred again in 1924, 1927-28, etc. On its appearance several measures were adopted by the state including house to house inspection, inoculation and rigorous inspection of railways travellers etc the details of the same is as follow.

[22] K Park, Preventive and Social Medicine 7th Edtn., Banarsidas Bhanot Publishers, Jabalpur,2002, p.222
[23] Ibid

Advent of plague into the Baroda territory 1898

Sporadic cases of plague seen from news paper reports, occurred at Bombay from the month of May 1896, but owing to the difficulties of diagnosis they were not recognize till September of the same year. The fact of this disease being new to the medical practitioners of this country as also its resemblance to ardent malaria, typhus, typhoco and septicemia and the rapidity of its progress and generally total termination made its diagnosis difficult in the absence of bacteriological examination by competent experts.[24] The experience of Bombay, Calcutta and Mahesana in the Kadi division illustrate how plague had escaped detection at the commencement of an epidemic. However the failure to diagnose the disease at the period of the commencement of the epidemic, or the appearance of sporadic cases, that leads to the most serious consequences. For, when the disease had one established itself the time for taking precautionary resources in very nearly gone. Under this state of things the epidemics made considerable progress in Bombay, especially in the Mandavis word of that town , this was followed by a panic amongst the mercantile community who had their homes in Gujarat. The Parses came in large number to Nawsari and Billimora and the grooms and Coachmen of the Shethiyas in Bombay left terror – stricken for their homes in the Ganbdevi Taluka. The first imported case in the Baroda state occurred in Navsari on the 1st of October 1896, in the Kadi town, on the first November 1896 in Amreli town, on the 18th of December 1896, in the Baroda town, on the 10th of March 1897 and on the 21st may 1897 in Beyt in Okhamandal in Kathiyawad, all the first imported cases[25] were received from Bombay except the one imported into Baroda which was from Surat reported to have received its infection from Bombay. Thus it

[24] H.P.O. D.No. 494, F.No.344/87, CMO to Dewan. 1898 p.2
[25] Ibid p.3

was seen that the principle towns of the Baroda State were infected directly or indirectly by the exodus of panic stricken people from Bombay.

Plague in the Navsari Division

There were 8 talukas in the Navsari Division, viz, Navasari, Gandevi, Palsana, Kaoreg, Velachha, Mahuva, Vyara and Songadh. Cases were recorded in all these except in Velachha, Mahua and Songadh, of the Navsari Taluka. The town of Navsari seems to had remarkably escaped from an epidemic of plague, though as stated above hundreds of persons flocked there from infected Bombay. Its escape was mainly due to the great exertion made by the Acting Subha/Governor, Rao Bahadur Kheshrao. B. Jadav in diluting imported cases from some of the houses in which the patients[26] had taken refuge and in promptly regretting the in makes of and thoroughly disinfecting the houses in which they were found and in vigilantly guarding the station and stopping at the very gate all affected persons from finding an entrance into the town.[27] The vigilance on the part of the Suba and his subordinates, was as successful that though their were 34 cases imported from Bombay, out of which 27 proved fatal, not a single indigenous case occurred in the Navsari town.

As soon as it was known that cases were occurring in Bombay, and that an exodus was taking place, a few temporary sheds were erected by the Public Works Department on the requisition of the Chief Medical Officer, on the west of the Railway lane to the right of the Javdi Bundar Road, and the first few patients were accommodated in them. These sheds were soon found by Subha to be insufficient

[26] H. P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 P. 3
[27] Ibid.p 4

and unsuitable for the purpose for which they were intended.[28] He therefore with the permission of the Government converted the large and spacious building of the Sarkari Dharmashala into a plague Hospital and fitted it up with the necessary furniture and conveniences of an hospital and erected in its spacious compound a disinfecting chamber for the proper and thorough disinfection of the person and clothing of all arrivals from infected quarters. The hospital was strongly guarded by a police party to prevent communication between the inmates of the hospital and other persons. Each patient was allowed two friends or relatives to attend upon him, subject of course to all the rules regarding surveillance and disinfection.[29]

From an early date medical men were posted at the Nawasari Railway station who examined all arrivals from infected districts and removed those who were suffering or were suspected to be suffering from plague, to the isolation hospital, while the unsuspected persons were made to expose their clothing to the influence of sulfurious acid fumes and to was their person with a disinfecting fluid[30].

When the plague appeared in the adjoining British Villages, all communication with them was suspended, except under passes, which were granted after due inquiry with a new to persons who had to go to and fro on business not being subjected to any hardship. These passes were freely granted to healthy persons. [31]

[28] H.P.O., D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.4
[29] Ibid p. 6
[30] Ibid
[31] Ibid

To ensure a greater degree of sanitation, house to house conservancy of the town was at once taken in hand, a large staff of *Bhangis,* was employed to keep streets, lanes, privies and cesspools in a clean condition, almost all the pit privies, which were a great menace to public health, were closed up[32]. The main road of the city which was very narrow and did not admit of free ventilation into the heart of the town was considerably widened, new roads were opened and large excavations which harbored filth were filled up. Public latrines in large numbers were erected in places where they were badly needed.

Up to this time the town of Navsari which had a large meat eating population had no proper place for the slaughter of animals and the dressing of their carcasses, and for the sale of fish. Such a places as they were seek with noisome odorous and presented a loathsome spectacle. They were therefore abandoned and a clean little structure now stands in their place.[33] Measures were also taken to keep bath and potable water supply not to be caught by infection of plague.

In this way many sanitary improvements have been effected at Navsari and it is more on account of this that the plague has been prevented from establishing itself in this second important town of the Baroda State.[34]

Villages of Navsari Taluka

The villages of the Navsari Taluka in which sporadic cases of plague occurred were Amalpor, population 751, Delwada 542, Dalki 235 and Vadoi 244 and Vesama

[32] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.7
[33] Ibid
[34] Ibid p.8

3131.[35] In each of these villages various cases detected and all of which ended fatally some of them were imported from Gandevi and some were from Bulsar.

The above cases as soon as they were detected were promptly dealt with by removal to temporary isolation sheds out side the village limits by local officials, segregation of contacts and the cleaning and this infection of the houses which they were detected.[36] These measures were found quite sufficient to prevent the spread of the epidemic in these villages.

Gandevi Taluka

The places that suffered most in this Taluka were Gandevi, Bilimora (sea-port) and Dhamtacha. Other places in which cases occurred in this taluka were Dhauri, Pati, Desad, Vadsasngal, Ajarai, Talod, Gaughor, Manekpur, Sawrawadi, Gadat and Varoti.[37]

The town of Gandevi was the head-quarter of the taluka of that name. Its population is 7,919. There is a municipality in the town. The conservancy arrangements up to the time of the breaking out of the plague were very unsatisfactory. [38]This state of things reported to the C.M.O. on several occasions but no measures were adopted on account of the deficiency of funds and the difficulty of procuring *Bhangis* to do the scavenging.[39] By 25th of December 1896 onwards various cases of plague were reported from various part of this taluka and most of them including the first reported

[35] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p. 9
[36] Ibid
[37] Ibid, p.10
[38] Ibid
[39] Ibid, p11

case were imported from Bombay.[40] The CMO's reports on 1897 plague states that no preventive measures were taken by the local authorities till the 5th of February 1897. Though the plague had then almost established itself in Gandevi.[41] Upon this the local authorities were addressed and the Subha of Navsari took the matter into his own hands. The first indigenous case was reported to have been detected on the 24th February 1897. From this date the epidemic progress till the 10th July 1897 and the Subha of Navsari took the matter into his own hands. The second long remission was from 8th November 1897 to 29th January 1898. There had been no cases reported in Gandevi since 4th April 1898.[42]

During the month of March 1897 measures of disinfection, cleansing and segregation of the sick and the affected were carried out most vigorously. But these had hardly any effect and the plague was rapidly spreading. On the 6th of April 1897 the district magistrate removed his camp to Gandevi and took charge of the plague operations himself. Prior to his going some of the infected quarters had been emptied of their inhabitants. But these people, especially the *golas,* among whom the mortality from plague was high, rushed back to their houses for the Holi holidays. These were again removed to the health camp outside the town by the persuasion of the district magistrate.[43] The *Dhobhis* had suffered equally with the *Golas*. These, before removal to the health camp, were given a hot water and carbolic soap-bath after there bodies had been amounted with carbolic oil. All there clothes were boiled in hot water and all

[40] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p. 12
[41] Ibid
[42] Ibid
[43] Ibid p.14

their earthen pots and metal vessels were burned in a bon-fire before being handed over to them.

It may be noted here with very great satisfaction that after subjecting the people of Dhobhiwad and Golwad to the above process of disinfection they remained remarkably free during the whole course of the epidemic that year. The Golas had only one case a couple of days after their evacuation and another after 22 days, after this the remained perfectly free till October 1897, when they had only two sporadic cases among them. After this the localities have been perfectly free[44]

Chhabalpur and Mota Bazar localities near Golawad soon got affected and the plague spread rapidly to other parts of the town. The evacuation business commenced about 10th of April 1897 and by the end of that month nearly 5000 persons were camped out, including almost the whole of the inhabitants of the affected portion of the city. The effects of evacuation became more and more perceptible in the month of May 1897, and the end of that month saw the last of the plague. From this date up to the 4th of August 1897 there was not a single case reported in Gandevi[45] from the 29th of January 1898 up to the 4th of April 1898, a few Sporadic cases occurred and since then no fresh case had been reported from Gandevi.

The infected houses in Gandevi were soon thoroughly cleaned, disinfected and lime-washed and after the evacuation of the town even the none infected houses were similarly treated. The sanitary improvement of the town was at once taken in hand. A

[44]H.P.O, D.No. 494, F.No.344/87, CMO to Dewan. 1898 p, 15
[45] Ibid p. 16

number of new roads were opened and large trees were cut out down in the most crowded parts of the town to admit free passage of air.[46] The use of tank water was prohibited, four new wells were sunk and fitted with pumps and a mutton market and a slaughter house built.

Arrangements for house to house visitation were made in the first week of the month of March 1897 when the plague had begun to assume some proportions. Members of the municipality and prominent men of each locality were associated with the affairs to form a committee of inspection.[47] The measure was un-popular but there was no determine opposition from the people. The inspection committee so formed was assisted by a police party to preserve order and to prevent sick people from being secreted. To assist house to house search, a census of the whole population was taken. When people begin to appreciate the benefit of segregation information was readily given by the inmates of the house or by the neighbours of a sick person from plague in their midst.

The hospital accommodation in Gandevi was ample. There was a Government Hospital erected. [48] Besides the Government institution, the Parsees and the Mohammedans had special hospitals of their own. But the latter was not very popular and the Mohammedans freely resorted to the Government hospital.

[46] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.17
[47] H.P.O, D.No. 494, F.No.344/5, Navasari Suba to Dewan of Baroda. 1898 p, 15
[48] Ibid p 19

It is gratifying to note that notwithstanding the seniority of the epidemic only 300 persons had left the town out of fear for the plague. [49] The total mortality from the plague of Gandevi was 281, the number of attacks being 332, out of which 4 were imported and the rest local.

Billimora

The town of Billimora is situated on the estuary of the river Ambia and is 136 miles north of Bombay It is a seaport town where large quantities of grain and fuel of the surrounding districts are exported to Bombay by country craft.

It had a population of 5,915 persons consisting chiefly of the Parsees, the *Golas*, the *Machis* and the Mohammedans.[50] The sanitation of the place was looked after by the local municipality and was fairly well maintained. The outs kick occupied chiefly by the machis (fishermen) and Kumbhars (bricks and tile makers) were however kept in an unsatisfactory condition on account of the filth from the trades of the trades people inhabiting the same playing their filthy trades there. Unfortunately these outskirts which were open to fresh sea-breeze were built over by clumsy constructions of the *Machhis* who were a dirty-lot. These measurable huts were about 250 in number with only a single small door for light and ventilation.[51]

Arrangements were completed for the inspection of all arrivals from Bombay and Valsad, a British town which was thus badly infected in the later part of December

[49] H.P.O, D.No. 494, F.No.344/5, Navasari Suba to Dewan of Baroda. 1898 p. 20
[50] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 P. 21
[51] Ibid p. 22

1896. But before these arrangements were completed infection was brought into the place by the exodus of people from the above named places.

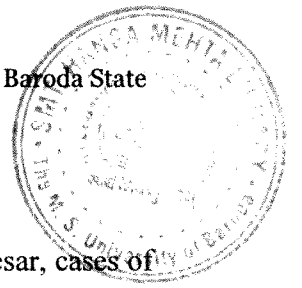
From the mortality returns of the Patel of Billimora it could be ascertained that a *machhi* named Soma Hira came from Bombay and died. [52] Here also the plague was imported from Bombay. The total number of cases detected in Billimora were 219. Out of these 21 were imported and 198 indigenous.[53] Out of the total deaths viz. 158, there were 14 deaths amongst the imported and 144 amongst the indigenous.

Measures of prevention of spread of the epidemic and its stamping out were the same as those described before for Gandevi.[54] The people of Gandevi and Billimora were freely offered the benefit of the protective inoculation recommended by Mohammadan *Hakims*.

Kamraj Taluka

In the Kamraj taluka of the Navsari Division there was only one imported case in Kathore probably from Surat on the 30th November 1897, which proved fatal.[55] Their being direct communication between this place and Surat by means of ferries on the river Tapti, an hospital shed had been constructed and kept ready for an emergency.[56]

[52] H.P.O, D.No. 494, F.No.344/5, Navasari Suba to Dewan of Baroda. 1898 p.23
[53] Ibid p. 24
[54] H.P.O D.No. 494, F.No.344/87, CMO to Dewan . 1898 p. 25
[55] Ibid p 36
[56] Ibid,p. 37



Palsana Taluka

In five villages of taluka viz, Palsana, Gabhem, Chalthan, Ethan and Balesar, cases of plague were detected, one imported in Palasana and in Balesar and two in Gobhem. There was one indigenous cases that in Chalthan and in Ethan . Out of the four imported cases in these villages, all recovered except one of Gobhem and out of the indigenous cases that in Ethan proved fatal. The cases were very few and far between, only segregation of affected and their contacts and the disinfection of their houses was attempted, and no evacuation and camping out of the inmates of the non-affected houses was resorted[57].

Vyara Taluka

Only one imported case was reported form the village of Unchamalla on 7th November 1897 which proved fatal.[58]

Songadh Taluka

The Songadh taluka with its Peta Mahal Vejpur remained entirely free from any plague incidence.

Baroda Division

The capital of Baroda had a population of 1,12,471 according to the census of 1891, of whom 60,557, were males and 51,914 are females exclusive of cantonment. It had

[57] H.P.O D.No. 494, F.No.344/87, CMO to Dewan . 1898 p. 41
[58] H.P.O D.No. 494, F.No.344/90, CMO to Dewan . 1898 P. 20-22

an area of 8 square miles[59]. The Baroda was the fourth important City in the Bombay Presidency coming after Bombay Ahamedabad and Poona.[60]

First imported Cases

The first imported plague case in Baroda was from Surat. *Kharwa (tile-turor})* affected with plague surreptitiously got entrance into the town on the 10th March1897 from Surat and died in Lakadpitha, Babajeepura.[61] This case was promptly detected and measures of segregation and disinfection were soon adopted. No dead rats or indigenous case were found in this locality after demise of Karwa.

On the 4th of April 1897, another case was detected in the houses of an once opulent family, that were Jejurkars in the person of Shankarrao Tatya Jejurker, aged 22, a dakmsham Brahmin by caste. Two more cases occurred subsequently in the same family and the epidemic spread in the portions round about Jejuker's House. From the 4th to 23rd April 1897, seven cases were detected in this locality all of which proved fatal.[62]

On 6th October 1897 an indigenous case was detected in Brahmanpura in the person of young daksham Brahmin woman named Sitabai Balwantrao Pachegvakar. This case was followed by seven more cases from that locality.

[59] H.P.O D.No. 494, F.No.344/90, CMO to Dewan . 1898 P. 20-22
[60] H.P.O D.No. 494, F.No.344/87, CMO to Dewan . 1898 p. 43
[61] Ibid p.46
[62] Ibid p.47

This may be fairly looked upon as being a recrudescence of the plague in Baharampur, after this again five more cases occurred in the Baharampur. When the affected localities was thereupon, taken in hands for purpose of segregation, cleansing and disinfection, a slight panic arose amongst the inhabitants and some people removed themselves to other parts of the town. Due to this indigenous case of plague began to occur .

On the recrudescence and spread of plague in the Baroda City, the District Magistrate of Baroda Rao Bahadur Vasudev Mahadev Samarth reported as follow in his letter of the 27th of December 1897;-

" Whether however, it was the poison introduced from Surat or the poison which was laying dormant over for the last official year, case of plague occurred once again in Baharnpura quarter of the City close by to Sultanpura. This time plague appeared not in the same part of Bahranpura which was the scene of it on. Nearly the same was tried with success on the previous occasion when the plague had appeared jejuker's Taliya in Baharampura.[63]

The difficult task of stamping out the plague is rendered more difficult by the attitude of the people towards it and towards the Government. They conceal cases, they remove cases from one quarter another thereby introducing the infection into the later. They give no information. They gives false and misleading information to government officials, they misunderstands the intentions and the scope of the measures devised by the Government. Those of the people who were marked out by

[63] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.51

their position or high status on in life and whom one excepts to be helpful at such an occasion generally find it suitable to leave the city for village, carrying more after than not the infection there and thereby adding to the difficulties of the undertaking.[64]

Every devise is invented and passively put forward as to how not to do the right thing overcome the plague. In the face of these difficulties, work becomes immensely more arduous which otherwise would have been considerably lightened. Deaths were not properly reported – deaths were concealed –dead bodies were disposed of during the silence or under the shadow of night".

In the month of January 1898, the total mortality in the city increased from weak to weak by leaps and bounds with it attack and deaths from plague. This led to the introduction to more drastic measures to be devised hereafter and arrangements for camping out people were at once taken in hand. By the middle of February 1898, plague cases were detected in almost all part of the town. From the first weak of March 1898, the total mortality in the town and together with it the number of attacks and deaths from plague began to decline. From this time the epidemic gradually declined until it was stamped out in the second weak of April 1898. After this no fresh case has been reported since the 24th of the same month.

Measures for the Baroda City

Before the 10th March 1897 when the first imported case from Surat was detected Government had taken steps to guard the Railway station to prevent infected person

[64] H.P.O, D.No. 488, F.No.344/,24 General Correspondence Medical Department

from getting into the town. Medical men were posted to watch all the down passenger trains arriving at the Makarpura Vishvamitree and Baroda Station. Temporary sheds were erected and managed for hospital use to the north of the town for the accommodation of plague stricken persons or persons suspected to be suffering from plague, detected on the Railway Station. [65] The Municipal Commissioner was authorized to remove such persons to the isolation Hospital under proper precautions. This arrangement was under the supervision of District Magistrate of Baroda. This was shortly supplemented by the system of registering names and destination of persons arriving from infected localities, for the purpose of watching these arrivals for 10 days to marks if they show any symptoms of Plague.

This stated above that arrival from infected places were allowed to go to their destinations after the names and whereabouts were registered. The municipal executive as well as the Police were ordered to make inquiries while on their beat to ascertain if there was any stricken amongst the arrivals from infected quarters or amongst the city people, in order that the first cases may not pass undetected. This information was ordered to be communicated in the first instance to the Munuicipal Health Officer.[66]

Formation of Committees

The Gaikwad Government by an order, dated 8th of April 1897 for the effectual carrying out of preventive measures, ordered the formation of Committee for the Baroda City and suburbs. The town was divided into 22 circle; a number of the city

[65] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.54
[66] Ibid p.55

Municipal Corporation or a municipal officer, two gentlemen of known respectability were asked to form a committee for that circle. The duties prescribed to the Committee were as follows.

1. To undertake house to house inspection for the detection of plague cases.
2. To bring to the notice of the municipal executive filthy and insanitary houses and other buildings which are found to be a source of danger to public health, with a view to their being dealt with under Huzur rules dated 25th February 1897.[67]
3. To assist Government officers in removing to plague Hospitals or segregation camps persons whose removal was considered necessary to prevent the spread of the Plague infection.
4. To explain to the people the necessity for adopting preventive measures and to see that the orders issued for the white –washing and disinfection of unsanitary and plague stricken houses were properly carried out by their owners.
5. To bring any instance of abuse of power or mis-conduct on the part of municipal or other servants employed for carrying out preventive measures, to the notice of Government. Each member of the Committee was empowered[68] to enter any dwelling situated within the limits of his Circle for purpose s of inspection between the hours of sun-rise and sun-set after giving one hours notice to the owner or occupiers thereof as required by the rule notified on the 25th February 1897.

[67] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.56
[68] H.P.O, D.No. 494, F.No.344/90, CMO to Dewan . 1898 p.25

6. Indigenous cases of plague were detected as stated before from the 4th April 1897, and by the 8th April, 5 cases had occurred in Bahranpura. On this date ,a circular was issued in which the duty of looking after the comforts of plague patients and of persons removed to segregation camps, was entrusted to the District Magistrate of Baroda, while the Sudharai Kamdar was asked to look after the cleansing and disinfection of houses and to see that the bodies of persons dying of plague were cremated or buried properly in places set apart for the purpose and that the clothing of those carrying the body were properly disinfected. [69] The Sudharai Kamdar, the District Magistrate, the Chief Medical Officer and the Sanitary Commissioner and the Secretary to the minister for plague arrangements, were ordered to meet and decide upon the subsidiary instructions to be issued to the officer under their control as to ensure the prompt and effectual carrying out of the several measure to be taken. The C.M.O. was asked to issue instructions to his subordinates with regards to the symptoms of plague and precautions to be taken against it.

Rules were also framed for the disposal of dead bodies from plague.

From the 23rd April 1897, to the 6th October 1897 no case either imported or indigenous was detected in the Baroda town[70]. During the interval the municipality, the Police and the 22 Circle Committee kept a sharp looks out for the detention of plague cases.

[69] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.58
[70] Ibid p. 59

To improve the registration of deaths, 18 clerks were appointed and posted at different burial and cremation grounds . All arrangements such as quarter for housing of patients were preserved intact and ready in such condition as to permit of being put to use at moments notice. The municipality all the while was busy cleansing the City with a view to guard against recrudescence.[71]

As the plague began to spread, the District Magistrate was on 20th of Nov. 1897 relived of his revenue duties and directed to devote himself solely to plague work. He was provided with a special establishment consisting on one assistant and a number of Karkoons for duty at the observation and segregation Camps, and office work.

When case began to increase, places were set apart for the observation of suspicious cases at Javeris Banglow in compound adjoining the Countess of Dufferin Hospital, where those that showed symptoms of plague were removed to Daliawadi an exclusive and commodious Dharmashala situated to the southeast of the City. Large additions were since made to this hospital for affording additional accommodation in case of necessity. This well fitted hospital, together with the sheds to the north of the city described before , provided ample accommodation for the sick.[72]

In addition to the Hospital accommodation had to be provided for segregation the contacts. The several; large and commodious Dharmashal a situated on the out skirts of the town and owned by different communities, such as the *Wammas Kachhias, Kausara* etc were availed of for the occasion.

[71] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898 p.60
[72] Ibid p.63

The new building for the Lunatic Asylum which was ready for the occupation was utilized for purpose of segregation of contacts for amongst better classes of the people[73]. Two more Dharmashalas viz patidar Dharmshala in Nagarwada and the Visalad Dhsarmashala in Wamawadi on the Warsha road were also utilized for segregation purposes.

In the month of November 1897, the Government succeeded in inducing people to come out for cooperating with them. The Mahajans of the City met and sent a deputation wait upon, His Excellency the minister and promised to raise a fund to open Hospital for Hindus. They requested Government to allow a person from their community to assist each Circle Committee in house search and in removal of plague stricken hospitals. This concession was most willingly granted.

The Mahajans appointed a Committee to manage there Hospital which they opened in Kachhiwadi and placed under the supervision of Government officials. The Maratha Community of Baroda built a temple hospital in a field pointed out to them by Government to the north of the City on the Lunatic Asylum Road[74]

Attempts were made by some well reputed Mohammedans gentlemen to move their community to come out and set up a hospital and a segregation camp for themselves, but the attempt bore little fruit. However, gradually they were moved into action under promises of Government aid. Soon afterward a Mohammedan Hospital was

[73] H.P.O no. 494, F.No.344/87, CMO to Dewan. 1898, p.64
[74] Now a day Karelibagh Road Area

started at Warsha Pared Ground and two Government places in the City were set apart for their use with special arrangements for Parda women.

The District Megistrate of Baroda caused a census of the town to be taken to enable the search committee to do the house to house search more thoroughly. [75]About this time some of the schools that were situated in infected parts of the town were closed and their teacher utilized for purposes of census and house to house search.

Division of the City into Wards

In the middle of January 1898, to make the arrangements for the suppression of plague still more effective, the city was divided into 8 wards, each of the four police Division being sub-divided into two wards. Each ward was provided with the following establishments;-

One Superintendent, three supervisors, three Karkuns and nine peons. Police establishment was comprising of one Naib Faujdar, one Havaldar, one Jamadar and ten Constables. In medical establishment there was one Medical Officer, one Nurse or daya.[76] Disinfecting and cleansing establishment was comprised of one mistri, one deputy mistri, day labourers according to requirements of each day. Establishment of general sanitation of ward comprised, one Muccadam, four Beldars and ten bhangis. The above formed a full compliment for each ward.

The Superintendents were chosen from amongst the active and energetic officers of the several departments and the supervisor from the Higher Guards of clerks in

[75] H.P.O no. 494, F.No.344/87, CMO to Dewan . 1898,p. 66
[76] Ibid, p. 76

Government service. The management of the wards was left entirely at the District Magistrate.[77]

Health Camps

The above measures were soon supplemented by the drastic measure of all plague operations viz, the shifting of the people from the infected area to properly laid out Health Camps outside the City.

A plot of ground on the Padra Road, Ajwa Road and Harni Road were selected by the Government, assisted by the secretary for plague arrangements and Sanitary Commissioner, the District Magistrate and by the executive engineer, Baroda city. Maharaja Sayajirao III was graciously pleased to visit the Camp sites, soon plotted out by the work of erecting temporary sheds was at once taken in hand by the District magistrate. Each shed was 20' by 20' with an enclosure 10x10 for cooking-sufficient space being left between the two rows of sheds.[78] Separate arrangements were made for natural purposes by digging trenches and enclosing them by bamboo taltees. The trenches were filled every day and new ones dug instead. Shopkeepers were induced to open stalls for the sale of provisions and arrangements for the execution of fire and for the lighting of the camps were complete. As soon as the camping out arrangements were completed and people began to be removed the progress of the plague received a check. The Modus Operandi was as follows:-

[77] H.P.O, D.No. 494, F.No.344/3, CMO to Dewan . 1898, p.68
[78] Ibid,p.70

Each infected locality was marked out commencing with the most infected. The people were first removed by the superintendent to the several wadis or dharmashalas which the Government had secured from the Mahajans.[79]

Here the people were made to disinfect their persons and belonging and after this was done to the satisfaction of the officer in-charge of the disinfection, they were marched direct to the health camps by this methods, the health camps were saved from the epidemic, only a few cases being detected , being probably of those who had imbibed the poison into their system previous to their leaving for the health camps.

For each health camp were appointed Superintendent from among the officer of the State, supervisors, karkuns, police guard, municipal fire brigade establishment, and lighting conservancy establishments.

Water pipes were laid on to these camps which were also supplemented by wells newly sunk in various places to provide and ample water supply.[80] As the evacuation of the city was thus in progress the ward superintendent were ordered to direct their attention towards the thorough cleaning of all the streets, houses and laws in the whole town before the people were allowed to reoccupy their houses. As all these measures were progressing hand in hand, and thus plague gradually disappeared from the City, the last attack was reported on the 25th of April 1898.

[79] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898, 71
[80] Ibid p. 72

While the epidemic was raging in town, cases occurred in the military lines of both cavalry and infantry. The Senapati Saheb was requested to adopt the same measure as those taken in the City, such as disinfection, segregation with the result that the plague was soon stamped out from them.

Plague in the Villages of Baroda Division

It has been stated before that when the infection began to spread in the town there was a panic among the people[81]. Those who had their houses in the distant parts of the country sent their women and children to those parts, while many of the people found quarters in the surrounding villages and few removed themselves to sheds and garden houses in the suburbs.

This was soon detected and the danger of the plague spreading to the surrounding village became apparent. The district Magistrate at once issued the notification to the village officer, ordering them not to allow any one to enter any village without his written precautions. This created uproar and petitioned and poured in complaining bitterly against the District Magistrate for his interference with individual liberty and freedom. The rule had to be replaced a little with the result that plague spread into almost all the villages surrounding the Baroda City- nineteen villages of the Baroda Taluka were thus affected about 8 of them very badly.[82] In Undera village, reported to have received the infection from the Baroda City. In all 118 cases were reported out of which 102 proved fatal.

[81] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898,p.73
[82] Ibid, p. 74

Koyali reported 117 cases and 102 deaths, Bajwa had 47 cases and 37 deaths[83] Jatalpur and Darjipura Four cases each reported and all proved fatal.[84] In Chhani 73 cases and 67 death were reported[85].

In Wasna 18 indigenous cases and 17 death were reported [86], in Karodia 6 cases were reported and all proved fatal. In Machhipura 5 indigenous cases reported which proved fatal . In Ankodia 3 cases were reported and all proved fatal.

One case each was reported from Kotwa, Wasna, Kapurai, Dashratha, Padamala, tankodia and Gorwa.[87]

It has been stated before that to check the spread of plague arrangements were made prior to the breaking out of the epidemic in the village in the shape of strict instruction to the village police and Patel to prevent Baroda people from taking shelter within any village site without a permit from District Magistrate. But when plague was broke out in various villages like Koyali and Undera, an organisation of systematic inspection of all villages as well to stamp it out, whenever it manifested itself in any of the villages of the Bartod taluka. The whole Baroda Talulka therefore divided into 30, circles having for the Centre of Each circle the Village nearest Baroda and with a radius of about 12 miles. Over each of these circle there was appointed an inspector or Karkoons provides with the Horse and assisted by Sepoy. [88]

[83] H.P.O D.No. 494, F.No.344/87, CMO to Dewan . 1898,p.75
[84] Ibid p.76
[85] Ibid p. 78
[86] Ibid p.77
[87] Ibid p. 76-78
[88] Ibid p.79

In addition to this special attention was paid to the conservancy of village and to the registration of deaths as a guide to the detection of plague case.

The measures adopted for the suppression and stamping out of the plague from the affected villages were the same as those adopted in the Baroda City, viz, detection of cases, their isolation[89] into special sheds constructed outside the village in open fields, where medical assistance was rendered to them by members of the subordinate medical service appointed for the purpose and placed at the disposal of the district Magistrate. The contacts were similarly segregated and the houses of the infected were cleaned, disinfected and opened for light and ventilation., the villages were freely offered the benefits of *Hakkims* prophylacite inoculation. Such of the village in which the plague took an epidemic form were camped out with an invariable success.

Savli Taluka

Ratanpur a small hamlet of the Savali taluka with a population of 268, is situated on the Panchmahal Border of the Baroda, here 62cases were reported and 47 deaths, the last discharged on the 10th of April 1898.[90]

In the Kasba town of the Savali with the population of 6,767 consisting of Hindus of all caste, mostly Baniyas and Mohammadans. Being a large town could not be managed by the local establishments for the purpose of plague.[91] A special establishment for purpose of plague under the Vahivatdar of the Taluka. In addition

[89] H.P.O, D.No. 486, F.No.344/11 Savli Report 1898 & F.No.344/87, CMO to Dewan, 1898, p.80
[90] Ibid, p, 81
[91] Ibid p.82

to this the local Medical establishment was put under requisition and a medical officer and a nurse were sent from Baroda on special duty.

As the plague was declining in the Baroda town at the time when it was ranging badly in Savli, the District Magistrate[92] had to transfer two of his superintendents, with a portion of their establishment, who were not needed in Baroda.

The first indigenous cases reported to have occurred on the 19th of the March 1898. There were 79 attacks and 62 death in Savali. Ever since notwithstanding the efforts of the plague authorities to stop the plague altogether, sporadic cases continued to occur at longer or shorter intervals, this is due to a small portion of the Kasba not being cleaned out on account of the approach of the monsoon.

The epidemic of Savli was rather sever on account of imperfect circulation.

The people of Savli showed a determined opposition to plague measures and resorted to violence in opposing Government measures. But the prompt actions taken by the District Magistrate averted a grater danger and ultimately led to the riot in the area.

Padra Taluka

In Padra taluka cases occurred in Padra Kasba, Darapura, Ghayaj, Goriad, Ekalbara and Dhabasa. In the Padra, population 8,415 , the first case was imported from Baroda.

[92] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . 1898, p.83

Altogether there were fifteen indigenous cases reported out of which 14 proved fatal. The last case was discharged on 24th April 1898.[93]

The measures taken by to suppress the plague were similar to those adopted in the Baroda City and Savali taluka. The whole Kasba was divided into 8 section and a karkun was appointed for each. Two supervisors were appointed with the peon each to look after the Karkuns under the direction of the local Vahivatdar , who was the plague officer of the Kasba.[94]

The measures were successful and the epidemic was stamped out in two months. In Derapur village of the Taluka two cases were reported and both of these proved fatal. In Ghayaj one case reported which was imported from Baroda on the 28 February 1898, which proved fatal on the same day.[95] In Goriad total 5 cases were reported out of which four were imported from Baroda. All these cases were proved fatal. In Ranu, Ekalbara and Dabhasa villages, one case from each was reported.

Form the account given above it seems that though people from Baroda had succeeded in carrying plague infection to the various villages of the Padra Taluka[96]

Dhaboi Taluka

[93] H.P.O, D.No. 486, F.No.344/87, CMO to Dewan. 1898, p.86
[94] Ibid p.87
[95] Ibid p.88
[96] Ibid p.89

Taluka Dhaboi stands third in the Baroda District was an old town noted for its architectural antiquities. One imported case of plague occurred in the month of January 1898 and total three cases occurred. [97]

This state of thing causes for anxiety and steps were at once taken to appoint a regular plague establishment as in the case of Padara, but in somewhat larger portion. Four establishment in the dharmashala were placed like those in Baroda. A temporary plague Hospital was established along with arrangement of on observation of sick, for segregation of the contacts and for observation of the passenger coming by the Railways.

Sankheda

Next to Dhaboi was the town of Sankheda with a population of 5,095 were two cases imported from Baroda and both proved fatal. [98]

Vaghodia Taluka

Though in Vaghodia Taluka being only 12 miles away from Baroda , but there was no report of an imported case, the first indigenous case was reported on 8th March 1898. From that date to 22 April 1898 total 61 cases were reported out of which 44 proved fatal. The District Plague Assistant the District Magistrate paid a visit to the village on the 9th March 1898 in Company with the District Plague Medical Officer. These two officer with the Vahivatdar of Vaghodia Taluka took the necessary measures such as those adopted for Baroda and other places, protective inoculation with the

[97] H.P.O, D.No. 486, F.No.344/87, CMO to Dewan. 1898, p.90
[98] Ibid p.91

Hakkim's serum forming a part of it. These measures were so successful that plague was stamped out of within six weeks.[99]

In Bhamiara, another effected village of Vaghodia where 23 cases were reported and out of which 17 proved fatal. The measures adopted in the village were same as mentioned above.

Petlad

In Petlad 4 cases in all were detected out of which 3 proved fatal all these cases were imported from Bombay with which Petlad has large business connection.[100]

The whole town was thoroughly cleaned, the arrivals at the railway station were washed and a large commodious shed with out houses was erected to serve as a hospital. A Dharamshala was fitted up and kept ready for the segregation of contacts.

Chandod

Chandod was a village situated on the bank of Narmada is regarded by the Hindus as holy and large numbers do congregate there own fair days, such as Chaitri poonam and other holidays for bathing in the holy waters of the Narmada. There were about 900 houses in this village with the population of about 3000 persons. The dual control over the town rendered the management of plague affairs a difficult and tedious task.[101]

[99] H.P.O, D.No. 486, F.No.344/87, CMO to Dewan. 1898, p.92
[100] Ibid p. 93
[101] Ibid p. 94

On the 2nd of March 1898 a Bohra died of plague at Chandod and then the plague in a short time spread in the locality surrounding the Bohra's house. Soon after the occurrence of plague in Chandod, the district magistrate visited the place, took its sensors, divided the place into three wards and appointed a karkun and sepoys for each and made hospital, segregation and camping out arrangements.

There was a small municipality under the control of the Mandwa rana whose help was also duly taken. [102] The epidemic was soon brought under control by the end of April 1898. In all there were 59 cases of plague in Chandod out of which 50 proved fatal.[103]

Kadi Division

The out break of plague in the Kadi Division, was not very severe, expecting in the northern limits of the division in the village, of the taluka of Patan and Sidhpur and some cases of a very bad type of prominence of plague in Mehasana.

The Kadi division was divided into ten talukas viz, Dehgam, Kalol, Kadi, Mehsana, Vijapur, Visnagar, Kheralu, Sidhpur, Patan, and Vadvali. Out of these Kalol and Vadvali escaped altogether. There were imported case only in Kheralu, Visnagar and Dhehgam. In a few places of the rest of the talukas there were both imported and indigenous cases.[104]

[102] H.P.O, D.No. 494, F.No.344/87, CMO to Dewan . p. 95
[103] Ibid, p.96
[104] Ibid p.97

As stated before, the first case of plague was imported into Kadi town on the 3rd November 1896, form Bombay. This case proved fatal on the day it was detected. At the initial stage there were total 3 cases reported and all proved fatal.

Visnagar Town

The Visnagar, there were two imported cases from Bombay on of the 13th March 1897 and another on 26th January 1898. Both proved fatal.

Kheralu Town

In Kheralu town one imported case was detected on the 1st February 1897 which proved fatal.

Mehsana Town

From 16th of February 1897 to 24th April 1897, total 16 cases were reported and all proved fatal. In a few places of the rest of the taluka there were both imported and indigenous .

The C.M.O. went to visit the effected places in Mehsana and with the assistance of the District Magistrate and Local Affairs, adopted such measures of segregation and disinfection as were found necessary.

Plague in first half of Twentieth Century: Baroda

Subsequent to the plague of 1897, it ranged violently during 1902 to 1904, there were 10,196 deaths in 1902-03 and 14,946 deaths in 1903-04.[105] The fumigation of the houses with the Neem leaves was tried in both the years and a pill prepared by the

[105] B.S.A.R. 1902-03, 1903-04

C.M.O, Dr. Shamssudinn Sulemani was widely distributed, as he considered it as efficacious as preventive measure.[106] The Parsee community of Baroda used this pill extensively. The Administer of the Chhota Udyapur also informed to the Ministry of Baroda State that the pills had been found infections in that State.

The best preventive measure of plague, however, was considered to be improvement in the condition of the people. However, three years of famine, 1900-1903, culminated in a terrible increase of plague cases, and after the good harvest of 1903-04 plague had almost disappeared from the state in that year.[107] Again after a year number of plague cases and deaths reported from various parts of the state. [108] The total 122 towns and villages got affected against 26, 1904-05, the disease was of virulent type[109]

Detail of reported case and deaths from Plague in the Baroda State : 1902-1948

Year	Cases reported	Deaths
1902-03	-	10,196
1903-04	-	14,946
1904-05	13,056	9,374
1905-06	6,296	4410
1906-07	19,938	14,618
1907-08	9,572	6,427
1908-09	DNA	DNA

[106] Each pill contained, Qunine—2grains, Ipecacuanha—1/2 grain, Camphor—1/4 grain, Carbolic Acid—1/4 M.
[107] B.S.A.R., 1902 -03, 1903-1904
[108] B.S.A.R. 1905-06
[109] Ibid

Year	Cases reported	Deaths
1909-10	4,640	3,039
1910-11	6512	4293
1911-12	1,272	868
1912-13	283	208
1913-14	1,869	1,156
1914-15	1915	1228
1915-16	303	2792
1916-17	1074	814
1917-18	30,703	22,239
1918-19	1,025	743
1919-20	-	-
1920-21	-	-
1921-22	16	12
1922-23	271	229
1923-24[110]	16	5
1924-25	0	0
1925-26	2	0
1926-27	1	0
1927-28	121	95
1928-29	172	129
1929-30	-	4[111]
1930-31	4	1

[110] In this year no case was reported from Amreli but from 15 from Kadi and 1 from Baroda City.
[111] B.S.A.R., 1929-30, no new case was reported in the year but due to the infection of previous year 4 deaths were reported.

Year	Cases reported	Deaths
1931-32	-	63
1932-33	-	291
1934-35	520	210
1935-36	0	0
1937-38[112] to 1947-48	0	0

In the year 1917-18 the epidemic of plague assumed a very sever form , both in the districts and in the city of the Baroda State. The epidemic reached its height in the Baroda during the months of December and January with a daily average of about 30 attacks and 25 deaths.[113] Sanction was accorded to engage Sub-Assistant Surgeons in the temporary employment on plague work but owing to the difficulty of finding men, only 4 could be engaged. One medical officer and four Sub- Assistant Surgeons were placed at the disposal of the Municipality for plague relief work.

Inoculations compared to previous epidemic of 1897, it was gratifying to note that the people came forward more readily for inoculation, both in the city and in the districts. Out of a population of 9,80,410 souls in the Baroda city, a large number of whom had evacuated, 12,898 persons were inoculated; while the Baroda district, the number of person inoculated was 3,094 in the Kadi district it was 4,995, in Navsari 769,and in Amreli 754.[114] In subsequent year no plague case was recorded.

[112] State was free from plague
[113] B.S.A.R.1917-18
[114] Ibid

From 1919-1921 no case of plague recorded but again it broke out during 1921-1922 in Amreli Division and total 16 cases were reported out of which 12 proved fatal. In the succeeding year number plague cases increased rapidly in Amreli[115] and few case of it also found in Kadi.

In the year 1927-28 again several towns and villages in the state were infected by plague. In all 121 cases , were reported out of which 116 were from Navsari District. The adoption of prompt and effective measures, both preventive and curative , checked the spread of epidemic.[116]

In the 1934-35, 26,587 inoculations were done. Houses were disinfected and the camps for the use of inoculated people were built. Rat campaign was organised.[117]In the 1935-36 no case of plague was found and rat catching operation continue in the various parts of the state.

From 1935 to 1948 no plague case was reported still some preventive work of destruction of rat was, however continued in Petlad, Dharmaraj, Gandevi town and Okha which were liable to plague.[118]

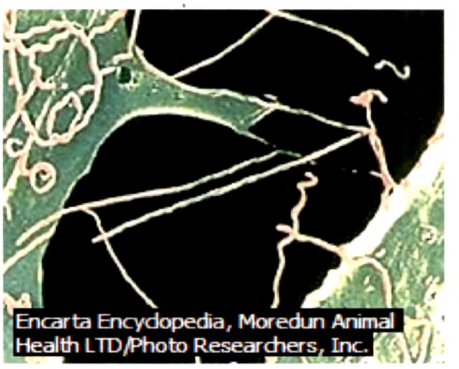
Cholera

Cholera is an acute bacterial infection of the intestine caused by ingestion of food or water containing *Vibrio cholerae*, serogroups O1 or O139.[119] Case range from symptom

[115] B.S.A.R. 1922-23, in Amreli only 269 cases reported out of 271 and 227 death out of 229
[116] B.S.A.R., 1927-28, p. 269
[117] B.S.A.R. 1934-35, p, 274
[118] B.S.A.R., 1944-45, p.197, also see, B.S.A.R.1941-42,p. 222,. B.S.A.R., 1940-41, p.196 B.S.A.R. 1939-40, p.220, B.S.A.R. 1936-36 p.306

less to severe infections. Typical cases are characterised by the sudden onset of profuse, effortless, watery diarrhoea followed by vomiting, rapid dehydration, muscular cramps and suppression of urine. Unless there is replacement of fluid and electrolytes, the case fatality may be as high as 30 to 40%[120].

Vibrio Cholerae



Cholera bacterium

History of Cholera

Cholera has been present in India since antiquity. In Ayurveda it is mentioned as *vishuchika* and is clearly defined in "*Sushruta Sanhita*".[121] In the history of Cholera four phases have been described. First Period, prior to 1817, the disease was confined to the east. Second period from 1817 to 1923, six pandemic were described and five of which were considered to have originated from India. Third period form 1923 to1960 the disease retreated from European countries and once again became a disease of the East particularly the Asiatic countries and came to be known as "Asiatic Cholera". Fourth period from 1960 to date, in 1961 Cholera was localised in

[119] WHO Report on Global Surveillance of Epidemic-prone Infectious Diseases, http://www.who.int/csr/resources/publications/surveillance/en/cholera.pdf, (accessed February 2, 2010)
[120] K Park, p.167
[121] Ibid

Sulawesi, in Indonesia for many decades suddenly became invasive and sparked of the seventh epidemic and is still continuing.[122]

Cholera in India in 18th and 19th century

Cholera was not a well-known disease as epidemic before the 19th century[123], but this was to change after the particularly virulent epidemic of 1817-1821 shook the medical establishment of the East India Company. Due to the immense fatalities of the disease and its terrifying symptoms, by the 1830s, cholera was recognised widely in Europe as a fatal disease originating in India[124].

Cholera has killed millions of people since it emerged out of the filthy water and living conditions of Calcutta India in the early 1800's. The first cholera pandemic of 1817-1823 spread from India to Southeast Asia, Central Asia, the Middle East and Russia leaving hundreds of thousands of people dead in its wake.[125]

However the number of cholera deaths in recent pandemics has still been high with many tens of thousands dying, the numbers are nonetheless considerably lower than the pandemics of the 1800's when many hundreds of thousands of people would die. This decrease in the number of cholera deaths is due to the research of the biological and social sciences that allowed us to understand, control, treat and prevent cholera.

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[122] K Park, p.167

[123] Epidemics of cholera-like diseases have been described by visitors to the Indian sub-continent as far back as the early sixteenth century and continuing through the nineteenth century. Beginning in 1817 cholera spread periodically to other parts of the world, in pandemic waves, retreating to its endemic area in South-East Asia between pandemics. For detail see, Chapter IV, WHO Report on Global Surveillance of Epidemic-prone Infectious Diseases, http://www.who.int/emc, (accessed February,2, 2010). however as per K.Park, Cholera has been present in India since ancient times.

[124] Medical History of British India < web link > http://www.nls.uk/indiapapers/cholera.html

[125] The history of Science ; Microscopes, social statistics and cholera <web link> http://www.comfsm.fm/socscie/histchol.htm, (accessed, 2 February,2010)

The development of the microscope that led to a microbiological view of living things, and the development of social statistics, which are the two important tools in biological and social sciences led to our current knowledge of bacterial and viral diseases such as cholera, tuberculosis and AIDS. These two trends led to a microbiological view of living things, and the development of social statistics that allowed us to see and quantify many types of social patterns. The emergence of microbiology and the gathering of social statistics both occurred in the 1800's and are examples of the saying that necessity is the mother of invention[126]. The advancement of the medicine is nothing but the efforts which made to understand, control and treat diseases such as cholera and tuberculosis and the need to control infections of surgical wounds led to new medical ideas and technology.

The epidemic of Cholera in 1863-64 is one of the prime examples of such an incident. Many such of epidemics of cholera have been reported in 1875, 1878-1879.

Broke out of Cholera in the Baroda state in 1875

On the 14th April 1875 Cholera broke out in the city of Baroda. The cantonment was then crowded with European and Indian troops and a great number of people who had met there for political purposes, and it was due to the very sever measures taken to prevent all unnecessary intercourse between the city and the camp that the epidemic did not reach the latter place[127]. Almost all type of preventive measures were taken by the Gaikwads government as preventive measure against the Cholera. For example when Cholera broke out in the city, as a part of precautionary

[126] K Park, p.167
[127] The Gazetteer of the Baroda State, Vol II Adminstration 1923, p.p.354-360

measure the fruits (especially mangos) were examined carefully , if any objectionable character were found its order of selling were cancelled in the city. In one of the letter Sir T. Madhav Rao wrote the Assistant to the resident of Baroda about the following the suggestion of the same for examine the fruits before allowing its sell in the city of Baroda[128] . Apart from this as an remedial step a good number of cholera medicines were purchased and the Chief Minister of the Baroda State, Sir T. Madhav Rao wrote a memo directing the City Administration to provide cholera relief to the poor sufferers.

"Those who are destitutes for then to procure proper medicines was difficult and were the greatest sufferers from cholera. We ought to try our best to provide medicines within reach of such persons. The best way is I think, to purchase a supply of medicine a distribute it in small quantities among all the police stations in the city with instructions to all your subordinates to give same to all poor patients within their range. Prescription will have to be required for this purpose; and I hereby authorise to inquire the expenditure what I have said is simply in the way of suggestions. You will, of course, act on your own desperation in this matter keeping the primary object in view- relief of the poor" [129]

The medicines distributed in the small quantities among all the police stations in the city, with instruction to all subordinates to give same to all poor patients within their range. The city was divided into ten divisions; British Medical subordinates were sent to troops as well to the effected; *vaids zealously* co-operated in

[128] H.P.O. F.No.199/53 Letter dated 12-05-875, By T.Madhav Rao to Asst. to resident Of Baroda.
[129] H.P.O. F.No.199/53, Memo, issued by Sir T. Madhav Rao, June 1875

distributing medicine[130]; an attempt was made to cleans the town of its accumulated flith; much was done to check the disease[131]. Nonetheless, by the 22nd of June 1875, there had been 901 ascertained cholera cases of which 581 recovered and 320 died. In 1877 there was some cholera in the city and the district, but it did not take a serious form . the returns gave 19 cases and 7 deaths, and serve to show not the extent of the epidemic, but the manner in which the people avoided the efforts of the medical and police authorities to discover and stamp out the disease.

In 1879-80, 1881 and 1915-1916 etc., where this monster affected many sufferings to the people of the Baroda state even leading to death. During this time cholera alone with fever and smallpox caused the heaviest toll of the life in the Baroda State.[132]

The general measures adopted during the time of broke out of the epidemic were comprised as a preventive measure cleaning of filth an darticles of diet and camping out were the most common measures. Apart from this special duty officers were sent from the Baroda Hospital to the affected areas.[133]

Cholera from 1906-1948

Year	Cases reported	Deaths
1906-07	74	47
1907-08	-	-
1910-11	154	-

[130] H.P.O. F.No.199/53, Memo, issued by Sir T. Madhav Rao, June 1875
[131] Ibid
[132] GSA. HPO Daftar no 478, File no 199/52
[133] GSA. HPO Daftar no 478, File no 199/55, 1896-1904

Year	Cases reported	Deaths
1911-12	203	119
1912-13[134]	1,210	710
1913-14	115	67
1914-15	641	290
1915-16	3,432	1744
1916-17	1,935	1,983
1917-18	60	28
1918-19	2152	743
1919-20	179	98
1920-21	43	-
1921-22	15	5
1922-23	1	-
1923-24	42	0
1924-25	3	0
1925-26	2	0
1926-27	7	0
1927-28	-	-
1928-29	3	27
1929-30	180	
1930-31	381	234
1931-32	-	283
1932-33	-	2

[134] The B.A.R.S. of 1912-13 states that the epidemic of cholera appeared in the Baroda City and Taluka and in Kalol, Kadi, Gandevi, Naosari, Palasana, Visnagar, Kheralu, Kamraj and Dehgarm Taluka in Aigust 1912. it broke out a month later in patan, Mehsana, sidhpur, Atarsumbha, Amreli, and Okha-Mandal Taluka. The epidemic was checked and brought under control by having recourse to the usual sanitary measures.

Year	Cases reported	Deaths
1934-35[135]	986	416
1935-36	534	270
1937-38[136]	542	281
1938-39[137]	525	250
1939-40[138]	0	0
1940-41	0	0
1941-42[139]	682	259
1942-43[140]	728	386
1943-44[141]	67	1
1944-45[142]	403	152
1945-46	411	195
1946-47	DNA	DNA
1947-48	534	237

In the last two months of the year 1915-16, there was a furious out- break of Cholera in the City of Baroda and several town and villages in the Baroda and Kadi Districts. The C.M.O. and Sanitary Commissioner visited most of the affected places, especially Petlad and Dhaboi. The co-operation received from the District Municipalities and local bodies was efficient. A Cholera hospital opened in Baroda on the eastern side of

[135] As a preventive measure 4,033 inoculations were done and 6,686 doses of billi- vaccine were distributed.
[136] As a preventive measure 49,374 inoculations were done and432 doses of billi- vaccine were distributed.
[137] As a preventive measure 20,364inoculations were done and 1187 doses of billi- vaccine were distributed.
[138] As per the B.S.A.R. report of 1939-40, Baroda State was free from Plague and Cholera both in the year
[139] As a preventive measure 41,195 inoculations were done.
[140] As a preventive measure 56,854 inoculations were done.
[141] As a preventive measure 7,548 inoculations were done
[142] As a preventive measure 53,193 inoculations were done

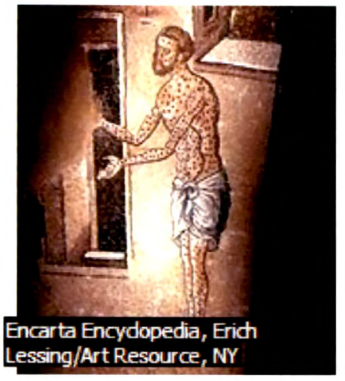
the Public Park. Free distribution of preventive and curative medicine was sanctioned by the Government, disinfection of wells in the Districts was vigorously undertaken and water supply to the city carefully investigated and measures devised for its improvement and various other sanitary measures rigorously carried out – as a combined result of which the epidemic was brought under control and showed distinct signs of gradual decline all over, by the end of the year.[143] In the same year smallpox also severely broke out throughout the territory and Kadi was the most affected division.

Smallpox

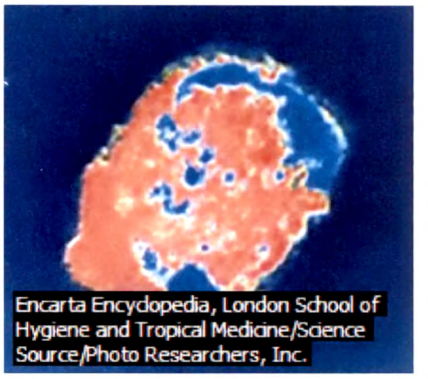
An acute infectious disease causes by *Variola virus* and clinically characterised by a sudden onset of fever, headache, backache, vomiting and some times convulsion, especially in children.

Over the next several centuries smallpox established itself as a widespread disease in Europe, Asia, and across Africa. During the 16th and 17th centuries, a time when Europeans made journeys of exploration and conquest to the Americas and other continents, smallpox went with them.[144] Between 1900 and 1920 in India, , smallpox killed an average of 370 out of every 100,000 people in the population every year. In all, smallpox killed an estimated 300 million people in the 20th century.[145]

[143] B.S.A.R. 1915-16
[144] Microsoft Encarta 2009
[145] Ibid



Smallpox Mosaic, 14th Century



SmallPox Virus

Smallpox Rash on body

Edward Jenner[146]

Baroda State was also a victim of smallpox several times and the treatment preferred for it was both indigenous religious belief of worshipping *sitalamata* etc. and western medicines as well. Whenever the epidemics occurred the daily reports of the status of disease were send to the Dewan by the C.M.O., so that the state may keep a high vigilance over the spread of the epidemic.

Smallpox appeared in the Baroda State in 1888, in Songadh [147] It is reported to have made its appearance on 1890 at Vijapur taluka and that out of ten cases which

[146] He was British physician Edward Jenner developed the first vaccine against smallpox. The picture shows how in 1796 he inoculated an eight-year-old boy with cowpox virus. Six weeks later he re-inoculated the boy with smallpox virus, finding the result negative.

[147] HPO, Daftr482File no. 199/57, CMO' memo, date 19 April 1888

ccurred between 1 to 4 instant, 1 proved fatal[148] and within a month, 24 new cases reported from Vijapur[149]

Small Pox cases at different places in the Baroda Territory from March 1891to May 1892 [150]

Place	Date of occurrence	No. of cases	Remarks
Okha Manadal (Amreli)	16/3/1891	5	Non of it proved fatal
Do	Do	5	Do
Do	17/3/1891	5	Do
Do	Do	1	Do
Do	18/3/1891	3	Do
Do	26/3/1891	1	Do
Baroda city	9/4/1892	4	All the persons under treatment
Do	10/4/1892	4	Do
Do	13/4/1892	4	All the persons under treatment
Do	14 /4/1892	4	Do
	15/4/1892	4	Do
Do	16/4/1892	4	1 persons under treatment
Do	17 /4/1892	1	Do
Do	18/4/1892	1	Do
Do	19/4/1892	1	1 persons under treatment

[148]HPO, Daftr482File no. 199/58,Dewan to Agent, date 16 Jan 1890
[149] Ibid
[150] HPO, Daftr482File no. 199/58,Dewan to Agent, weekly reports.

Place	Date of occurrence	No. of cases	Remarks
Do	20 /4/1892	1	Do
Do	21/4/1892	4	4 persons under treatment
Do	23/4/1892	4	All 4 persons under treatment
Do	24 /4/1892	4	Do
Do	25/4/1892	4	Do
Do	264/1892	4	3 persons under treatment
Do	27 /4/1892	3	Do
Do	29/4/1892	3	All 3 persons under treatment
Do	30 /4/1892	3	Do
Do	1/5/1892	3	Do
Do	2/5/1892	3	Do
Do	22/5/1892	4	4 persons under treatment
Do	5/5/1892	3	3 persons under treatment
Do	6//5/1892	3	3 recovered
Do	7/5/1892	1	All 3 persons under treatment
Do	8 /5/1892	1	Do
Do	9 /5/1892	1	Do
Do	10 /5/1892	1	Do
Amreli	3/5/1892	1	1 persons under treatment
Baroda city	11/5/1892	1	All 3 persons under treatment

Place	Date of occurrence	No. of cases	Remarks
Do	12/5/1892	1	Do
Do	13/5/1892	1	Do
Do	14/5/1892	1	All 3 persons under treatment
Do	15/5/1892	1	Do
Do	16/5/1892	1	Do
Dwarka (Amreli)	19-20/5/1892	10	4 recovered 2 died 4 under treatment
Byte Dwarka	Do	9	4 recovered 3died 2 under treatment
Baroda city	17-24/5/1892	1	1 recovered
Amreli	14-20/5/1892	5	5 under treatment
Dwarka (Amreli)	21/5/1892	7	7 recovered
Do	22/5/1892	7	7under treatment
Do	23/5/1892	7	3 recovered 1 died 3 under t.
Byet Dwarka	21/5/1892	2	2 recovered
Do	22/5/1892	7	1 recovered 4 died 2 under t.
Do	23/5/1892	6	4recovered 2 died

Reported cases of Small pox in the Baroda City from 1912 to 1948

Year	Cases reported	Deaths
1911-12	621	141
1912-13	DNA	454
1913-14	DNA	474
1914-15	DNA	194
1915-16	DNA	1,502
1916-17	DNA	DNA
1917-18	DNA	DNA
1918-19	DNA	DNA
1919-20	DNA	DNA
1920-21	DNA	DNA
1921-22	DNA	DNA
1922-23	DNA	DNA
1923-24	DNA	DNA
1924-25	DNA	DNA
1925-26	DNA	DNA
1926-27	DNA	DNA
1927-28	DNA	DNA
1928-29	DNA	DNA
1929-30	DNA	DNA
1930-31	DNA	37
1931-32	DNA	64
1932-33	DNA	171

Year	Cases reported	Deaths
1934-35[151]	3447	1577
1935-36[152]	1855	327
1937-38[153]	558	126
1938-39[154]	548	259
1939-40[155]	3,064	1337
1940-41	829	238
1941-42	176	92
1942-43	161	80
1943-44	389	173
1944-45	420	228
1945-46	1967	820
194647	DNA	DNA
1947-48	224	118

All the districts were affected by smallpox during the year 1912-13, Kadi and Navsari being the greatest sufferers.[156]

[151] During the year 27,489 persons were revaccinated.
[152] In this year small-pox visited 28 talukas of the state . 14,963 persons were revaccinated . revaccination at the age of 8 had made compulsory and the age of primaru vaccination was reduced from 12 to 6 months. This was a special provision of Baroda City
[153] 18,091 persons were revaccinated .
[154] 17,533 persons were revaccinated during the year
[155] There were widespread epidemic pof small pox , the number of deaths were fivetimes as many as the previous year.
[156] B.S.A.R. 1912-13

Influenza

In the month of June and July 1918, devastating epidemic of Influenza raged throughout the whole state from September to November 1918.[157] There was a mild outbreak of Influenza throughout the City in the District and in the succeeding three year[158]. Though in 1922-23, 384 cases were reported but again it was controlled in the next year as there was no serious epidemic of influenza reported in the year 1923-24., and 1924-25[159]

[157] B.S.A.R. 18-19
[158] B.S.A.R. 19-20 and B.S.A.R. 20-21, B.S.A.R. 21-22
[159] B.S.A.R. 1923-24, 1924-25