Major Health Problems
Chapter - 3

MAJOR HEALTH PROBLEMS

Infectious diseases play havoc with the lives of the people resulting in unpredictable morbidity in which Madras has share in all diseases of India. European’s entry into India profoundly altered the socio economic and political milieu prevalent in Madras. Industrious nature and submissive habits of the population made the Tamils easy victims to foreign domination in the past and to bureaucratic subjugation in the present. The predominant agrarian life throughout the ages took a change after the advent of the Europeans. Agriculture development disrupted traditional system of drainage, exposing savages of malaria and water borne diseases.

The Royal Sanitary Commission Report stated that the main enemy of the British soldiers in India was not the Indian enemy but disease. Diseases have no respect for national boundaries, no discrimination between rich and poor, sex, religion, caste or community. From ancient times, the literature like Susruta Samhita states that people were aware of the bacterial origin of certain diseases like fever, leprosy, small pox and tuberculosis. Preventive medicine is the real and immediate need of a country and no doubt the epidemic diseases claim the highest toll of mortality.

There were about one thousand seven hundred diseases afflicting mankind out of which about 750 were due to living organisms. Large illness and mortality occurred every year throughout the country and so far as Madras Presidency and other parts of India were concerned, malaria, cholera, small pox and plague were termed as the “BIG FOUR”. At periodic intervals, influenza caused heavy mortality. Other diseases like tuberculosis, leprosy, venereal diseases did not occur as epidemic
but were important in the determination of health and welfare of the nation.  Most of the tropical diseases which the tropical doctors dealt with were found in Europe. Cholera, plague and smallpox diseases were distinguished for their intensity in the tropics and very organized efforts were needed to combat it. During the last quarter of the 19th Century, came the era of bacteriology and parasitology. Search had begun for microbes and the medium (vector) and the tropical soil which was rich in both.

The epidemics of malaria, cholera, smallpox and plague were brought to the countryside by the government policy of immigration, railway, transportation and embankments. White owned plantations, mines and factories herded colonies of labourers which spread the diseases. Cholera and smallpox swept entire villages and in order to save themselves people began to migrate. Several views prevailed regarding nature's influence on diseases. Diseases were caused by breathing air, emanations of noxious vapours from the bowel of the earth due to atmospheric changes, accumulation of dirt and decaying matter, escape of poisonous gases from the ground due to the rise and fall in the level of subsoil water and so forth.

Bowel infections such as cholera and dysentery, diarrhoea and typhoid spread by contact, through drinking of water contaminated by excreta or by consumption of foodstuffs infected by flies. The infection in some diseases is strictly insect-borne. In relapsing and typhus fevers is transmitted by lice, in malaria, filariasis, dengue and yellow fever, the infection can only be conveyed by certain species of mosquitoes that can transfer the infection to the healthy people. Vast improvements in study and the diagnosis of cases further aided to establish that the diseases were caused by living organisms specific for each disease.

An epidemic meant a wide occurrence of an infectious disease in a community at a particular season. The epidemic had serious impact on economy, agriculture, culture and the public health of a place. Among diseases that had occurred in
epidemic proportion throughout history plague, influenza, small pox, tuberculosis, cholera, diphtheria and typhoid fever were significant. An outbreak of influenza in 1918 killed more than 20 million people around the world. An epidemic cannot possibly occur if the microbes are bottled up in an infected individual. If other persons are to be affected, the microbes must find an outlet and conditions for their transmissions to others must be present. In respiratory diseases such as influenza and pneumonia and eruptive fevers such as smallpox and measles, the germs are transmitted from the sick to the healthy chiefly through infected droplets of nasal and oral secretions during coughing and sneezing.

Certain diseases like bubonic plague affects lower forms of fauna and only incidentally in man. One remarkable feature about epidemic diseases of all ages had their relation to climatic conditions. The scanty knowledge in meteorology in the past probably accounts for the confused views on epidemic causation. Climatic conditions manifest themselves in seasonal changes in the weather which can be expressed in terms of temperature, humidity, rainfall, solar radiation and so on. The effects of season on epidemics may be brought about by its influence on man, the microbe and the conditions of transmissions of infection. Smallpox, leprosy and plague once problem of Europe and other temperate regions were later met within the tropics due to rapid advance made in the former countries in public health and sanitation. The causation for the sudden onset of diseases was lack of awareness, proper communication and transport for which thousands fell victims. In India 80% of the diseases were waterborne.

In spite of control programmes under operations at national and international levels some disease are still rampant. At the time of independence health problems were formidable. Infant and maternal mortality and morbidity rates were high, and communicable diseases were widespread. Majority of the people suffered from
undernourishment and malnutrition caused by food shortage. Water borne disease such as malaria and filarial were a great menace to world population in general and to India in particular. Large slums in urban centres were the result of open drainage practice, indiscriminate disposal of water, industrial effluents into bodies of water and increased migration from rural areas. This aggravated the spread of waterborne diseases like cholera, typhoid, tuberculosis, dysentery and gastroenteritis. The problems concerned with the state were the improvement of environmental hygiene, raising nutritional standards, prevention of communicable diseases and promotion of treatment facilities for the afflicted.

The notified diseases as mentioned in the 4 volumes of the Madras code were cholera, leprosy, plague, smallpox and diphtheria. The Madras Public Health Act 1939 provided a list of notified diseases among which influenza, filaria, malaria, tuberculosis, fever, dysentery and diarrhoea were also noted. The chief diseases which prevailed in the state from 1947 to 1967 were small pox, cholera, plague, dysentery and diarrhoea, respiratory disease and fevers. Tuberculosis and leprosy also affected the people in the society. Each disease had epidemiology and surveillance and preventive measures which are dealt with in this chapter.

**Cholera**

India is the world endemic home of cholera. This bowel disease had existed for centuries in epidemic form of varying magnitude sweeping rural areas periodically. Its frequent occurrence was traced to be spread by pilgrims resorting to fairs and festivals at sacred places. Another reason was congregation of labourers for harvesting purposes, in large number in places without protective water supply, indiscriminate fouling of water bodies. The intake of contaminated food through flies and drinking water through the washing of infected clothes formed reason for cholera.
Cholera is an acute diarrhea disease, which results in dehydration and death caused by the bacterium, *vibrio cholera*. It is dependent on monsoon conditions and its extent varies with the intensity of the monsoon. Cholera is found to occur during the month of September to November and reaches its peak in late December. It travels westwards and it traverses to north and it visits states of South India between August and November. Cholera in the province was caused by two serologically distinct types of organisms.

Robert Koch, an eminent bacteriologist, identified the *vibrio cholera* as the bacillus carrying this disease which was sensitive to rays of the sun. Flies too act as carrier agents in spreading this infection. The human body with high content of hydrochloric acid found in the juice of the stomach acquires immunity to diseases. That is why people who take curds or fresh juice regularly have high quantities of this acid in their stomach.

The physical environment that causes cholera in India was climate, water and soil. The study of the disease gives a vivid notion about the incidence of cholera which was minimum in winter season and mortality was high with the rise of heat and humidity in July and August. The rivers, wells, tanks and ponds play an important role in the dissemination of cholera in different parts of the country. The nature of the soil contributes to the development of cholera *vibrio* which contaminates the water of ponds and wells by its movement. The alkaline nature of the alluvial soil gave way for high mortality of cholera.
Indians in general were interested in going on pilgrimages. These religious gatherings are more likely to spread epidemics of cholera. In the pilgrim centers the gathering included not only pilgrims but people affected by diseases, beggars, and shop vendors and so on. Mostly the villagers from far and wide under the banner of pilgrimage flock holy places. These people are ignorant, poor and undernourished and are not provided with sanitary arrangements, hygienic food and water. The study of fairs and festivals shows the number of people who attend the festivals to take a dip in the holy water of the rivers which are the source of propagation of the disease.

Rivers are polluted with dirt, filth brought by heavy rains. There was a practice throwing the charred remains of human bodies in the water to fulfill their burial customs. This makes the water contaminated. The well water gets polluted by the nature of its open construction and by the utensils used by different people for taking water from it. Other things that get easily contaminated are open food and milk, already polluted articles quickly pollute others. Poor sanitary measures, unfavourable economic conditions of most of the people, and lack of sufficient medical facilities are some of the reasons for the spread of cholera. Epidemic records of the nineteenth century for cholera showed that decline of cholera started only in the twentieth century.

The notable places in Tamilnadu, found endemic for cholera are the districts of Tanjore, Tiruchirappalli, South Arcot, Cauvery delta and districts of Krishna, West Godavari and Guntur in the Krishna-Godavari delta. These districts are in close proximity to the water systems and densely populated places. In the last quarter of 1947 severe winter epidemic was envisaged with a high mortality in Tanjore and other places such as Tirunelveli, Tiruchirappalli, Mathura and Rammad. This incidence had revealed that infection was imported from Adi Amavasai Festival in Rameswaran. The labourers in search of employment from outside areas who flocked to the above places contaminated the water. As remedial measure pot
chlorination, chlorination of water, DDT spray and anti cholera inoculation were carried out. The manufacture and issue of million doses of cholera vaccine by Kings Institute, Guindy showed that preventive measures were taken immediately by the concerned authorities. Provision for transport of drugs and food supplies for patients and treatment initiatives taken proves health care measures undertaken.  

In South Arcot district 1948 was a worst year of cholera. Severe epidemic took place in the third quarter of the year 1949 in East and West Godavari districts. The serious floods in the above districts submerged paddy and food scarcity was seen throughout flood affected areas. Prevalence of cholera was seen throughout the Madras Presidency. The year 1950 saw the occurrence of three epidemics, mild in ceded districts and Coimbatore district was worst affected of it. The public were warned of the diseases and advised not to eat food which was exposed to dust and flies. Slum clearance work was done and protection given through inoculation. Due to scarcity people had the necessity of consuming unaccustomed food stuffs and grains that caused dysentery and diarrhoea. In this situation, the village headman had wrongly classified cholera as diarrhea showed difference in the mortality figure.  

Despite food scarcity and drought conditions the prompt action taken by voluntary organization improved the situation. Anti cholera work under WHO was carried out in Tiruchirappalli (Cauvery Delta) and Tanjore villages. Milk, food and multi vitamin tablets were supplied and anti cholera vaccination was done. About 2.5 lakhs of anti cholera inoculations were used. By adopting precarious measures the winter epidemic were averted in 1951. As there was shortage of vaccine in the laboratories there was a demand for anti-cholera vaccine in 1952-53. The Director of Medical Service and the Health Minister visited the famine stricken areas in 1952. However the vaccination made the people withstand the disease and the

As a preventive measure, effective sanitary measure was taken in 590 fairs and festivals because of which the state was free from cholera in 1955 and 1956. By the end of 1956 Coimbatore district was affected by this disease. To fill the gap cyclone has caused heavy rains and floods which affected Mana Madurai and Paramakudi of Ramnad district. Kilakarai was completely affected by rain. The people’s suffering was aggravated by inflow of water which surrounded the villages, creating a chance for cholera outbreak. Unqualified persons were appointed as cholera health inspectors during emergency in affected areas which was also a reason for heavy toll of lives of pilgrims from Samayapuram Mariamman festivals. The people from Lalgudi and Manaparai districts of Tiruchirappalli were affected and infection spread to North Arcot, South Arcot, Madurai, Tanjore and Madras. In 1958 anti cholera measures in pearl fishery operation places at Tuticorin were undertaken to ward off the disease.

Mass immunization work was carried out and under Kamaraj ministry; awareness was created among people about the mode and spread of cholera through leaflets, posters, radio talks and cinemas. In Madurai and Tiruchirappalli, cholera occurrence had been checked. Though the state was free from cholera in 1960; slums, villages along the rivers and channels deltaic and endemic areas were affected by the consequence of this disease. By October 1962 the infection started and continued till mid of 1963 in Chingelput, North Arcot and South Arcot districts. It was widespread in South Arcot, North Arcot, Tanjore and Trichirapalli districts. The cholera at Brahmathsavam festival (Kancheepuram) was brought down by prompt measures.
Chlorination of water had subsided the disease and immunization by anticholera vaccine proved safe. Though all the districts were affected, Tanjore, Tiruchirappali, South Arcot and North Arcot districts had periodic occurrence.

The statistical data between 1947 and 1950 showed that cholera had its occurrence almost in all the districts of Madras State. The incidence of cholera recorded between 1950 and 1960 showed the rapid decline of the disease. This decline was felt with the increased provision of protected water supply, improvement in environmental condition and intensive health education. The number of deaths which was 26,432 in 1950 had decreased to 20 in 1960.

About five hundred fairs and festivals were held in the state periodically. Hence, sanitary arrangements were made during major festivals like ‘Velanganni’ festival at Nagapattinam, ‘Vaikunda Ekadesi’ festival at Srirangam, ‘Karthigai
Deepam’ festival at Thiruvannamalai and ‘Arudra Darisanam’ festival at Chidambaram. Incidence of epidemics and endemics further declined because of the vigorous implementation of mass eradication programmes. In 1966 in view of celebration of major festivals special sanitary arrangements were made to prevent cholera. There was a definite downward trend in the incidence of mortality by cholera. Moreover provision of protected water supply was completed in every area. Even though cholera was controlled, it continued to be a menace and had claimed many lives. Preventive and relief measures were of great use only before an epidemic.

**Small-pox**

Small-pox is a major epidemic of the world caused by *variola virus* and is characterized by sudden onset of fever, headache, backache, vomiting and convulsion especially in children. The disease had its origin in the eastern countries in India, Central Africa and China. In India it played a devastating role killing millions. Being a tropical country, India was affected by smallpox which occurred during the winter months of December and January and the hot summer months. The summer months witnessed incidence of mortality due to small-pox, in almost all the villages in the Madras Presidency. The festivals to mother goddess were held to safeguard people from this disease. The roofing conditions of houses whether it be low roofing or tinsheet roofing which causes extreme heat are evident in rural areas. Hot weather is the time when the disease was prevalent in India and it never subsided till the rains set in. Small-pox took a heavy toll in India before the vaccination arrived in India in 1802. But until 1927, when the vaccination was effectively introduced, the disease did not subside.

From the epidemiological reports published by the League of Nations, it is evident that the rate of incidence of smallpox in India was the highest among all
countries. Under Madras Public health Act 1939, it was a notified disease. The wet weather has some influence on the occurrence of this disease and infection was carried through air. The British had entered India for their commercial gains but the fear of smallpox kept them at bay from the Indian shores. They selected Nilgiris as their health resort during summer months because they could not bear the humidity of South India. At the initial period as vaccination was not made compulsory many children were not vaccinated. When the death toll of the disease was taken into consideration it was understood that children were the most affected.

In the hilly tracts, mortality is greater than in plains due to difficulties of vaccination. Only when a death occurs its prevalence was felt. The disease was attributed to the presence of Goddess Mariamman who would be offended if medical aid were applied, which contributed to a number of deaths. This dreadful disease was treated as visitation of God when its causation, prevention and treatment were unknown. To avoid the spread of infection, isolation was imposed to check the spread of disease from the affected to others. The hanging up of neem leaves in front of the house of smallpox patients warned people of the disease. The disease is highly infectious and is detected by pustules all over the body, specially the face and upper limbs. It is a disease found in all parts, especially in hot dry season. Due to smallpox eye sight was also lost.

Small-pox occurred side by side among the children in the form of chickenpox and measles. No district was free from smallpox. Primary vaccination and revaccination were made compulsory under law. In 1949 there was increase of casualty and the worst affected districts were Krishna, Guntur, Nellore, Kurnool and Bellary. Periodic Epidemics occurred in Chingelput till 1950. There was an increase in death rates caused by smallpox in the districts of Salem, North Arcot, South Arcot, Tiruchirappalli, Tanjore, Ramanathapuram, Coimbatore and Tirunelveli. The attack
of smallpox decreased in 1952 and Sri Kakulam was worst affected followed by South Arcot, Nellore and Cuddapah. In 1953 there was no epidemic due to intensive vaccination in the state.\textsuperscript{38}

Though there was no occurrence of smallpox in the state in 1954 in Malabar and Madras mild traces of disease were visible. The districts of Madurai, Tiruchirappalli and Chingleput faced a heavy attack during the year which increased in 1955 too. Except Nilgiris, smallpox was felt in 1956 in all districts. From the above statement it was to be observed that small-pox occurred in severe form and struck once in five to seven years. The badly affected were the children below ten years of age.\textsuperscript{39} Once again in 1957 and 1958 epidemic of smallpox started. In Dindivanam town about 33 deaths were recorded and vaccination was carried. Due to frequent attacks proposals were finalized to eradicate smallpox in 1959. The vital statistics in 1960 showed a large number of deaths in the state. Except Nilgiris and Kanyakumari other districts faced attacks. Small-pox eradication by mass vaccination was inaugurated in September 1960 at the national level.

Epidemiological investigation of smallpox epidemics revealed that from September to November 1962 the State Health Authorities had taken note of the smallpox cases. Madras reported smallpox cases throughout the year 1963 and NSEP (National Small Pox Eradication Programme) was started in eight districts. Throughout the summer month there were unstressed incidents of mortality due to smallpox. People in village offered festivals to Goddess Mariamman.\textsuperscript{40} In Ramanathapuram district affected areas were Sivagangai, Paramakudi, Mudukulathur and major cases from Paramakudi were also recorded.\textsuperscript{41}

In 1966 Dharmapuri, Salem and South Arcot districts had major attack and mass vaccination campaign continued in the state. Consolidation phase was in progress and the entire state was on vigil to maintain immunity during 1966-67. For a question
in the legislative assembly why smallpox had not been eradicated since independence the answer was that only by vaccination it would be wiped away. Almost all the districts were affected by smallpox except cold places like Nilgiris and repeated occurrence was in South Arcot and Chingelput districts. The only control measure was vaccination which was known to medical science. Home isolation and disinfection at bed side were also other measures which were forcibly adopted leading to the decline in the attack of the disease. Health publicity campaign through printing of slogans on postal covers and inland letters were taken up for the purpose of eradication of smallpox.42

Chart – 2

Deaths from smallpox (1947-67)

The official parchment certifying the global eradication of smallpox, 9 December 1979.
Under central assistance the state schemes included, constitution of mobile epidemic units to facilitate quick transport of staff and medicine to villages which were threatened with epidemic disease was arranged. In food deficit areas these epidemic units distributed free food supplemented with multivitamin tablets. Mobile laboratory vans moved from place to place where there was heavy outbreak of epidemic diseases. Three epidemic units were constituted by the Third Five year plan in Salem, Madurai and South Arcot Districts. Transportation of cases to infectious disease hospital for isolation and treatment were also carried out by the units.

A vast international campaign by issue of stamps and medals from 1967 to 1979 led to the eradication of smallpox. It is not the efforts of medical personnel but mass intensive vaccination which was responsible for complete eradication of smallpox.

Fevers

Fevers were categorized into many varieties like malaria, filaria, kalazar, enteric fever, influenza, typhoid and pneumonia. It was malaria the most important kind of fever which caused a heavy death toll in India. The hill tracts suffer most as the temperature, the moisture and the ground and surface water were favourable for its growth. In the valleys where the sub surface saturation was high and the relative humidity and temperature were high, fevers were common. The increase in fly population caused the spread of fever causing organism and intensive fly control measure like spraying and tightening of general sanitation and hygiene had brought the situation under control.

In 1948 filarial survey was taken and it was in existence in 1950. Kalazar had its occurrence in Ramanathapuram, Tirunelveli and Madras, mainly confined to coastal areas. Both rural and urban areas were reported endemic for Kalazar. Government had sanctioned a mobile unit for the treatment of the disease and the control of the vector sand fly responsible for the transmission of the disease.
Pneumonia was seen in Madurai and enteric fever was widespread in Madras, Coimbatore and Malabar by 1950 for which 65,694 were treated. Anti filarial measures were taken up under the Elephantiasis Enquiry Committee supervision.

Influenza and enteric fever occurred in Madras and its research was undertaken in Government of India Influenza centre. There was increase in the incidence of influenza in 1951 and a pandemic attack in 1957 occurred affecting all the important ports in India. The attack was imported from Singapore and patients were kept under observation and the infection was felt in Madurai, Coimbatore and Tuticorin. The outbreak of the diseases was felt in Madras and it was examined that the attack was due to virus. At the same time the students of a school at Ooty were affected by this infection due to the influx of visitors from Madras for the flower show. In the year 1962 there was a severe outbreak of influenza between November 1962 and June 1963.46

Malaria

Malaria, being the major health and social problem in India, received a large amount of attention from medical research workers. India's number one enemy malaria, a protozoa disease and indeed a public health problem killed thousands of people each year.47 Long ago in India, this disease was called the “king of the diseases” and was described by Vedas and Brahmans as death fever. There had been five types of mosquitoes that carry malaria according to the Vedas.48 The name malaria was derived from Italian word mal-aria or bad air, as it was termed as Roman fever. The protozoal parasite is transmitted through the bite of infected female Anopheles mosquito. Malaria and mosquito bites were referred to in the Vedic literature. British India was a depot of malaria, except Kashmir. In Punjab alone, during 1890-1908, several malarial epidemics had occurred killing lakhs of people.

Protozoa
Sir Ronald Ross who was in Madras Medical Service in 1897 made the epoch-making discovery that anopheles mosquito transmits malaria. He investigated that the large colony of Wynaad (Madras state) was highly malarial. Colonel Perry was the first to point out the high incidence of malaria in Visagapatnam followed by Ross. Malaria had originated from Africa and Mediterranean shores, India and South East Asia through human migration. In places of high sub-surface saturation, relative humidity and high temperature fevers were common. The construction of dams and immigration projects tended to give rise to malariogenic conditions. The foot hill areas of Western ghats were mosquito breeding place at the edge of slow flowing streams and channels. Anti malarial schemes under the WHO were carried out. In India alone, over two million cases were reported every year.

After Independence in India about 75 million suffered from malaria every year. New methods of malaria control were introduced. The WHO and other international bodies highlighted the threat posed by waterborne disease to India’s population in particular. Bhore committee had its proposal to set up central anti-malarial organization at the provincial head quarters. The central malaria organization set up in 1945 coordinated supervised units under the Director of Public Health to launch control measures. In 1947-48 anti malarial scheme was introduced in Madurai. Acres of fertile land were fallow due to hyper endemicity of malaria as in Wynaad taluk of Malabar and agency tracts in Visagapatnam. Anti malarial measures remained clinical throughout the nineteenth century and the twentieth century and the anti larval techniques used had minimal impact on malaria epidemics, as state ignored critical factors of famines and hunger.

The introduction of DDT, residual spray was responsible for quick and striking results in the areas of Madras state where malaria control scheme were introduced. Thirty four anti malarial schemes were on operation and quinine was substituted by...
effective drugs like *paludrine* and *mapacine*.

In 1949 malaria was high in Madras and Bellary district. A scheme of anti malarial control in co-operation with WHO and UNICEF was inaugurated in Coimbatore in 1949 and in the hyper endemic Malabar district it was carried out in 1950. The prolonged residual toxicity of DDT made control in rural areas feasible. Thirty one anti malarial scheme in epidemic tracts of the state were in operation in 1950. The WHO malaria control demonstration team was started at Nilambur. Malaria Bureau functioned with two regional malarial organizations from October 1953.

In Valparai among the Papanasam hill tribes and in Thekkady and Periyar dam site in Madurai the anti malarial scheme was carried out. Due to extensive anti malaria operation more lands were brought under plough and to colonize tracts of land which were unexpected on account of malaria prevalence. There was reduction in malaria mortality which encouraged settlers to extend the cultivation of food crops into forest area. Many fertile regions have not been reclaimed and used because of malaria. This disease can easily be controlled with proper organization and preventive efforts.

Many schemes were in operation in different parts of the state. Preventive measures were out carried out on a large scale. DDT a common insecticide against mosquitoes proved ineffective in spite of its use in peripheral areas for malarial eradication. Because of its poor response, flies rose in large numbers to become a menace. Hence *hetrazan therapy* was directed against vector species of mosquitoes. A study of mortality due to malaria after post partition period in India revealed by G.Borkar in his "History of independent India" stated that it was reduced from 75 million to 60 million. This reduction rate was by the application of pilot schemes in the state and the attention paid by the five year plans.
Table 3.1

Comparison of deaths from malaria and other fevers during the year 1960

<table>
<thead>
<tr>
<th>Area</th>
<th>Death from Malaria</th>
<th>Deaths from fever other than Malaria</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>637</td>
<td>59,982</td>
</tr>
<tr>
<td>Rural</td>
<td>505</td>
<td>49,402</td>
</tr>
<tr>
<td>Urban</td>
<td>132</td>
<td>10,580</td>
</tr>
<tr>
<td>Municipal towns</td>
<td>67</td>
<td>6,189</td>
</tr>
<tr>
<td>Census towns</td>
<td>65</td>
<td>4,391</td>
</tr>
</tbody>
</table>


The mortality from malaria further decreased from 732 in 1959 to 637 in 1960 but was on the increase in 1963 as 873. The Regional Malaria Organization, Coimbatore with its jurisdiction that extended over the districts of Nilgiris, Coimbatore, Salem, North Arcot, and Chingleput carried out anti-mosquito and anti-filarial check up surveys. Similar organization at Tanjore with its jurisdiction over the districts of South Arcot, Tanjore, Tiruchirappalli, Madurai, Ramanathapuram, Tirunelveli and Kanyakumari carried preliminary surveys to formulate schemes for anti-mosquito and anti-filaria measures. The organization took part in the fly control operations at Velanganni where a number of people attended the annual festival and the importance of control of insect-borne diseases was impressed on the people.

In the urban and semi-urban malarial areas great emphasis was laid on anti-larval measures since the vector breed and rest mostly in wells especially on the walls of wells. The anti larval measures consisting of systematic weekly treatment of well with mineral oil emulsion as larvicide and introduction of larvivorous fish in wells was undertaken which brought down the mortality rate to a considerable extent.
Filariasis was a great public health problem in the Madras state and was endemic in several districts and widespread in the districts of Chingleput, South Arcot, North Arcot and Tanjore. Other name of the disease was mycetoma or Madura leg marked by swollen leg prevalent in black cotton soil tracts. The problem of filariasis was not mainly confined to urban areas, but also in urbanized rural areas in varying degrees. The methods adopted for the control were elimination of unnecessary collection of water, avoidance of man-made breeding places and control and treatment of water collections. Tablets and mosquito curtains were distributed. The species of the parasitic worm causing the disease was *Wuchereria Bancrofti* and the vector mosquito transmitting this type of infection was *Culex fatigans*. In Madras state *Malayi* type of filariasis was not recorded. The Government grant on anti-filarial measures made the local authorities to institute anti mosquito schemes.

Plague

Plague is an epidemic disease prevalent in certain areas with moderate cool climate and healthy atmosphere. The word *Mahamari* or the great death given in the religious text was associated with rats. The infection which is caused after a epidemic was established among rats. The climate of Madras city was cooler during November and December. The micro organism named *bacillus* pests was transmitted indirectly from rat to man by fleas from infected rats. *Bubonic* and *septocemia* plague were the two types of plagues. In ancient times Babylonians accused demons of generating plague and made attempts to drive them. In the event of diseases the British blamed and segregated the indigenous people. All the city hospitals became Lock hospitals meant for prostitutes during the plague epidemic in Bombay and Calcutta.
Plague threatened not only civilian and military life but also international trade in cotton, oilseeds and grain. There was panic among the Europeans and the British officials in India who were frenzied over the epidemic. Patients who were suspected of the disease were pulled up and carried in vans to the hospitals for quarantine. Many died on their way to the hospitals. Places like Bangalore, Coimbatore, Salem and Nilgiris showed more traces of plague since independence. Sporadic infection took place in 1945-1946 in Kallakurichi of South Arcot district.

During the decade of 1941-1950 plague cases were found mostly in Coimbatore, North Arcot, Salem, Tanjore and Ramnad district. Nilgiris had continuous presence of this disease. In Madurai it was controlled and eradicated after prevalence for 20 years in 1950. The rational control of plague was to break the close association between rat-free or rat-proof houses to control the epidemic. Temporary measures such as cyanogas fumigation to destroy rats and rat fleas, anti-plague inoculations and evacuation of infected localities were carried out.

For fumigation and close of rat burrows, menials, coolies, peons, and plague inspectors were deputed by municipal health officers. In plague endemic villages of Salem, Nilgiris, Coimbatore, Coonoor, Ooty towns, DDT treatment were regularly given. Plague vaccination was supplied from Haffkine Institute, Bombay and distributed to public health department. The plague affected patients were hospitalized and temporary measures like rat destruction by trapping, poisoning and encouraging enemies of rats and the permanent measures were rat proof godowns. In 1951 plague had its prevalence in an epidemic form in Bellary district followed by its existence in Nilgiris and Hosur taluk of Salem. Other districts were free from plague in 1952. The whole state was free from plague since 1956, except Hosur taluk and Salem. The endemic villages and towns were treated with DDT and inoculated against plague.
There was continuous occurrence of plague in Salem and in subsequent years anti-plague inoculation was carried only in Salem and Gobichettipalayam of Coimbatore. There were 46 attacks in Salem and preventive measure in Ooty, Coonoor, Thiruvannamalai and other areas were undertaken. By 1966, no incidence was reported in the state. As the prevalence of plague was limited to certain areas only preventive measures were confined to the areas like Salem, Coimbatore and Nilgiris, and the quick eradication of the disease was made possible.

Resurgence of communicable diseases such as malaria was due to low levels of public expenditure on health and commercialization of medical care. Small pox was and is the only human infections disease which had been completely eradicated from nature so far. Expectations from public health care were freedom from epidemics and public health was often confused with medical care. Health services failed to contribute to health environment, adequate nutrition and healthy life style but were curative in nature. The severity of diseases and the deaths and attacks envisaged throughout the state ushered the government to show great interest in the health aspects. Government initiated vigorous measures to reduce the mortality rates of the disease.

With the health plans and guidance of international agencies along with the deep concern of the welfare of the people, the government organized preventive and curative measures. In almost all the districts, the scourge of cholera and small pox was felt. Preventive measures were enforced in endemic areas where infection was derived primarily. Tanjore, Tiruchirappalli, South Arcot, Cauvery delta, Krishna, Godavari delta and Guntur were affected by cholera very often. Sanitary improvement, careful personal hygiene and anti-cholera inoculation had warded off diseases. Fevers like malaria were seen in the coastal areas. Other diseases which affected the people were dysentery and diarrhoea and respiratory diseases.
Cholera, smallpox, malaria and respiratory diseases were common and decrease in death rate was felt only after the implementation of anti-disease campaign. For example, the death toll of malaria in the Madurai district which was 283 in 1951 had been reduced to 47 in 1960. The measures adopted by the government were to be appreciated. The diseases mentioned above were however tackled by the introduction of preventive measures but there are other problems which affected the social and economic condition of the people thereby affecting their life styles. The next chapter will give a brief summary about the efforts and steps taken by the government to enhance the health status in urban and rural areas.
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