

Initiating The Eradication of Tuberculosis in Tamil Nadu – A Historical Study

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Abstract

A potentially serious infectious bacterial disease that mostly affects the lungs. Tuberculosis is caused by bacteria that spread from person to person through microscopic droplets released into the air. This can occur when someone with the untreated, active form of tuberculosis coughs, speaks, sneezes, spits, laughs or sings. Although tuberculosis is contagious, it's not easy to seize. In order to control and prevent this disease Tamil Nadu government took number of steps particularly establish of Hospitals, Sanatoriums and Centers. This article made an attempt to analyze the steps taken by Tamil Nadu government towards prevention of this contagious disease, particularly mass BCG campaigns, Sanatorium for Rehabilitation, Control Programme and Schemes.

Key words: Bacterial, Microscopic, Untreated, Sanatorium, BCG campaigns.

Tuberculosis (TB) is an airborne infectious disease that affects the lungs and other parts of the body. It has been one of the major public health problems. WHO recognized the magnitude of the TB problem and has given a high priority to the international control of TB. Tuberculosis is caused by the bacterium *Mycobacterium tuberculosis* and is usually associated

with improper nutrition, bad housing, and difficult work conditions. The disease is prevalent particularly in industrialized urban areas due to overcrowding and excessive strain. Tuberculosis was first discovered by the scientist Robert Koch, who also described the tuberculin reaction (1890) now used as a primary skin test for the diagnosis of TB. The All India Sanitary Conference held in the then Madras in 1912 discussed various initiatives such as the formation of anti-tuberculosis societies and the establishment of sanatoria and dispensaries. Dr. J. Frimot Moller introduced BCG vaccination in India in 1948.¹ The scheme for the control of TB in Tamil Nadu was accepted by the state government on 1 March 1950. The salient features of the scheme were creating awareness on BCG vaccination, opening of TB clinics and promoting institutional treatment of TB. The Tambaram Sanatorium was expanded to accommodate nearly 400 cases. Two more sanatoria were functioning in Perunthurai, Coimbatore, and in Tiruchirappalli. The Wellesley Jail Sanatorium, intended for convicts suffering from TB, was converted into a regular sanatorium. A new sanatorium was constructed in Sengipatti, Thanjavur district. Foundation stones were laid for the construction of a sanatoria in Devakottah Road, Ramanathapuram district. Another TB Sanatorium was proposed in Madurai, with land acquired from the Meenakshi Sundreswarar Devasthanam.² The government policy was to encourage the opening of more such institutions with private participation to relieve the pressure on state hospitals and sanatoria. The Provincial Welfare Fund supported the establishment of TB institutes in various centers in the state.

Tuberculosis is curable if found early and treated properly. Mass radiography has been widely used to diagnose early for treatable cases and examine contacts. This method is useful in large groups of people if there were laboratory and clinical facilities for follow-up of the suspicious cases discovered and establishment of exact diagnosis. However, early detection of TB is not easy in our country. Ordinary X-ray plants have been installed in all the district headquarters hospitals in the State. Because of the limited capacity of hospitals, a large percentage of the detected cases had to be put on the waiting list, and the disease become relatively advanced at the time of their admission for treatment. There are only two small rehabilitation centres for this purpose in India: one at Arogyavaram (Madanapalle) and another at Tambaram (Chennai).

Tubercle bacillus is to be ubiquitous. The disease infects people at an early age; children, young adults and low-income groups are more likely to develop the disease. An important factor in combating the disease is educating people about the nature of TB and the measures to be taken for its prevention, cure and after-care. Every clinic, hospital and sanatorium can well become a centre for educating patients and their family. Public health nurses can warn the family of the affected patient about the dangers of careless spitting by the patient. They can teach the mode of transmission of disease and how to ensure at least partial isolation for the patient at home.³

The Hospital sanctioned by the Government and Private

In 1947, death rate due to TB was 1.40 (1.38) per square mile. There were six hospitals and sanatoria, run by the government and others, exclusively for the treatment of tuberculosis patients at the beginning of the year. Four new hospitals and sanatoria were opened and a few beds were exclusively provided for TB patients at certain district headquarters hospitals. The total number of beds available was 1361. The state government approved the construction of twelve wards of eighteen beds each at the Government Tuberculosis Sanatorium, Tambaram, at a cost of INR 5,50,000. The Flag Day Committee of the Tuberculosis Association of Madras contributed INR 10,000 for the construction of a ward. The Tuberculosis Hospital was inaugurated with a capacity of 48 beds. At this time, there were 11 outpatient TB clinics in Madras City.⁴

There was a steady progress in the campaign against tuberculosis in the Madras Presidency. Increased hospital accommodation was made available, the mortality rate in the city of Madras come down of 352 per million. In 1947 the tuberculosis institute at Egmore received a large number of patients. Additional accommodation was provided in the TB Sanatorium, Tambaram, which promises to become the biggest sanatorium in India. A new tuberculosis hospital was built at Konnur High Road, Perambur. Outside the capital, TB clinics were running in six headquarters hospitals and three private sanatoria at Perundurai and Tiruchirappalli were all working satisfactorily.⁵ In the State, there were three institutions run by the Government and one other run by medical missions or private bodies for the treatment of patients suffering from tuberculosis.

The government institutions are:

- I. The Government Tuberculosis Institute, Egmore.
- II. The Government Tuberculosis Hospital, Madras.
- III. The Government Sanatorium, Tambaram.

The other one Institution is:

- I. The Coimbatore District Jubilee Tuberculosis Sanatorium, Perundurai.

The Sanatorium of Perundurai received annual grants from the government. The Government TB Institute, Egmore, was well equipped with X-ray and laboratory facilities and about ten to twelve thousand cases were examined in this clinic annually.⁶ The total number of patients treated for tuberculosis in the medical institutions was 1,00,005 as against 88,697 in 1947; 1760 of these cases ended fatally as compared with 1443 deaths in the previous year. A scheme for BCG vaccination against tuberculosis was started in 1947 in Madanapalle town (AP).⁷ In 1949, the number of TB cases treated in hospitals was 1,71,234 as against 1,20,009. It compared with the previous year, there was a very large increased in the number of cases under category of pulmonary tuberculosis in the district of Salem.⁸

Tuberculosis Institutions in the State

In 1951, in consultation with the Director of Public Health and the Director of Medical Services, Madras submitted proposals for a pilot scheme of community control of tuberculosis with the TB Institute, Egmore, as the headquarters.⁹ The TB Institute in Egmore was worked for anti-tuberculosis. Emergency cases were treated in the General Hospital that housed a TB ward of 20 beds under the administration of the Director of Government TB Institute and Clinics. The Madras Provincial Welfare Fund donated the mass radiography equipment to the institute in 1951. The mass X-raying of selected groups of people like industrial workers, college students and general public was carried out. A modern clinic was built in Temple Gardens, Rayapettah, and started functioning in 1951.¹⁰ The Tuberculosis Institute, Madras, was the centre for anti-tuberculosis work and catered to public with diagnosis treatment and preventive measures. It was also a teaching centre.¹¹

The TB institutions in the state came under the control of the Medical Department. The staff of the public health department carried out propaganda work through leaflets and presentations on the prevention of TB. The government approved the introduction of BCG vaccination on a mass scale by establishing a Central Administration Unit with six field teams to carry out tuberculin testing and BCG vaccination for non-reactors, covering a population of about one crore in the first instance in the course of the next 5 to 6 years. This scheme was inaugurated in the Coimbatore district and was extended to other areas in the state.¹² The Madras University and Government of Madras gave offered a diploma course on tuberculosis and the Tuberculosis Institute, Madras, functioned as a training centre for students training for the postgraduate course in Tuberculosis and Public Health. The two courses of training, namely the Tuberculosis Diseases Diploma (TDD) course and the university diploma course, provided specialized training to the medical staff in Madras. But the number of practitioners who took advantage of this course was very few. The Institute undertook the diagnosis and treatment of these that were diagnosed as suffering from pulmonary TB among certain age groups and occupational groups. The institute carried out domiciliary service in 1954, and visited 2638 houses examining 1601 contacts. Of these, 250 were detected to suffer from pulmonary TB. BCG vaccination provided as part of the anti-tuberculosis programme. During the year, 63,520 persons were tuberculin-tested, of whom 17,758 were negative and 15,674 were protected by BCG vaccination. The tuberculosis clinics attached to the four regional hospitals, viz., Government Royapetta Hospital, Government General Hospital, Government Standly Hospital and Kasturba Gandhi Hospital for Women and Children, Madras.¹³

Preventive Care of Tuberculosis

Tuberculosis was not a registrable cause of death in rural areas. Deaths from pulmonary tuberculosis were separately registered in the municipalities. In 1952, there were 6747 deaths from TB (at the rate of 0.94 deaths per 1000 people) as compared with 7227 deaths in 1951 (1.05 per 1000). High mortality rates were recorded from the municipalities of Palani (2.65), Melapalayam (1.95), Palayamkottai (1.77), Periyakulam (1.73) and Kancheepuram (1.71). The cases treated for TB in the state during 1948–1952 are shown in Table 1.

Table 1: Number of cases treated for TB during 1948–1952

Year	Pulmonary TB	Non-pulmonary TB	Total Treated
1948	72,961	27,094	100,055
1949	79,934	40,075	120,009
1950	94,708	72,788	167,496
1951	106,498	64,736	171,234
1952	126,118	82,647	208,765

The control of TB through curative and preventive medical care was under the Director of Medical Services. The Director of the Tuberculosis Institute at Egmore oversaw the preventive care of contacts of open cases of TB attended to by the state TB clinics in the city. BCG vaccination campaign was confined to Madras city. Two medical officers and the health visitors provided preventive care. They visited homes of the open cases of pulmonary TB and advised the patients and their relatives about the methods of segregation and disposal of sputum of patients and other hygienic measures. Given below is a summary of the visits:

Contacts	3,750
Contacts completely investigated	1,699
Contacts diagnosed to have TB	205.

The medical officers and health visitors of the four TB Clinics had done their survey work as 'Contact'. The statement of work done at the four TB clinics are given below:

House visits	10,617
Contacts of open cases	8,693
Tubercular cases traced among contacts	359

The mass X-ray examination of various groups of people, mainly from industrial workers, groups of people in various institutions like Children Aid Society, Vigilance Home, Civil Asylum, Madras City Police, Madras Fire Service, Indian Air force were tested. X-ray was taken for 11,143 persons of whom 2648 persons were diagnosed to have pulmonary tuberculosis. A large number of TB cases was detected by mass radiography.

The Director of Tuberculosis Institute, Egmore, organized the BCG vaccination campaign in the State through three BCG vaccination teams, one of the Madras Corporation and

two of the government. Mass X-ray survey and BCG vaccination for non-reactors of Montoux test were conducted for the students of Women's Christian College. A conference was held at New Delhi among administrative officers of BCG campaign and the Directors of Public Health of the states in December 1952 and another meeting of the Central Health Council at Hyderabad regarding the methods for popularizing and pushing on BCG vaccination work in the state in 1953.¹⁴

The curative and preventive medical care for TB continued to be under the medical department; thereafter the proposal to transfer the same to the Public Health department was started mass BCG vaccination work in the state in November 1954. As many as 46,023 old and new cases were attended to out of which 12,758 cases were treated, 3,556 cases were diagnosis a suffering from TB. The diagnosis and treatment of these cases were carried out by the Tuberculosis Institute, Egmore. The most affected age group was 16–35 years in the low-income group. Four clinics situated in the city hospitals were jointly run by the government and the corporation of Madras. These clinics operated with one medical officer and two health visitors to work in the line. The four clinics examined 19,710 cases, out of which 6,488 were found to be TB. The Madras City Tuberculosis Association provided financial assistance to 39 poor patients on the advice of the clinics. The Institute trained students for TB treatment among medical colleges particularly B.S.S.c. (Bachelor of Sanitary Science courses), T.D.D course, and Health Visitors and Student Orientation course. TB was tested in all school children and contacts of cases and BCG vaccination of non-reactors were also carried out: 63,250 cases were tuberculosis-tested and 15,674 were vaccinated. Mass X-ray campaign conducted in institutions such as colleges, firms, and police and among labourers in companies was undertaken. A total of 19,340 cases were X-rayed and out of them 1,384 were suspected to be affected with TB and considered for further investigation. TB was tested, 843 cases were reported and they were thoroughly examined. Out of them, 36 were found to be active TB patients detected by mass miniature radiography.

Bacillus of Calmette and Guerin

Bacillus of Calmette and Guerin is often used against highly virulent TB bacilli. More than 10 million inoculations have been carried out all over the world between 1921 and 1949. It is not necessary to administer the vaccine to persons already infected with TB bacilli revealed by a positive Tuberculin test always preceded BCG vaccination in any individual except infants at birth and only those who react negatively were administered the vaccine.

The Government of India was aware that the preparation of the vaccine, which is absolutely innocuous, required a special technique and careful control. They therefore restricted its production to a single laboratory at the King Institute of Preventive Medicine and Research, Guindy (Chennai), by a specialist trained in Europe. The original strain of the bovine tubercle bacilli that was provided by Pasteur Institute, Paris, and that had been used with such remarkable safety all over the world is the one used in this laboratory also. By reducing the incidence of TB cases, the number of open cases which act as centres for spread of infection would be greatly reduced. This is a great objective and achievement in the public health control of tuberculosis. The effects of this strategy could be seen well within a decade. The Government of India heeded to the advice of leading experts in these subjects both in India and outside. They planned the entire scheme with the greatest sense of responsibility and the desire to effectively and quickly control the spread of TB in India. BCG is not the only weapon with which TB was to be fought but also the improvement in nutrition, better housing and education of public still remained important. The high death rates, which were about 200 per 100,000 of the population in most Indian cities for increasing the general resistance of the population as well as for the isolation of the open cases, were poor but B.C.G. Vaccination was most useful weapon to health workers for preventing.¹⁵

Mass Vaccination Campaign

In 1949, the BCG campaign was started in the state. Furthermore, four additional tuberculosis clinics were opened in four different hospitals. The government approved the introduction of BCG vaccination on a mass scale in the state, by establishing a Central Administrative Unit at Madras in September 1954. The Central Administrative Unit consisted of

a supervising public health officer, a publicity officer and six field teams, each composed of one assistant surgeon and six health inspectors to carry out tuberculin test and BCG vaccination for non-reactors all over the state, to cover a population of one crore falling within the age group of 1–25 years. On 14 November 1954, the BCG vaccination scheme was inaugurated in Coimbatore. This work was completed on 25 December 1954. This scheme became a great success. Table 2 shows the data of the work carried out in this campaign.

Table 2: BCG vaccination during November–December 1954

Place	Period	Population	Total tested	Total read	% of read to tested	Positive results	% of positive to read	Vaccinated cases
Coimbatore Municipality (Urban)	15–20 Nov. 1954	197,755	210,814	183,711	87.1	110,344	60	73,215
Coimbatore (Rural)	29 Nov. to 25 Dec. 1954	300,000	230,077	192,875	83.8	95,983	49.7	95,328

Fourteen teams participated in the campaign (4 from Mysore, 4 from the Travancore–Cochin State and 6 from Madras). The six Madras teams worked during December received praise from Dr. Mahler, Senior BCG Adviser, Government of India. The Government ordered that all district headquarters stations and their belt areas up to a radius of 5–6 miles should be taken up for BCG vaccination first, followed by all municipalities and finally rural areas. The plan was to complete mass vaccination in all district headquarters towns and belt areas and then proceed on a district basis. Necessary equipment for the scheme, such as station wagons, vaccination outfits, sterilizers, public address equipment and film projectors were sponsored by the UNICEF.¹⁶

In March 1958, the Madras BCG vaccination campaign completed covering the rural areas and municipal towns (other than district headquarters) of Salem district. By mid-March

1958, the office and field teams moved to the North Arcot district and covered the taluks of Chengam, Thiruvannamalai, Tiruppattur, Polur and Gudiyatham. Then the Ramanathapuram district was taken up. The government approved an additional unit consisting of four teams which commenced work in the district of South Arcot in June 1958. Work was completed in the taluks of Viruddhachalam, Gingee, Tirukkoyilur and Kallakurichi.¹⁷ The sanatorium provided pre- and post-treatment for patients before admission and after discharge. The contacts were examined for early diagnosis of tuberculosis. Mass radiography was also used in the detection of early cases of pulmonary TB in organized groups.¹⁸ The medical officers and the health visitors visited 1,464 houses in 1959 and detected 1,029 pulmonary cases among the contacts. Leaflets and posters were distributed by the Public Health Staff in the villages and advised those afflicted with the disease to take prompt treatment in medical institutions. The BCG units campaigned in Ramanathapuram, South Arcot, Thanjavur and Madurai districts. In 1959, 765,863 persons were tuberculin-tested and 214,558 were vaccinated. There was some anti-propaganda against the campaign by certain sections of the people in the Thanjavur district. This was responded with an active and intensive educational campaign by the BCG staff not only through the distribution of leaflets and pamphlets on BCG but also by conducting group discussions with the people, particularly teachers, panchayat members, etc.: 2,786 cinema shows were conducted, 670 meetings were held, 11,308 talks were delivered and 7 exhibitions were organized in Madurai and Tiruchirappalli districts. The field teams moved into the districts of Tirunelveli and Kanyakumari in 1960 carrying out 17,145 talks, 717 meetings and 1,578 film shows and 2 exhibitions. There was a decrease in the death rate from 1959 to 1960: 2,865 deaths due to TB (a death rate of 0.44) in 1960 as against 3,069 at 0.51 in 1959. High death rates due to pulmonary TB were recorded in the towns of Kodaikanal (5.5), Periyakulam (2.7), Madurai (1.3) and Salem (1.3).¹⁹ BCG vaccination campaign in the rural areas and municipal towns of Coimbatore district and in the taluks of Salem, Attur, Rasipuram, Namakkal, Tiruchengode, Hosur, Omalur and Dharmapuri was completed and work was started in Krishnagiri and Harur Taluks.²⁰

The following scheme was contemplated under the Second Five-Year Plan (1956–1961):

- i) Intensification of the BCG vaccination programme

- ii) Establishment of well-equipped and adequately staffed TB clinics in district headquarters hospitals
- iii) Isolation of advanced cases of tuberculosis
- iv) Provision of an after-care and rehabilitation centre for treated tuberculosis patients.

BCG Vaccination Campaign

In March 1961, the first round of vaccination was completed and the number of persons tested for BCG was 5,406,871 and 1,740,912 were vaccinated. In April 1961 the second round was started with two units covering Tirunelveli and Nilgiris districts followed by Salem and Coimbatore districts. By the end of 1961, the campaign was again started in Gobichettipalayam, Bhavani, Erode and Avanasai taluks. 1,180,317 persons were tuberculin-tested and 306,842 persons were vaccinated with BCG. The units also educated the people about tuberculosis. In municipal areas, 2,955 deaths (death rates 0.52) from pulmonary tuberculosis were recorded in 1961. Deaths recorded in 1960 were 2,865 (0.44).²¹

Educational initiative was also intensified: 31,850 talks were delivered, 635 meetings were held, 746 film shows were exhibited and 2 exhibitions were conducted. A total of 12,85,758 persons were tuberculin-tested and 357,134 persons were vaccinated. In 1961, 3,243 deaths (death rates 0.55) from pulmonary TB were recorded in municipal areas. The following mortality rates recorded: Madras 0.42 (deaths 2,428), Salem 1.21 (6,994), Madurai 0.61 (3,526), Tiruchirappalli 0.69 (3,988), Vellore 1.24 (7,167) and Tuticorin 1.02 (5,895), respectively. These six towns accounted for nearly 54 per cent of the total deaths due to pulmonary TB in all municipal areas.²² In 1963, Unit I completed its work on the BCG vaccination campaign in the South Arcot district, and started work in Thanjavur. Unit II carried out door-to-door campaign in Ambur municipality, with the active co-operation of Bethesda Hospital and in the areas mostly inhabited by Muslims in Vellore municipality. In 1963, 10,81,891 persons were tuberculin-tested and 3,61,316 persons were BCG-vaccinated.²³ This campaign was successfully completed in Thanjavur district and moved to Tiruchirappalli district. Four BCG teams of Unit II were attached to district TB centres of Madras, Vellore, Thanjavur and Ootacamund, respectively. The BCG team of Unit I was attached to the district TB centre at Ramanathapuram. In 1965, 663,113

persons were tuberculin-tested and 193,520 were vaccinated. They carried out active and intensive educational campaign. One hundred eighty meetings and 270 film shows were conducted in 209 taluks in the State.²⁴

Sanatorium for Rehabilitation

In 1957–1958, the government approved upgraded and additional buildings for TB clinics in the then Erskine Hospital, Madurai, at a cost of INR 1,38,000, Government Headquarters Hospitals, Coimbatore, at a cost of INR 1,41,000, and Thanjavur at a cost of INR 50,000. The government approved the proposal for the construction of a tuberculosis ward with 30 beds in the Government Headquarters Hospital, Tiruchirappalli, at a total cost of INR 78,000 under the second five-year plan. It provided about 140 isolation beds in Madras City and 60 isolation beds near Madurai. The corporation TB Hospital at Otteri was brought under the state government and the hospital was expanded with 140 isolation beds.

A new tuberculosis sanatorium was constructed at Austinpatti near Madurai with sixty isolation beds. An already functioning after-care and rehabilitation centre in the TB sanatorium, Tambaram, which can take care of 45 cured cases, continued to be under medical supervision. The accommodation available was not adequate and a proposal was made to expand the facilities. The government also launched suitable cottage industries like watch repairing, basket making, paper bag making etc. for the rehabilitation of the cured patients. The construction of an additional hostel for 55 ex-patients and other subsidiary buildings was estimated at INR 2.25 lakhs.²⁵

Tuberculosis Control Programme

Tuberculosis Control Programme was taken up as a national programme with the aim to reduce infection as expeditiously as possible by finding all infection cases and providing them with effective treatment as well as providing preventive BCG vaccination to children. The National Tuberculosis Control Programme was a programme fully integrated with the existing health service. The National Tuberculosis Control Programme functioned as part of the district TB programme. Its objectives were to detect and treat a maximum number of TB patients

amongst the out-patients attending health institutions with symptoms and to offer protection against TB by giving prophylactic BCG vaccination in a systematic way.

To this end, a comprehensive TB services programme, known as the district TB programme, was launched. The district TB programme was implemented in all the districts of Tamil Nadu. In Tamil Nadu, estimated TB cases in the state were about 7.5 lakhs. As on 31 March 1970, about 65,675 TB patients took domiciliary treatment in various district TB centres and subcentres in Tamil Nadu. Under preventive care, BCG team administered BCG vaccination to all the eligible population in the 0–20 age group in each district, thus offering protection against TB. These teams also covered all the schools starting from primary schools and provided BCG vaccination to the students. So far, 38,87,706 people had been given BCG vaccination in Tamil Nadu by BCG teams after they were integrated with the district TB programme i.e. after 1964. Prior to that 30,91,806 people were offered BCG vaccination under the mass BCG vaccination programme. So in all 69,79,512 BCG vaccination had been given in Tamil Nadu.²⁶

Table 3: provides data on the achievements of the district TB Programme in Tamil Nadu during 1977–1978,²⁷ 1979–1980²⁸ and 1981–1982.²⁹

Sl. No.	Examination/Treatment	1977–1978	1979–1980	1981–1982
1.	X-Ray chest examination	1,57,938	2,11,162	2,49,297
2.	Sputum examination	1,06,267	1,44,383	1,62,038
3.	Pulmonary TB cases under treatment	54,700	52,700	70,794
4.	Sputum positive cases among the pulmonary TB cases	11,120	12,643	15,018
5.	BCG vaccination provided	11,56,669	15,45,742	13,38,230

The TB Control Programme has been in force in Tamil Nadu since 1963. Under the Programme District TB centres were established in all the districts in Tamil Nadu to provide free diagnosis and treatment of TB. All government hospitals, government dispensaries and primary health centres take part in this exercise in Tamil Nadu. As part of the TB control programme, BCG vaccination scheme is implemented with 23 BCG Teams. These teams have been attached to the district TB centres. The BCG teams take up each and every village moving door to door to give BCG vaccination to the eligible population, anyone in the 0–20 years age group. The district

TB officers and the BCG Surveillance Team periodically supervise the working of the BCG Teams.

Tuberculosis Control Scheme

In 1972, it was estimated that there were 7.4 lakhs cases of TB in Tamil Nadu. Under the district TB Programme, 4.7 lakhs cases of TB were diagnosed and treated. The objective of the TB control scheme was to diagnose and treat as many TB cases as possible and thus prevent transmission of infection and also to protect infants, children and adults through prophylactic BCG vaccination in a systematic manner. The TB control scheme was implemented in the Madras City and in all the then 13 districts. The district TB programme was functioning through the primary health centres, government hospitals (at the taluk level), panchayat union dispensaries, etc. and arranged free diagnostic and treatment facilities. The district TB officer oversaw the operations. There were two TB publicity units in Tamil Nadu with headquarters at Madras and Madurai. These units helped the BCG teams in their door-to-door campaigns through advanced publicity and propaganda and also by way of film shows on tuberculosis.³⁰

The percentage of deaths from TB is still high in India. The economically advanced countries of the world have improved the social and economic conditions of their people. India faces problems such as population increase and their focus on cities, resulting in overcrowding and poor housing conditions, food shortage, and thereby malnutrition. These two dangerous conditions are likely to further increase the incidence of TB. The existing facilities for detection, isolation and treatment is inadequate with a lack of trained personnel doctors. TB treatment has to a large extent become the job of a specialist surgeon. The shortage of trained staff and necessary to increase the standard of TB work now prevailing in many countries, travelling fellowships had made available from the WHO.

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