Chapter: Three

DISEASE ECOLOGY IN INDIA: AN HISTORICAL PERSPECTIVE

"To be a member of any human community is to situate oneself with regards to one’s past."

Eric Hobsbawm

3.1 Introduction

The centuries between the fifteenth and the nineteenth witnessed an era of expanding empires by the European powers and a growing resistance against them. The knowledge of the ground realities which enabled this expansion came from the discipline of Geography - commonly a subject that deals with the distribution of phenomena including people and resources on the earth’s surface. Geography is often considered as a discipline that has served those in power than those who need basic recourse. It was in this background that the new knowledge of ‘geography’ based on unchallenged naval capacity was used by the Europeans to expand their empire across the globe. The intention of this expansion was nothing but the accumulation of wealth and the occupation, or rather exploitation of the so called ‘unclaimed’ land full of mineral and other resources. There were unintended consequences as well ranging from cultural amalgamation and the flow of tropical disease to Europe. Among the unintended consequences of development was the creation of disease network, which spanned the world. Like the trading network, disease network too was first put in place by the Portuguese.

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The expansion of empire through trade relations and other coercive and subversive methods that included economic, political and military means continued and were called imperialism. Imperialism was a complex ideology, which had widespread intellectual, cultural and technical expression in the era of European world supremacy rather than a mere set of economic, political and military phenomena. There were different kinds of justifications for the imperial rule right from cultural supremacy to technological advancements. The spread of western medicine is one such justification for imperial rule.

By the closing years of the nineteenth century, medicine had become a tool of demonstration of European superiority in terms of political, technical and military power. The very nature of late nineteenth-century medicine contributed to this far-reaching medical interventionism. A Eurocentric historiography has depicted disease as one of the great problems Europeans had to overcome in securing their mastery of the wider world. The major campaign in the colonies against sleeping sickness, plague, cholera, yellow fever and malaria during the period between 1890 and the First World War strengthen this argument. However, it was the internal contradiction of capitalism between the pursuit of labour efficiency and the pursuit of profit that impelled European colonial regimes and the commercial and industrial enterprises working under them towards their greater involvement in indigenous health care. Virchow rightly claimed that politics was ‘nothing but medicine on a grand scale’.

Disease was a potent factor in the European conceptualization of indigenous society. The hazards and depredations of disease were conceptualized as an

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4 ibid.
established part of a hostile and yet untamed tropical environment. Africa, Asia and the Americas were all seen to have their fatal and incapacitating diseases and only through the superior knowledge and skill of the European medicine it was thought possible to bring those under control.⁶

Here is an attempt to analyse the nature of the sense of the past and to trace the changes and transformation with regard to conceptualization of tuberculosis and its therapeutic measures in society especially in Indian society. India was under imperial rule for more than three centuries. There has been a plethora of studies on various diseases and their causations at different points of time by different schools of historians. Simultaneously, ‘enormous efforts’ have been reported even by the colonial government to curb the menace of certain diseases like plague and syphilis at specific junctures of history. But one finds little on the part of the government or on the part of people or charitable societies when it comes to tuberculosis until the mid twentieth century despite tuberculosis being as old as the human civilization. The real nature of the disease could be identified only at the dawn of the 20th century, when it had already declined in the western society. The reasons for the decline of tuberculosis in the west are multifarious ranging from nutritional improvement of people to improvement and implementation of public health⁷.

Unfortunately for humanity, tuberculosis inspite of being contagious and communicable does not have the dramatic character of acute infectious diseases like cholera, smallpox and plague which are usually associated with India in the public mind.

3.2 Diseases in Indian History

Disease construction varies with the cultural understanding of the symptoms and the human-nature relationship. Similarly, disease risk is also said to vary in relation to culture. Modern medicine started with the identification of tubercle bacillus that caused tuberculosis and the discovery of a tiny living organism that caused Cholera by Robert Koch (1843-1910). Disease was subsequently conceptualized as a distinct, discrete and a disjunctive entity that existed within individual human bodies.

The common conception about the epidemic diseases like cholera, small-pox, venereal-disease, plague, tuberculosis etc., was that they started with the initiation of agriculture in a given area and when a sizeable number of people settled there. In the Old World, settled agriculture began between 10,000 BC and 9,000 BC and subsequently the diseases. The time schedule positioning the evolution and appearance of Old World diseases fits nicely with the chronology of agricultural development. The theory, however, does not explain why these diseases (except for Tuberculosis) failed to develop in the new world.

Another aspect of the conception about diseases is the power relation between groups in a society. The distribution of power in a society decides the accessibility of the resources and the political process and other institutions for the common mass. It is the power relation between a dominant few and the dominated many that impacted

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on the epidemics in the colonies like India.\textsuperscript{10} Obviously, it was the rulers who determined the official responses to the disease threat.\textsuperscript{11}

### 3.2.1 Disease in India

Ancient Indian society had a rich literary tradition from the Vedic times of writing about disease and its cure. The earliest Sanskrit documents relevant to medicine are the \textit{Rig Veda} (1500 B.C.) and the \textit{Ayur Veda} (700 B.C.). It has been established from these sources that Indian medicine was strongest in surgery. The doctors still refer to the Indian method of rhinoplasty – the method of turning down a flap of skin from the forehead. When we study the reasons behind their supremacy in such techniques it comes to light that infidelity in a wife was punished in ancient India by cutting off their nose and doctors devised this particular flap operation for the repair of this mutilation.\textsuperscript{12} Walker also points out that Indians excelled in surgery but were week in the base of surgery i.e. anatomy. In the \textit{Ayur Veda} there was a description of the vascular system which strongly suggests that Doctors of this period in India anticipated Harvey’s discovery of circulation of blood.\textsuperscript{13} The relationship between dying of rats and occurrence of plague was observed by physicians of this period, similarly they were aware about the role of mosquitoes in the causation of malaria. The first reference of tuberculosis as \textit{Raj Yakshma} is noticed during this period itself. The tradition continued with the writings of Charaka and Susruta (about 400 A.D.). Walker considers Susruta a surgeon who describes nearly a hundred

\textsuperscript{10} For details see, S. Watts (1999) op. Cit.
\textsuperscript{11} ibid.
\textsuperscript{12} K. Walker (1955) “\textit{The Story of Medicine}”, OUP, New York, pp. 28-29.
\textsuperscript{13} ibid.
different surgical instruments used by himself and his colleagues. He was probably the earliest who mentions of Malaria and gave an excellent clinical description of malaria and goes on to attribute it to the bite of mosquitoes.

Indian society played down the importance of healing in spite of having knowledge about different diseases and various therapeutic methods for them. The importance of nirvana and the uselessness of the body were highlighted in the Post-Vedic texts. There were few gods / goddess that can be associated with that of the healing. The importance of Charaka and Susruta remained in the text only; the great Dhanvantari was never worshiped, though the tradition had about eighty million divine entities. In the post Vedic period, Buddha gave the concept of healing to society but the practitioners of medicine in India were denigrated from the caste hierarchy on the belief that they touch the unholy part or matter that exists due to the rage of god. Other religious traditions in the subcontinent too had medical men of individual brilliance but not in he institutionalized form or medicine or medical training. In the twentieth century initially the British relied on the traditional knowledge of disease and medicine. The latter period saw the expansion of western medicine among the elite, and the lower ranks of the society were left on largely ignored indigenous medicine.

Indian statistics of morbidity and mortality was hardly considered adequate owing to two reasons. The first reason for the inaccuracy was that a large majority of the people of India died without any kind of medical attendance. The report of Medical Officer in 1899 quotes Dr. Simpson the late Health Officer of Calcutta who

recorded that at least 50 percent of the mortality occurred without medical attendance of any kind.\textsuperscript{17} The second reason was identified as erroneous method of data collection. In 1947, the then Medical Advisor to the Secretary of state for India Lt. General Sir Bennett Hance said that the “Indian statistics of morbidity and mortality are notoriously inaccurate, the method of their collection is archaic and the margin of error consequently very large”.\textsuperscript{18} Still the available statistics can be an indicator of the gravity of a particular disease as all of them are equally erroneous. Spatial distribution also gets reflected if the data from different regions is equally erroneous. It may not be comparable with other countries where data collection is very accurate. Knowing that the data about morbidity is highly underestimated, these data may not be a true representative of the suffering of the people.

The nature and magnitude of death from tuberculosis and malaria was far more in excess than even by the most shocking outbreaks of cholera, plague or smallpox. The death incidence of malaria was higher than that of tuberculosis. One eighth of the population i.e. fifty million people of the sub-continent were reported suffering from malaria and ratio between reported death and the reported cases was 1:50. While, for tuberculosis the ratio between reported death and the reported cases was 1:5. It can be inferred that about two million five hundred thousand open cases of tuberculosis existed in India at any one time. Dr. Hance compared the annual death from these two diseases with that of the death during the Bengal famine of 1943 and noticed that,

when we consider that the Bengal famine of 1943, which shocked and horrified the world, and for the mitigation of which the charitable minded

\textsuperscript{17} Dr. Simpson (1897), quoted in Home/ Medical- A / No. 95 / October 1899 / National Archive of India (NAI)/ New Delhi.

\textsuperscript{18} B. Hance (1947) in an address to the Common Wealth and Empire: Health and Tuberculosis Conference, NAPT, London.
public all over the world subscribed vast sum of money, was responsible for an increase of the death rate of seven hundred and eighty thousand, that is only 78 percent of the annual death rate from malaria and 150 percent of the annual death rate from tuberculosis. 

The problem remained that the epidemics like cholera, plague or small-pox could attract both official and public attention speedily, while the steady damage done by the two diseases – malaria and tuberculosis passed virtually unnoticed.

3.3 Conception of Tuberculosis

Meachen, a consulting physician for tuberculosis at the Southend Municipal Hospital and also the tuberculosis officer at Essex in 1936 quotes Sir William Osler, “the student who dates his knowledge of tuberculosis from Koch may have a very correct but a very incomplete appreciation of the subject”. Nevertheless, it was Robert Koch who revolutionised the fight against tuberculosis. His first contribution was his announcement at a meeting of ‘Berlin Physiological Society’ at Germany where he claimed to establish the cause of tuberculosis i.e. the discovery of tubercle bacillus though; he was not the first to talk about the tubercle. The second phenomenon was his announcement in 1890, when he claimed to produce a substance first called ‘lymph’ and afterward ‘tuberculin’, which was expected to provide a ‘scientific cure of the disease’. There is intense debate on the validity of Koch’s claim about the discovery of tubercle bacilli for the first time. Dubos questions the claim and points out that it was way back in 1722 in London when Benjamin Marten

21 Franciscus Sylvius of Leyden (1614-1672) was first to use the term tubercle, for details see footnote 34.
suggested that a minute living creature is behind the symptoms associated with tuberculosis. He quoted Marten,

...promote some other peculiar, latent or essential cause which I suppose to be joined with them. the original and essential cause then which some content themselves to call a vicious Disposition of the Juices, others a Salt Acrimony, other a strange Ferment, others a Malignant Humour, may possibly be some certain species of Animalculae or wonderfully minute living creatures that by their peculiar shape or disagreeable parts are inimicable to our Nature; but, however, capable of subsisting in our Juices and Vessels.23

Marten’s claim did not get currency because of the fact that the eighteenth century England was terribly unreceptive of the contagious theory of phthisis. His book was not ignored by the contemporary physicians. His theory of contagion was rather dubbed as unsound and was forgotten. The same could only be rediscovered in 1911. It was again Villemin, who tried to establish the germ theory of disease and performed different tests in various laboratories. His theory was tested by a group of physicians in London and they also did not dismiss the theory. Koch could convince the world community about the nature of disease and he has been considered as a demigod across the world. Dubos said that Villemin suffered much in his pride as his work was contumiously ignored. He further stated:

He (Villemin) becomes the true discoverer who establishes the truth: and the sign of the truth is the general acceptance. ...in science the credit goes to the man who convinces the world, not to the man to whom the idea first occurred.24

Despite the establishment of the germ theory of disease for tuberculosis and the ‘real cause’, the physicians remained doubtful about the future of the disease and its cure. It was only after 1944, when streptomycin was produced and chemotherapy

24 Ibid
formally started, that scientific cure for tuberculosis was said to be available. In 1936 Meachen quoted Sir James Kingston Fowler who remarked that no one can tell "when the struggle against tuberculosis began or when it will end".25 Meachen stated,

...it is both helpful and advisable in order to obtain a true perspective of things as they are to look back to first groupings after truth to pick up the little bits of knowledge here and there and then piece them together until some sort of a picture is visible which ultimately becomes clearer, through never perfectly transparent.26

Even in the mid 20th century professionals agreed that tuberculosis remained the greatest destroyer of mankind in the prime of life inspite of all advances in diagnosis and treatment.27 Tuberculosis that was referred to as "captain of these men of death" in the seventeenth century and as "White Plague" in the nineteenth century, began to decline in many countries mainly in the west from the mid to late the 1800s.

Tuberculosis which has now been established as a disease associated with infection by *Mycobacterium Tuberculosis* in which modules (tubercles) occur in the tissues of various parts of the body has a long history. The earliest record of tuberculosis can be found in a book on China by Hall where he states that ‘there are descriptions of lung cough and lung fever, which was probably tuberculosis or ‘laoping’ as far back as 2698 B.C.28 The history of tuberculosis dates back to Babylonia where traces of it were found in the remains and the bones of Egyptian Mummies.29 Hippocrates, the ancient Greek Physician made many clinical observations upon pulmonary tuberculosis. Hippocrates called attention towards the so-called

26 ibid
28 Quoted in Meachen Op. Cit
‘consumptive type’ i.e. ‘Phthisis’ which involves diminution or shrinking of the body following incurable ulcers of the lungs and accompanied with a small fever. The term ‘Phthisis’ that continued to be used till the third decade of 20th century in medical literature, had its origin in the Greek language and meant wasting. The derivation of the word phthisis is from

\[ \phi \theta i \nu \sigma i \zeta = \text{to consume, but some think} \]
\[ \phi \theta v e i \nu = \text{to spit.} \]

According to Hippocrates tuberculosis is caused by a small growth in the lungs. This primitive pathology held true until the 17th century, when Franciscus Sylvius of Leyden (1614-1672) used the term “tubercle” and stated that tubercle was often seen in the lungs in case of consumption. However, it was not differentiated from various forms of ulcers.

3.3.1 Tuberculosis in Indian Medical Traditions

Indian tradition of medicine and disease dates tuberculosis to the Vedic literature, probably the first written evidence in the world. In the *Rig Veda* there is a hymn on the cure of tuberculosis whilst Susruta in an ancient work on traditional medicine, the *Ayur Veda*, speaks in detail of the difficulty of curing the disease and even blames physicians for not treating it early. Tuberculosis was known as *Raj Yakshma* because the Moon – the king of stars got infected from this disease. Another explanation to call it *Raj Yakshma* was that if somebody got infected with tuberculosis then it required huge amount of dietary measure and rest that only a king

could afford since Susruta also advised walking, horse or carriage exercises and a good diet. The writings of Charaka and Susruta provided details about it and they called it ‘sosha’, the conception parallel to the Hippocratic tradition of identifying tuberculosis as ‘consumptive-type’. Tuberculosis remained a phenomenal disease in large cities of India during the 15th and 16th centuries. Hakims in Lucknow and Delhi called it ‘Sil’. The word Sil used in North India is an Arabic one and means to unsheathe, to unchain (metaphorically to unsheath from the life). The conception of Sil continued in the twentieth century and British physicians too referred to it as a word that was being used to describe the disease in vernacular. In the year 1932, Cummins pointed out in one of his reports that,

the very fact that the name applied to it throughout North India “Sil” is the same as that used to describe it is such distant countries as Egypt- where the Arabic word Sil to unsheathe, to unchain, suggest the formidable character of the consumption refer to – implies that the knowledge of tuberculosis was as widely spread as the lore of oriental medicine in the past.31

The popular term for tuberculosis was ‘Tap-i-diq’ because fever was one of the primary symptoms of the disease. The Greek conception of wasting due to disease, as it has been named Phthisis for the advanced cases of pulmonary tuberculosis, goes along with the Indian understanding of the disease as Kshaya Rog (wasting disease) by the Raj Vaidyas and Kavirajs. The word commonly used during the twentieth century was Consumption because it consumes the body.

It was in 1907 when a book named “Phthisis and its Cure” was published in India by K.C. Roy and Co, Monghyr for the sale in open market. The book provides the details of the disease, the ways in which one can get infected, details of the causes, manifestation and the treatment that can be taken. The publication of the book by an Indian publisher is noteworthy as it made people aware of the disease and its

31 Health/ No. 79/32 – H/ 1932/ NAI, New Delhi
treatment. More striking was the fact that the publisher was none other than the supplier of tuberculin – the lone medicine available for the 'scientific treatment of tuberculosis'.

There was indirect reference of the disease as a contagious disease in official records since 1894 when guidelines were issued to factories under Indian Factory Act 1881 amended by Act XI of 1891 for decongestion.\(^\text{32}\) Though in the Act there was a provision for specific needs of space for each individual worker and for proper ventilation, yet there was nothing in the Factory Act 1881 under which the factory occupiers 'could be compelled to move in this matter'.\(^\text{33}\) The annual reports of the Sanitary Commissioners and annual reports from civil hospitals and dispensaries, however, did not name phthisis or consumption or tuberculosis as a disease until 1902, though there was mention of deaths from diseases of the lungs.\(^\text{34}\) The report submitted to the government in 1902 from different states and presidencies on civil hospitals and dispensaries was for the year 1900. In the report, there was a mention of confinement cases, which were related to the lunatics and other contagious diseases specially venereal diseases which were on the rise. To control such diseases the government passed legislation for the extension of rule to prevent venereal diseases outside cantonment in the year 1899.\(^\text{35}\)

Only one province in India i.e. North- West Province tried to maintain the death record and there was a statistics of 1897 in which the causes of death was verified for 15,611 individuals and tubercle of lungs as a cause of death was

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\(^\text{32}\) Judicial / No. 133-140 / July 1894 / NAI, New Delhi.
\(^\text{33}\) Home / Medical –A / No. 99-1000 / September 1902/ NAI, New Delhi.
\(^\text{34}\) Home/ Sanitary / No. 82-142, July 1891 / NAI, New Delhi; Home/ Medical / No. 87-129 / July 1896 / NAI, New Delhi; Home/ Medical – A / no. 19-32 / January 1902 / NAI, New Delhi
\(^\text{35}\) Home / Sanitary-A / No. 207-214 / October 1899/ NAI, New Delhi
mentioned. However, the jail administration were more specific in this regard as their report submitted in the year 1903 did show the records giving an idea about the number of admissions and deaths due to tuberculosis / pulmonary phthisis since 1896 and from 1894 for one cellular jail i.e. Port Blair.

A representative from India, Dr. Alexander Crombie was sent to attend the Congress on Tuberculosis in Berlin which was held in May 1899 and was asked to submit a report on the congress and the situation in India. After his return from the congress he submitted a report entitled “Report on the Recent Congress on Tuberculosis at Berlin with Special Reference to the Prevalence and Prevention of the Disease in India” to the Government of India (GOI) in October 1899. This was probably the first official documentation on the cause, prevalence and prevention of tuberculosis in India. The nomination of Dr. Crombie as a representative from India to attend the congress in 1899 can be taken as a landmark in Indian history of tuberculosis. He could attend the congress as he was on vacation in Europe. The archival records showed that the then Viceroy of India had refused to send any medical man from India on the ground that one could not be spared from here. However, no specific reason for not sending a representative from India was given even to the reply to the crown. The response from Viceroy to the letter from the secretary to the Crown in Britain showed “…we could not spare any officer from India for tuberculosis conference and suggest you should select officers those now on leave in Europe ....”

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36 Sanitary Report of North-West Province for 1897, Home / Medical-A / No. 95 / October 1899/ NAI, New Delhi.
37 Home/ Port Blair – A / No. 19-21 / November 1903 / NAI, New Delhi.
38 Home/ Medical –A / No. 173-174/ March 1899/ NAI, New Delhi.
39 Home/ Medical –A / No. 173-174/ March 1899/ NAI, New Delhi.
The Crombie's Report accepts that tubercular disease is due to the presence and multiplication of the tubercle bacillus discovered by Dr. Robert Koch. The book entitled "Phthisis and its Cure", published by K.C. Roy and Co. accepted a similar explanation for the prevalence of the disease. Two later reports by Lankaster in 1916 and by Cummins in 1932 also go along with the arguments provided in 1899. The importance of good hygiene at the public place was highlighted in India in the early twentieth century. The sanitary report for the jails for 1903 accepted that, 'the incidence of tubercle of lungs and of pulmonary disease generally may be reduced to a minimum by proper measures of hygiene'.

The conception of the disease in India or for that matter anywhere in the world varied along some of the key variables. Important among these were the causation and association factors like climate, heredity, nature of disease i.e. contagious or non-contagious and so on.

3.3.2 Climate and the Disease

The association of disease with ecology in general and with climate in particular is not new either for the physicians or for the general readers. A deep association of the disease to a particular climate or at least increased or normal susceptibility to the disease can be traced back to the celebrated work of Hippocrates. Even the well-known explanation of tuberculosis through out Europe in the Romantic Age and the establishment of sanatoriums recognized the effect of climate on the

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40 Home/ Port Blair – A / No. 19-21 / November 1903 / NAI, New Delhi

41 Through out the Europe in 17th and early 18th century poets described the movement of tuberculous patients to a milder climate. There are heart-breaking stories about the death of various literary figures one such quoted by Dubos was of Keats and Shelley who symbolise the romantic and consumptive youths of the 19th century. Keats wrote to Godwin about his illness in a letter as "My health has been materially worse ... it is to my advantage that this malady is slow in nature and if one is sufficiently alive to its advances, is susceptible of cure from a warm climate." See for details Dubos, R. (1952)
disease. However, the first report of 1899 on tuberculosis in India did not highlight the importance or association of climate with the disease even while discussing the etiology of disease. It was in 1903 when probably for the first time in the official records, climatic conditions especially amount and duration of rainfall were considered as indirect factors contributing to the spread of the disease. Captain Waters, the offciating senior medical officer submitted his report on Phthisis, Malaria and other disease in the Port Blair jail and tried to link the poor living conditions specially overcrowding and poor or no ventilation in the jail with prevailing weather conditions that favoured the spread of phthisis in the jail between 1894 and 1903. His report from Port Blair jail under home department states:

In the Andaman there is rain for at least seven months of the year and during that period the prisoners and their clothing are very wet often. …there is no arrangement for drying these wet clothes and they have to be disposed off in the barracks. During the heavy rain every possible air inlet is closed by the convicts … become foul and deleterious to health. Thus all conditions of moisture, heat, and absence of direct sunlight required for the propagation of disease are present ….

After a decade of Captain Waters’s report on Port Blair Jail, Forster, professor of pathology at Lahore Medical College submitted a report entitled “The Etiology of Tubercle in the Punjab Jails” in June 1913. This report downplayed the role of environment whatever it may be and there was no mention of the climatic variable in this report. It was the time when writings across the world from Europe to America on tuberculosis did talk of the association of climate and tubercle bacilli and climate as a factor determining possible spread of the disease.

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42 Sanatorium treatment: The first criterion, which was to be consideration for the establishment of a sanatorium was the climate. A patient needs to be in milder climate to recoup from the disease. There are numerous incidences, examples and stories in the available literature right from the writings of 19th century when sanatorium treatment was started. For the details of these, see Lankaster (1916), Muthu (1922), Dubos, R. (1952) and many others.

43 Home/ Port Blair – A / No. 19-21 / November 1903 / NAI, New Delhi

44 Home/ Jail – B / No. 12 / June 1913/ NAI, New Delhi.
In India the celebrated report of Lankaster published in 1916 initiated a debate across the country among different state governments and the Government of India (GOI). Lankaster based his observations on a three year study in different parts of the country and considered climate as an important factor for the spread and existence of the disease. The report has devoted one full chapter on the relationship between climate and tuberculosis. The ‘good climate’ for the treatment of tuberculosis has been identified first followed by a discussion of the climate where prevalence rate is more. The report finds the Plateaus of India like high tableland of Rajputana, Central India, and Central Province, the Daccan and the Mysore plain with their low rainfall, low relative humidity, dry clear atmosphere and high mean temperature as more favourable regions for treatment. These regions also have a low prevalence rate. Climate of British Baluchistan, higher parts of Kashmir with Chitral and Gilgit, the hill country of Chota Nagpur, the highland of central Assam and Madras Presidency were also included in the category as favourable regions.45 One wonders how Lankaster whose report was otherwise seminal included Assam in the climatic type characterized by low rainfall, low relative humidity and dry clear atmosphere. Lankaster’s report further categorizes some regions as unfavourable for the treatment and favourable for the prevalence and spread of the disease and his list includes lower Assam and the delta of Bengal, the whole of the eastern and western Indo-Gangatic plain including whole of Punjab (excluding south-west corner), the North-West Frontier Province, Gujarat and the Malabar Coast. The rest of India was intermediate with respect to the conditions favouring spread of disease or treatment of disease.

45 A. Lankaster (1916) Report on Tuberculosis in India.
Interestingly some of the regions where incidence rate was low were identified as most favourable for treatment of the disease due to their location. He stated,

...by separating Chitral, Gilgit and the higher hills together with some of the isolated districts in the Central Provinces and Chota Nagpur which are inhabited by aboriginal tribes, into a “most favourable” group, in which the tubercular infection would seem not to have penetrated as yet to any very large extent; and at the other extreme by including in a “most unfavourable” group Lower Bengal, the southern parts of Bihar, the United Province except the north-east corner, the Central Punjab and the Kathiawar and Malabar coast.46

Climate was considered as the factor that determined the way of life47 of the common man and which favoured or hindered the spread of the disease. Lankaster highlighted that,

Temperature exerts its influence far more by effecting customs, habits and habitations of the people than by any direct effect upon the disease. There can be little doubt that the greatest cause of the comparative freedom in Central and Southern India is that a warm and equable climate favours an open air life and at least does not compel closed-up dwellings; while it is no less true that one outstanding reason of the great prevalence in the Punjab and the north is the general lack of ventilation since a more “closed-up” life is supposed to be necessitated by the extreme cold of the winter and to a less extent by the fierce heat of summer.48

However, Lankaster’s explanation for the prevalence of tuberculosis does not justify the incidence of the disease in two contrasting regions viz., the high altitude regions of Gilgit and other parts of the Himalayas has low incidence despite cold climate and the Malabar Coast and Kathiawar region which is coastal and desertic but has the high incidence. Still, his observation on the incidence and prevalence of tuberculosis was of great value as immediately after this report was submitted the

46 Lankaster (1916) op. cit.
47 Climate was held responsible for the customs and habits of the people like dressing sense, way of sleeping, keeping windows open or closed during night which is otherwise responsible to spread of disease in the region.
48 Lankaster (1916) op. cit
Government of India has asked the provincial governments to enquire at their level and report back to the Surgeon General.

The climatic explanation of prevalence and incidence did not continue for long and the report submitted by different committees in subsequent years ignored climate as a factor. Though, in Mysore when a committee was being constituted to look into the incidence of tuberculosis in the state, climate did figure as a factor to be investigated. Dr. Chandra Shekhar in 1927 undertook a survey tuberculosis to enquire of the conditions prevalent in the state and included “the climatic conditions of the localities which can be selected for carrying on different lines of treatment”.49

Tuberculosis was accepted as a widespread disease in India during late nineteenth and early twentieth centuries. The initial reports show that Europeans in India were equally susceptible to the disease. In contemporary Europe slandered treatment of tuberculosis was confinement in sanatoriums. This was the period when institutions to treat tuberculosis were started in India as well so the Europeans stationed in the colony, should not feel insecure. Appropriate climate was the pre-condition for opening up of any sanatorium for tuberculous patients. At present the debate on climate and its association to tuberculosis may seem irrelevant. But it was important during the first half of the 20th century in India and was extensively debated.

It was as early as in 1899, when the first report of any kind was submitted to the Indian government; there was an important acceptance that “tuberculosis is acquired not inherited”.50 By this time in the international arena it was an established fact that heredity acts as a disposition and not as a reason for tuberculosis. Crombie’s

49 Medical / 1927/ No. 43/ 1-5/ January 1928, State Archive of Karnataka, Bangalore.
50 Home / Medical-A / No. 95 / October 1899, NAI, New Delhi
report quotes Rudolf Virchow - the father of modern pathology, stating “it is never seen in the unborn baby though it may be implanted in the first few days after birth...it is inherited not as a disease but as a predisposition”.\textsuperscript{51} Koch and Virchow were of the opinion that a predisposition to tuberculosis could be inherited. Mukerjee in his book “Tuberculosis and its Early Diagnosis and Treatment” accepts that the effect of heredity on tuberculosis is not proved. It was post-natal contagion that was accountable for much larger number of cases. Infants if separated from tuberculous mothers at birth did not develop the disease.\textsuperscript{52} Though, Bhatia (1938) considered heredity as a cause for prevalence of tuberculosis in his book on unaini treatment of the disease.\textsuperscript{53}

### 3.3.4 Tuberculosis as Contagious Disease

The contagious nature of tuberculosis probably remained one of the most debated and contested issues that affected the treatment process and the measures to combat the menace. The fact was highlighted by Dubos. He states, as “the diverse theories concerning the nature and spreading of the distemper determined the ways in which society tried to protect itself”.\textsuperscript{54} It was in the mid 16\textsuperscript{th} century that a physician from Florentine, Hyeronymus Fracastorius clearly expressed the theory of contagion of tuberculosis. His theory received sufficient acceptance across Europe especially in Italy and Spain. Republic of Lucca became the first state that promulgated an anti-tuberculosis legislation in 1699. Many European States followed the suit, important

\textsuperscript{51} Home / Medical-A / No. 95 / October 1899, NAI, New Delhi


\textsuperscript{53} P. C. Bhatia (1938) “Unani Treatment for Tuberculosis”,

amongst were the administrative authorities of Italian cities and the governing bodies of Spain. In the year 1699, a group of physicians in Naples recommended regulations to the department of health and suggested that:

1. Physicians shall report a consumptive patient when ulcerian of the lungs has been established. Failure to do so entails a penalty of three hundred ducats for the first offense and banishment for ten years for repetition of it.

2. . . . Household goods not susceptible of contamination shall immediately be cleaned and those susceptible at once be burnt and destroyed.

3. The authorities themselves shall replaster the house from cellar to garret, carry away and burn the wooden doors and windows.

4. The poor sick shall at once be removed to a hospital ....

Apart from this, there were clear guidelines for keeping separate clothes for the consumptive patients and destroying the clothes after the death of any such patient. These regulations were enforced in some of the states across Europe before opposition against this theory developed in the 18th century. However, Italy continued to believe in the theory of contagion of tuberculosis as can be noted from different famous stories where the patients had to pay the cost of the house to the land-owner as it was to be destroyed according to the orders of the local governing bodies.

The contagious character of phthisis was known since the 16th century, but this view and the extreme measures against the disease died by late nineteenth century due to unsupportive character of British physicians. Dr. Benjamin Rush (1808) and Sir Thomas Watson (1836) the two leading physicians of the time in Britain did not believe in contagion. In England, this opinion was held even after the germ theory of disease was established in 1882 by Robert Koch. The British Medical Association in 1883 through collective investigation committee conducted a survey.

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56 For the details of these stories, see R. Dubos
on the contagious character of tuberculosis among doctors. Out of 1078 received replies, 778 answers (72 percent) were given in the negative. Only 261 (24 percent) physicians supported the contagion theory of tuberculosis, while 39 physicians (4 percent) remained doubtful.\cite{A.C. Muthu (1922) Op. Cit., p. 4.} This affected the British attitude towards the disease and the measures that were taken to control it in the United Kingdom as well as in the colonies. They did take punitive action against the spread of other infectious and contagious diseases like syphilis. They remained skeptical about taking such measures against tuberculosis even after establishment of the infectious nature of the disease. Dubos contributed this inaction to different factors and put on record that “...in part because certain physicians were not entirely convinced of the contagiousness of phthisis, in part because the strict application of the edicts was too costly, also because so many personal interests were involved”\cite{Dubos (1952) p. 30}.

Indian understanding of tuberculosis in the 19th and early 20th century was not dissimilar from that of the British understanding as policies in India whether economic, public or health were directly guided from England. This gets reflected in Crombie’s report of 1899, which put on record that,

Tuberculosis is a communicable disease, but it is not infectious in the popular sense of the world, in the sense in which scarlatina, mumps, and typhus fevers are infectious although the only scientific distinction is that the infectious material of tuberculosis is not so easily diffused as is that of the disease named.\cite{Home / Medical A / No. 95 / October 1899, NAI, New Delhi; emphasis added}

During the next decade or so, this view regarding the contagious nature of tuberculosis prevailed in India as is obvious from various archival records, despite British physicians accepting the infectious nature of disease as evident from one of

\begin{itemize}
\item \cite{A.C. Muthu (1922) Op. Cit., p. 4.}
\item \cite{Dubos (1952) p. 30}
\item \cite{Home / Medical A / No. 95 / October 1899, NAI, New Delhi; emphasis added}
\end{itemize}
the resolution of British Congress on Tuberculosis for the Prevention of Consumptive. The resolution passed at the general meeting on 27th July 1901 recorded “that tuberculous sputum is the main agent for the conveyance of the virus of tuberculosis from man to man, and that indiscriminate spitting should therefore be suppressed”.60 There were repeated request from annual meetings of the British Congress on Tuberculosis in this regards, yet the government did not make an active effort in combating the disease or making it compulsory to notify the incidence of tuberculosis as was done in case of other diseases like cholera or plague or syphilis. Bombay presidency initially used the compulsory notification of the disease but did not continue on the grounds that it incurred unnecessary economic burden on the municipality. The nature of the infection was more amongst Europeans in the initial phase (1840-1890), but later on native population was also equally affected. Despite higher incidence amongst European, the Government Of India did not do much because of its conception of the disease, as even in Britain it was only in 1913, when notification of all cases of phthisis was made mandatory.

While, some regarded tuberculosis as an infectious disease, others believed it to be the product of the prevailing social and economic conditions in a particular civilization. This brought face to face the views of two opposite schools – the ‘specific school’ and the ‘social school’. One group believed that the disease was caused by the conveyance of tubercle bacillus from one person to another through atmosphere or tuberculous food ... and the only way to eradicate it, was by destroying the source and channels of microbe dissemination. The other school maintained that it was mainly a disorder of nutrition, a diathesis brought about by poverty, worry and bad hygienic conditions and the only way to deal with it was by

60 Home / Medical-A / No. 96-103 / October 1901, NAI, New Delhi;
improving the social and economic conditions of the people. The proponents of this view-point include Muthu and his colleagues who maintained that tuberculosis was a disease of a civilization with vicious social and economic environment or poor and deranged nutrition in fact it is a deficiency disease affecting the body metabolism the condition of the blood and the vitality to the system. Muthu on the basis of his long experience in different sanatoria in India concluded that "the germ theory of tuberculosis has not satisfactorily explained all the problems of the disease. The presence of tubercle bacillus is not a decisive factor in the development of tuberculous process". He further stated that "we have made too much of microbes and too little of man in the causation of tuberculosis, which more truly lays within the body than outside. There is no valid proof that widespread prevalence of the disease is brought about in the majority of cases by its contagious character".

Both the schools had their own agenda to propagate. On the one hand the spread of western medical advancements was the reason while others were trying to take example from the west itself where disease had declined much before the establishment of the cause of tuberculosis. Whatever the reasons for the ongoing debate, the debate itself was one of the most important and remained so even now after decades of scientific treatment of the disease with high quality antibiotic. Even today, there are two schools of thought, one engaged in killing the bacillus and the other interested in better nutrition, improved public health facilities and decreasing tension in social life. The knowledge about tuberculosis in India can not be questioned. The only problem areas were the intervention by the state and the

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62 ibid
limitation of the colonial government in taking the appropriate measures to tackle the disease.

Between the contagious and constitutionalist schools there were a large body of moderates who believed that tubercle bacillus get implanted in a soil already weakened by poor and insanitary conditions. Muthu considered that the attitude of the moderates though plausible was a camouflage and tended to confuse the real issue. Tuberculosis was either a disease caused from beginning to end by the bacillus or was pre-eminently a disease that depended on the constitutional character of the human body. According to the first "the seed make soil – the constitutional diathesis is the result of bacterial infection", while according to the later the strumous or scrofulous diathesis was a primary condition which instead of being caused by the toxin of tuberculin bacillus was the result of bad living and poor nutrition. The two etiological factors called forth two divergent ways of treatment.

3.4 Pattern of Tuberculosis in Indian history

Most important among all the issues related to tuberculosis in India during the early 20th century was its extent in India as compared to that of Europe especially Britain. Initially it was considered that India had been in a comparatively better condition than Europe when it came to morbidity or mortality from tuberculosis. Crombie in his report of 1899 compared different types of tuberculosis and suggested that:

...they confirm the experience of all medical men in India, that in contrast with that of Europe disease of the chest and phthisis among them take quite a subordinate place in the sickness and mortality of India and that the

63 A.C. Muthu (1922) OP. Cit.
tubercular diseases of childhood are conspicuous in consequence of their rarity among the civil population.  

By the time the next report was submitted in the year 1916 and subsequently published in 1920, the disease had started taking a heavy toll and the Lankaster report doubted that whether tuberculosis in India was on a rise or was only a matter of non-reporting. Lankaster started his report writing by quoting a resolution at the second All-India Sanitary Conference held in Madras in 1912 as:

That statistics appear to show that this disease (tuberculosis) is rapidly increasing in India, especially in urban areas, but that is doubtful whether the increase is real or apparent only due to such causes as more accurate diagnosis and registration.  

An important revelation referred to by the proponent of the static theory of tuberculosis in India was that of Dr. Conwell, who in 1829 itself noted “it is a generally perceived error that the pulmonary tuberculosis in India is rare”. He attributed it to improved means of physical examination (Stethoscope). Though, the ‘new machine’ and the new kind of training had more to do with his argument than the reliability of the stethoscope in detection of tuberculosis. It is now known that this is not sufficient to establish the existence of tuberculosis per se. The mortality record of Christians in India, which remained static, provided evidence in support of the static theory of tuberculosis. Similar argument was advanced on the basis of statistics from Port Blair jail’s report for tuberculosis (1880 - 11%; 1900 - 10.9%; 1901 - 11.4). Analogous advice was given in the Annual meeting of British Congress on Tuberculosis for the ‘Prevention of Consumptive in London’ in 1902 where statistics from India was compared with that of Britain. The letter from the sanitary commissioner dated 2nd June 1902 to the Government Of India on the report on this

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64 Home / Medical-A / No. 95 / October 1899, NAI, New Delhi
congress noted “it was formerly believed that in India phthisis was a rare disease, but it has long been recognized that this belief was not correct, and there is now a body of opinion that the disease is common”. An issue of Indian Medical Gazette published in June 1902 also subscribed to a similar opinion and was quoted in the report by sanitary commissioner that “in the Philippines tuberculosis kills more people than malaria or dysentery. The same is true for India. Yet tuberculosis has been called ‘White Man’s Plague’ and till recently it was thought to be rare in India”. However, the report accepted that it would be naive to say that the disease in India was equally prevalent in the past as it noted that it would not be easy to determine whether increased facilities for observation accounted for this change or whether there is a real increase in the frequency of the disease. Both the factors equally contributed to the increased prevalence rate of tuberculosis in India. It was thought probable that many cases could be detected by the use of modern methods, “while in recent years the aggregation of susceptible subjects in factories and schools has almost certainly led to an actual increase in the incidence of the disease”.

The confidential correspondence between the Government Of India and the provincial governments indicate a contrasting picture as the Chief Commissioner of Delhi in his letter dated June 30th 1916 writes,

... The Chief Medical Officer Delhi considers that there is no reasonable ground for doubt as regards to the prevalence of the disease in the city and his own experience is that the disease is on the increase in India generally.

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66 Home / Medical-A / No. 99-100 / September 1902, NAI, New Delhi
67 ibid
68 ibid
69 Home/ Sanitary –A / No. 29-51 / October 1916 / NAI, New Delhi.
The jail (Port Blair) statistics, which helped in propagating the static theory of disease also suggested otherwise in different reports. The report of Captain Waters on the incidence of Malaria and phthisis in Port Blair jail stated something similar,

Pulmonary diseases in general and pulmonary phthisis in particular are maladies ... and an increased mortality from these causes demanded some explanations. In Port Blair both the general respiratory death rate and phthisis rate have much increased of late years, the death ... from phthisis is five times those of 1894, or in other words, in 1894 one death in 12 was due to pulmonary phthisis whilst in 1902 the phthisis deaths were 1 in 4 of the total.  

Different reports and studies and personal experiences of the doctors suggest that tuberculosis was not new to Indian soil but at the same time they all in one voice concede the fact that there has been virgin soil in India and especially Indian villages have remained safer places as far as the menace of tuberculosis is concerned. Lankaster in his study was clear on this when he reported that,

Whatever may be thought regarding the greater cities, tuberculosis in its various forms has spread to a large extent in many regions where formerly it was almost unknown, and it is becoming more and more prevalent in rural areas instead of being confined to the towns.

Cummins in his report on ‘Tuberculosis in India’ in 1931, remained suspicious about the prevalence rate of tuberculosis in India in the distant past. He reviewed the various doctor’s diaries and reported that

All in contact with the problem agree that the disease is increasing and, although accurate statistics are not available to furnish quantitative data, the evidences seem to point out the increase being rapid and progressive.

Muthu in his study of tuberculosis in Madras (now Chennai) recognized that while tuberculosis had been declining in Europe and the United States, it was slowly

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70 Home / P.B. A, November 1903, No. 19-21, NAI, New Delhi.
increasing in India during last fifty years. It was in 1938 when Major General Sprawson found Indian population more susceptible to tuberculosis than other population groups. He highlighted that “Indian population as a whole is more susceptible to tuberculosis than that of England and Scotland ... the disease runs acuter course – immunity in India is less”\(^{73}\). It was a kind of self-acceptance that India, at least some part of it, had been safe from the menace of tuberculosis, because if virgin population were exposed, it would have more susceptibility after exposure. The concept of virgin races was highlighted in the report by Lankaster as well,

> the inhabitants of virgin areas have shown a marked degree of hyper-susceptibility to tuberculosis when they have migrated to cities ....\(^{74}\)

He further stated that

> the impression left upon the mind after careful enquiry, with comparison of such statistics as are available, is that many large areas in India, which 40 years ago were particularly “virgin soil” to tuberculosis, have become considerably infected; that phthisis has been, for generations, probably centuries, a common disease of the large cities, yet even in these there has been considerable actual increase during the last forty years; that while in smaller towns and in the villages districts it was formerly comparatively rare or even absent, yet in these during a similar period, the disease has made its appearance and spread widely.\(^{75}\)

It meant that tuberculosis in India was on an increase between 1890 and 1930. Important references are found from different reports submitted from time to time to Government Of India including the landmark report on Tuberculosis by Dr. Lankaster (1912-1915) submitted in 1916 and by report of Cummins “Tuberculosis in India” submitted in 1931.


\(^{75}\) ibid
3.4.1 Spatial Distribution:

It is evident from the above analyses, that there was dissimilar rate of prevalence of tuberculosis in India during the period under consideration (1890-1950). The variation can be analyzed in terms of male-female, rural-urban, and above all across various provinces and amongst the people of various religions/faiths. The kind of statistical data that is required for spatio-temporal study is not available for the colonial period. However, the available statistics along with the personal experiences of the doctors does provide us some understanding of the spread of tuberculosis in this country.

There had been a remarkable degree of variation in the prevalence of consumption in different regions. There were some more or less isolated areas (the virgin lands) where tuberculosis appeared to be non-existent even as late as in 1915. Doctors from remote areas and other isolated regions were quite confident about the non-existence of the disease in the past and noted that they had watched the wide spread of disease with improved means of transportation and communication among different populous regions. Medical Officer of Gilgit and Chitral provided one such evidence and observed that,

I have received information as to the total absence of tuberculosis among the indigenous inhabitants of those regions inspite of housing conditions most favourable to spread of disease. ... cases were comparatively numerous amongst the Hindustanti troops and followers stationed there.\textsuperscript{76}

Two Medical Missionary workers in Srinagar who stayed for more than for 25 years there spoke of extreme rarity of both pulmonary and surgical tuberculosis in their early days of work. Evidences from hospital records in this region supported their statements. Qayyam, Assistant Political Agent of Khyber, who had spent quite a

\textsuperscript{76} Lankaster (1916) \textit{Op. Cit.}
considerable time of his life with Afridi tribes of Pathans of North West Frontier, was quoted as saying, "30 years ago consumption was unknown to them ... now its spread in villages is a matter of anxiety".\(^{77}\) Lankaster’s experience of 17 years (when he was posted in Peshawar) confirmed these kinds of observations and he added that there had been a great increase of the disease both in Peshawar city and in the districts around. Dease, M.D., who worked in Kumoan for 34 years during which the first 10 years he had worked as Medical Officer and in-charge of Government and missionary hospitals, stated that,

... in those years (when he was Medical Officer) tuberculosis was almost unknown in villages ... in numerous cases Christian students sent for training to Bareilly become infected and had to return to their village home and that in many villages where before disease was unknown it is now comparatively common.\(^{78}\)

Kennedy on the basis of 25 years of experience in the Chotanagpur region reported that, he

...was stuck by its extreme rarity in chotanagpur. ...watched the gradual and serious increase of consumption in Hazaribagh and the surrounding districts..., dating it the time when the climate began to have a reputation for being favourable for the treatment of disease. ...influx of cases from Calcutta and other parts of Bengal and in time the whole county side became infected.\(^{79}\)

Cases of healthy highlands of the Deccan and the Central India plain were also similar to that of Hazaribagh and Ranchi in Chotanagpur. Lankaster recognized this fact held that when the young people go from central India or the Deccan to work or study in Bombay or the Konkan they encounter a definite measure of risk of consumption.

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\(^{78}\) ibid

\(^{79}\) ibid
During the pre-independence period the morbidity statistics for general population was hardly available and one had to rely either on reports or available statistics for different groups which can be taken as representative under defined condition with known limitation. The death rate for the year 1896 among European soldiers serving in India has been reported as 86 per 10,000, while among women the death rate was higher and noticed as 120 per 10,000. \(^{80}\) Reports from the general population too suggest a similar situation with regards to the higher incidence among women. Lankaster in his report refers to the higher incidence among women in Calcutta as female death rate from phthisis was 33 per 10,000 while male rate was only 22. Further the report said that the phthisis death rate for Mohammedan women was 58 per 10,000 as against 30 for Hindus. \(^{81}\) Similar situation was reported from Lahore, where in each category female death rate from phthisis was higher.

**Table 3.1**

Deaths from Phthisis during year 1913

<table>
<thead>
<tr>
<th>Community</th>
<th>Mohammedans</th>
<th>Hindus</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Females</td>
<td>Male</td>
</tr>
<tr>
<td>Death from phthisis</td>
<td>150</td>
<td>299</td>
<td>59</td>
</tr>
</tbody>
</table>

Source: National Archive of India

Later reports of Cummins in 1932 too reported a similar situation. \(^{82}\) Inter-community comparisons suggest that ‘Eurasians are more affected than any other class, and next to them are low-class Mohammedans’. \(^{83}\) Comparison among different group within one set of economic strata can be a better representative for the inter-community differences in the prevalence.

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\(^{80}\) Home / Med-A/ October 1899, No.95.

\(^{81}\) Lankaster

\(^{82}\) S.L. Cummins, Health/ 1932, 79/32-H, NAI.

\(^{83}\) Birch, quoted in Crombie’s report on tuberculosis, Home / Med-A/ October 1899, No.95
Table 3.2
Reported phthisis among different regiments of British Army for the year 1896

<table>
<thead>
<tr>
<th>Regiment according to caste/religion</th>
<th>Admission rate to phthisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sikhs</td>
<td>25.6</td>
</tr>
<tr>
<td>Rajput</td>
<td>26.6</td>
</tr>
<tr>
<td>Mussalmans</td>
<td>41.1</td>
</tr>
<tr>
<td>Gurkhas</td>
<td>57.8</td>
</tr>
<tr>
<td>Dogras</td>
<td>66.5</td>
</tr>
<tr>
<td>Dogras and Sikhs</td>
<td>40.5</td>
</tr>
</tbody>
</table>

Source: National Archive of India

The data from various regiments, which were composed almost exclusively of certain races or castes, show that Dogras were more prone to infection than any other community followed by Gurkhas. Their vulnerability can be attributed to their previous residence in the virgin land with regard to tuberculous infections.

The spatial variation with regards to prevalence of tuberculosis among troops showed that Bengal was more vulnerable than other command areas. Interestingly, vulnerability of Punjab was next to Bengal though Sikhs had least risk of infection.

Table 3.3
Reported phthisis among different Commands of British Army for the year 1896

<table>
<thead>
<tr>
<th>Commands of British Army in India</th>
<th>Admission rate to phthisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bengal</td>
<td>37</td>
</tr>
<tr>
<td>Punjab</td>
<td>33</td>
</tr>
<tr>
<td>Madras</td>
<td>16</td>
</tr>
<tr>
<td>Bombay</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: National Archive of India, New Delhi

To understand the spatial variation with regards to prevalence of tuberculosis, available statistics from jails of different parts of the British Empire has been taken here. Available statistics also can be said to be an indication of the fact that tuberculosis was more prevalent among the prisoners than among troops. The relative prevalence of tuberculosis among different group of population is shown in Table 3.4.
Table 3.4
Relative prevalence of lung tuberculosis per 10,000 of population

<table>
<thead>
<tr>
<th>Group</th>
<th>European troops</th>
<th>Native troops</th>
<th>Prisoners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubercle death</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1896</td>
<td>6.4</td>
<td>6.5</td>
<td>30.7</td>
</tr>
<tr>
<td>1900</td>
<td>6.4</td>
<td>8.6</td>
<td>51.6</td>
</tr>
</tbody>
</table>

Source: Home / Med-A/ October 1899, No.95 and Home/ Medical – A/ September 1902/ No. 99-100, National Archive of India

It is evident from the table that while mortality rate from tuberculosis remained almost static for the European troops, it increased almost by 50 percent in the case of native troops and nearly 100 percent in the case of prisoners. The increase in case of prisoners is a reflection of increase of the disease in the general population which is also supported by the data from the statistics of native troops.

Jail statistics is preferred over military data as recruitment in the military was done only after a test available at that particular point of time. But admission to jails was from the general population. This statistics as well as some of the British reports do suggests that jail statistics is exaggerated as poor people who were reported for theft were put in the jails and their initial condition led them to infections in the jail. Still, the economic condition of the country was such that people did not have much to eat and were compelled to steal. Had well-to-do involved in capital accumulation through unfair means, this argument might not have been given by the machinery that were responsible for maintaining law and order in the country. Lt. Colonel Braide, I.G. Prison of Punjab in his report of 1913 when refuting the Foster’s argument was that jails were favourable places for tuberculous infection. He noted that ‘the increase of the disease amongst prisoners as a mere reflection of the increase in the free

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84 Tuberculin test of Gurkhas, details and weight and body measurement in the earlier period was to ascertain the physical conditions of the new entrants. Initially deteriorating physical conditions was a sign of early phthisis infection and was true to certain extent.
population and it was 45 percent for prisoners and 42 percent for general population.

Table 3.5
Ratio of death per 10,000 of population from Malaria, Dysentery, Tubercle and Pneumonia and from all causes of death during 1899

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Malaria</th>
<th>Dysentery</th>
<th>Tubercle</th>
<th>Pneumonia</th>
<th>Total of the four</th>
<th>Total of all causes</th>
<th>% of major causes to all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madras</td>
<td>12.2</td>
<td>13.4</td>
<td>25.0</td>
<td>11.0</td>
<td>61.6</td>
<td>167</td>
<td>38.99</td>
</tr>
<tr>
<td>Bombay</td>
<td>14.0</td>
<td>2.6</td>
<td>25.2</td>
<td>39</td>
<td>104.2</td>
<td>259</td>
<td>40.23</td>
</tr>
<tr>
<td>Bengal</td>
<td>20.0</td>
<td>5.9</td>
<td>47.5</td>
<td>28</td>
<td>154.5</td>
<td>232</td>
<td>66.59</td>
</tr>
<tr>
<td>NW province and Oudh</td>
<td>12</td>
<td>5.2</td>
<td>30.2</td>
<td>44</td>
<td>138.1</td>
<td>218</td>
<td>63.39</td>
</tr>
<tr>
<td>Punjab</td>
<td>8.3</td>
<td>25.7</td>
<td>31.5</td>
<td>52.2</td>
<td>117.7</td>
<td>191.2</td>
<td>60.36</td>
</tr>
<tr>
<td>Burma</td>
<td>3.3</td>
<td>45.9</td>
<td>32.8</td>
<td>13.8</td>
<td>100.8</td>
<td>184.4</td>
<td>54.66</td>
</tr>
<tr>
<td>Assam</td>
<td>100.6</td>
<td>53.7</td>
<td>13.4</td>
<td>33.5</td>
<td>201.2</td>
<td>496.3</td>
<td>40.54</td>
</tr>
<tr>
<td>Central Province</td>
<td>20.9</td>
<td>41.9</td>
<td>26.3</td>
<td>31.5</td>
<td>120.6</td>
<td>243.9</td>
<td>49.44</td>
</tr>
<tr>
<td>Berar</td>
<td>16.9</td>
<td>8.4</td>
<td>16.9</td>
<td>16.9</td>
<td>59.1</td>
<td>135.2</td>
<td>43.71</td>
</tr>
</tbody>
</table>

Source: Home / Jail- A / November, 1900. No. 20-37/ National Archive of India, New Delhi

The available statistics suggests that while a higher death rate was reported from Burma and Assam, a higher incidence of tuberculosis was noticed in Bengal (47.5). This was followed by Burma (32.8), Punjab (31.2) and North West province (30.2). In this report Bombay and Madras (25 per mille) comes after Central Province where slightly higher incidence (26.3 per mille) had been reported. Crombie’s report for the year 1899 suggests that in the North West province where data for verified deaths were available only 40 deaths out of 15,116 occurred due to tubercle of lungs. This comes out to be around 26 per 10,000, which is not in contradiction with the jail statistics of Waters’s report. Importantly enough Oudh is included in the Water’s report and that might have affected the data and a higher incidence of tuberculosis was reported. This comparison provides some kind of validity to the jail statistics which is presented here as representative for the general population. Besides, there

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85 Home / Jail- B/ 1913, Number 25/
were other kinds of statistics, too, for various regions and for different periods. Urban areas were considered quite vulnerable especially Calcutta and Bombay, as the report of 1902 noted while comparing the incidence in the two cities with that of English counties,

...no doubt registration is bad in Calcutta and it is not good in Bombay, but there is no reason to suppose the phthisis is seriously over-stated, and if it is not, the phthisis mortality in Calcutta is as high as in an average English county, while that in Bombay is nearly five times as great as in London, where, in 1898, phthisis was more fatal than in any other English County.  

Table 3.6
Total Mortality and Mortality from Phthisis in London, Calcutta and Bombay

<table>
<thead>
<tr>
<th>Cities</th>
<th>London</th>
<th>Calcutta</th>
<th>Bombay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>1898</td>
<td>1901</td>
<td></td>
</tr>
<tr>
<td>Total Mortality</td>
<td>183.3</td>
<td>377</td>
<td>755</td>
</tr>
<tr>
<td>Mortality from Phthisis</td>
<td>17.34</td>
<td>12</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: National Archive of India, New Delhi

The data shows that the total mortality was higher in the Indian cities than of the British Capital. The year for which data has been quoted and compared was the year when incidence was one of the lowest. It was recorded that in England and Wales the phthisis death rate was lowest in 1898 (13.17 per 10,000) except for the year 1896 when it was 13.07. 87 Crombie’s report despite highlighting the nature of tuberculosis in India did mention the lesser prevalence of the disease in the country and compared the figures for different cities with that of Germany – a country having a middle position in Europe with regards to the disease. Rarity of bovine tuberculosis in the country and the way of living of Indians that includes boiling of milk before use was cited as one reason to the lesser prevalence of the disease.

86 Home Medical – A/ September 1902/ No. 99-100/ NAI, New Delhi.
87 ibid
3.5 Combating Tuberculosis

The diverse theories concerning the nature and spread of the distemper determines the ways in which society tried to protect itself. In 1899, tuberculosis was identified as an epidemic in Britain and it was communicated to the viceroy in India. He has been requested to send a medical man for the forthcoming tuberculosis conference at London. The request was humbly denied on the ground that medical men in India were under scarcity and it would not be possible to send one for the tuberculosis conference and the crown could choose one from the medical men having vacation in Britain. The increase in the incidence of the disease in the colonies was also noticed.

Understanding of the causal factors responsible for the prevailing situation is perhaps paramount for any combative measures to be undertaken. Massive infection prevailing in India was generally attributed to the existing poverty and overcrowding, factors, which appears to have become more acute with, increase in population and the concentration of persons in the vicinity of the growing industrial centres. Indian population had an estimated increase of about 64 percent between 1872 and 1911. The high density of towns such as 465 persons per acre at Lahore, 563 persons in Cawnpore (now Kanpur) and overcrowding in certain areas of these towns were considered one of the conditions, which “favour in every possible way the spread of tuberculosis”.

Industrialization, too, was considered as a crucial factor that contributed to the spread of the disease. Apart from increasing concentration, it brought people from

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89 Home/ Medical –A / No. 173-174/ March 1899/ NAI, New Delhi.
villages to the urban centres, the place infected with bacilli. Once the people from the rural areas – the virgin land, got exposure to the tubercle bacillus they become more vulnerable. The fact has been considered by the physicians in the early 20th century and beautifully highlighted by Cummins who stated that,

...the effects of contact with a new industry on traditional life of an agricultural or pastoral community tend to be such as to emphasize the harmful aspect of poverty, to impose new standards and desire, to diminish simplicity and content and to produce the type of psychological background which favours misery and aggravates infective processes. \(^91\)

The process of diffusion of disease is equally affected and carried out by different means of transport and communication as diffusion of any innovation. The role of migration and return migration on such diffusion has been well established in different studies. Once health of the more potent people from the rural areas – the virgin land started deteriorating due to their exposure to the bacillus they in most cases tend to return to their villages because of their wish to die peacefully at the villages instead of dying near roaring mills in the cities. This brought the bacillus to the villages where native villagers got infected in due course. Cummins highlighted the study of Broughton and quoted that,

When a man lived in a comparatively isolated community not only was his range of ideas limited by that community but his manners and habits were also limited. He did what his fathers and grandfathers had done for hundred years before him ... ... once a man becomes a citizen of a vast city, many of these conditions must be cast aside. He can scarcely escape contamination ... ...men from all parts converse with him and he wakens to the fact that his narrow range of ideas must be widened if he is to maintain himself successfully in his new environment. When such a man returns to his village spread new ideas ... ...unfamiliar germs are more fatal than new ideas and the tubercle bacillus is especially more potent in virgin soil. \(^92\)

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\(^91\) Health, No. 79/32 – H, 1932, NAI, New Delhi.

\(^92\) ibid.
Other various factors including habitual and customary ones were often referred to as the cause for the infection and its spread. Later on the incidence of tuberculosis was reported more among women. The reason advanced for such situation was the 'purda system', however the infection seems to be transmitted to them from outside something like STDs (Sexually Transmitted Diseases) in recent times and the reasons often given were as unhygienic conditions and unawareness.

The bacillus was brought to the villages by different means like military stations, workers coming back from cities once infected and the sanatorium treatment. As shown by mortality among Christian-it seems that Christian were infected from mother-land as there was tuberculosis there in epidemic form. Due to their presence at different places especially at cantonment and at jails as officers other section of population got infected. Though the disease was not unknown to the country, the extent to which it spread has something to do with the exposure of common man to the Europeans through various means. The link can be simplified as follow European Christian – native Christian – native working population – native non-working population.

The attack on the menace remained limited to opening up of sanatorium and other preventive measures, as there was hardly any reliable medicine available for the treatment of the disease. Identification of bacillus and recognition that it is an infectious disease by Koch in 1882 remained a landmark in the combat of tuberculous disease in a scientific way. It was in 1840 that sanatorium treatment was initiated but actual operationalization of this therapeutic means started in 1890, when confinement of the patients was thought necessary and recuperation process required a 'change in weather'. Sanatorium treatment remained as a key to tuberculosis control programme throughout the world. In India, too, the initial governmental and charitable efforts
remained concentrated towards the opening of good sanatorium in different parts of
the country and their management in good hands.

Government of India under the British Empire realized the severity of the
disease and this can be noted in different records. Though, increasing incidence of
tuberculosis was reported to the government via various reports since 1899, by the
first decade of the twentieth century the vision of Government of India gained clarity.
In 1912, it addressed the provincial governments with clear vision to address the
menace. One such address to Madras government shows the attitude of the then
colonial government:

The attention of the government of India has been drawn to the prevalence of
tuberculous disease in India and to the great increase of phthisis in recent
years in the larger towns and cities, and it has been represented to them as
most desirable that well-equipped sanatoria should be established with as
little delay as possible in different parts of India for treatment of tuberculous
patients. The government of India are advised that the treatment of phthisis in
the early stage of the disease in sanatoria, in which patients can receive the
most minute daily attention of specially experienced physicians, affords the
only hope of cure, and they believe that many valuable lives will be saved if
suitable institutions for the treatment of tuberculous patients are established in this
country. 93

This kind of initiation was noticed often in the official correspondence of the
British Empire through out the last fifty years of its operation in India. After the
submission of the report by Crombie in 1899, the fact that Tuberculosis in India had
become widespread was almost an established fact and the professionals started
discussing the possible and probable combative measures. Back in Britain, the fight
against tuberculosis was at its best after achieving the expected lowering in the
incidence and now the life of British nationals in the colonies outside the motherland
had to be protected from tuberculosis by the Empire. The concerns in the paper and
reports did not get translated into action until the repeated reports and resolutions

93 Emphasis added; Home / Medical –A/ May 1912 / No. 40-64 / NAI, New Delhi.
from the British Congress in London exerted adequate pressure on the imperial
government to take action against the menace.

The first government sanatorium was opened only in the year 1917. Private
and missionary efforts prevented the situation to go completely out of hand. With
permission from the government but without any support from the government; the
first sanatorium in the country was opened at Dharampore near Shimla in 1909 with
keen interest of Mr. Malabari of Patiala. But, after his death the institution suffered
financial setback and by the year 1916 its future seemed bleak without more generous
support. Another important Sanatorium was established at Tilonia near Ajmer under
the auspices of the American Methodist Episcopal Mission, but this was limited for
girls of the school and orphanage run by the mission in north India. Another
missionary run sanatorium was established at Almora under the auspices of London
Missionary Society but again was limited for the Christian women only. Bhowali was
probably the first institution set up under provincial government’s auspices but built
and endowed mainly by private endowments to treat tuberculosis patients. Lankaster
compared it with the best of sanatoria in the west. Apart from these; there was one
sanatorium at Madanapalle in South India run by various missionary societies
working in Madras and another at Lonavla near Pune. Various other institutions were
in operation and were run either on complete philanthropic basis and some with an
aim that combined profit with philanthropy. In 1916 to a question in parliament, the
Government replied about the number of tuberculosis Sanatoria as follows: Madras –
1, Bombay – 3, U.P. - 2, Punjab – 1 (all private), other provinces – Nil. The report of
1932 showed that each province of India had one or more than one sanatorium.
However, knowing the size of the population of the country and the availability of
beds for common people in the existing sanatoria and the facility were highly inadequate and the well-known Lankaster report in 1916 noted that,

Sanatoria for the treatment of consumptive patients under open air conditions are at present few and far between in India, there being not more than one bed for about a million and a half of the population.\(^9^4\)

A majority of the beds were available on payment basis only, and there was no facility available in the form of open-air treatment for the people who were unable to pay the charges. There were a few seats available free of cost in Bhowali sanatorium, but the charges incurred on food and accessories while staying in the sanatorium were too costly and unaffordable for the common man. The argument for the limited number of beds for the common people was that; the beds remain vacant, as the common people did not come for the treatment, because either they were ignorant about the treatment or simply were unable to pay the charges of the sanatorium.

Early detection of the disease remained the key to the success of this kind of combative measures and this remained vital even after invention of antibiotics. The problem lied in the detection of the disease as the normal symptoms of 'Kshyarog' was fever and Indian traditional practice used to keep patients on fast during fever. So the prescribed treatment instead of being more nutritious used to become less notorious with more of physical exercise. There was virtually no cure for the late detection of the disease. Before invention of antibiotic, it depended more on the timely detection of the disease as noticed by almost all physicians including the practitioners of traditional medicines. In the year 1895 the invention of X-ray by Prof. Roentgen brought almost a revolution in the field of tuberculosis treatment. Early

detection of tuberculosis was now possible with the help of X-ray. The machine was
brought to India in the first decade of twentieth century at a laboratory in Madras and
later different tuberculosis hospitals started its use. The sputum test was known to the
professionals in the country and various laboratories used to perform the test and in
the later period under the governmental intervention it was done free of cost for the
patients referred to by the qualified doctors. But the question remained the facility
was limited for the patient who could afford to consult the private doctors at that time.

There was an obvious scepticism about the curability of the disease in
different reports. Crombie in 1899 accepted that the condition had become
'favourable than before' and 'cure' could be attained in clinical sense, i.e., local
symptoms would pass away and patients could resume the normal work. It was not
only in India but also even in Britain the practicing physicians were holding similar
views about pulmonary tuberculosis. Cox, central tuberculosis officer in the
Lancashire County, had hold similar views even in the year 1938 when he wrote that
about 63 percent among the definite cases of pulmonary tuberculosis succumbed to
death due to tuberculosis within five years from detection.95

For the treatment, a combination of measures was suggested that included
'open air treatment' along with dietetic, physical and appropriate therapeutic measures.
On dietetic measures different combinations of nutritious food ranging from milk, ghee
and meat to defined quantity of cereals were suggested by different agencies. Sastri in
1934 suggested Yogic treatment for the patients suffering from early and advance
stage of tuberculosis. Dr. Khambata in Amrit Bazar Patrika highlighted the use of
various forms of milk and open air and said that "... and the recent Bratachari

95 G.L. Cox reported in the Health / 1938/ 37 – 9/38 – H, NAI, New Delhi.
moments of songs and folk dances ought to go for a great way towards ameliorating the ravages".  

This kind of treatment continued with certain timely modification until the invention of streptomycin in 1944 that acted as powerful antibiotic against the bacillus. Tuberculosis as a disease was countered worldwide—with the help of preventive and public health measures rather than by medicine. If one takes a radical view advocated by McKeown and others, it was the increasing nutrition level that prevented the population from getting infected. When the disease was almost brought under control in Britain, the physician in 1938 accepted that,

While methods of diagnosis have improved, while new methods of treatment are tried and not without success on individuals, it still remains that the best result in anti-tuberculosis work obtain by detailed, unobtrusive and continually applied measures for the prevention of this disease.

Combative measures during pre-independence era initially had two dimensions namely: ‘public health’ and ‘ecological’ or ‘epidemiological’. But in the later period there had been inclusion of third dimension, which has now become more dominant if not the only one, that was ‘biomedical interventions’. Various kinds of inoculation and tuberculin testing were important along with certain forms of concoctions to be taken as medicine against tuberculosis.

Ecological or epidemiological aspect of disease talked about the living conditions of the patients where bacillus could grow faster or its spread could be checked with success. Crombie in his report advocated about the change in site of the patients and outlined various public health measures in detail that could be adopted to check the spread of the disease that included notification; isolation; application of

96 B.P. Khambata (1934) Amrit Bazar Patrika
tuberculin test for detection of bovine tuberculosis; amelioration of the conditions of life among poor; regular food supply; disinfection of sick room and removal, disinfection and destruction of expectoration. Later reports of the professionals and other did not divert much while suggesting the measures. However, the attitude of Government Of India as well as that of various provincial governments and their reaction(s) towards reports of various committees that were constituted to investigate the incidence of tuberculosis kept on changing.

In the year 1936, a note on Tuberculosis in India highlighted that “Tuberculosis in India is primarily a disease of defective urbanization”. This kind of understanding called for a special kind of intervention. The same report noted that,

No measures for the reduction of the incidence of Tuberculosis in India can hope to attain success unless the housing problem in these overcrowded insanitary portions of our town is dealt with. ...the most urgent need therefore is to stop the continued creation of future slums and this a matter for legislation

This was not the first report that highlighted the need for legislation for regulating the construction of buildings in the urban areas. In 1901, the resolution passed at the general meeting of the British Congress on Tuberculosis included such measures as,

That in the opinion of this congress, overcrowding, defective ventilation, damp and general insanitary conditions in the houses of the working classes diminish the chance of curing consumption and aid in predisposing to and spreading the disease.

The response to such resolutions by the Government Of India and provincial and local authorities needs attention to understand the reason why the so called

98 Health / 1936/ 44 – 14/36 – H/ NAI, New Delhi
99 ibid
100 Home/ Medical –A/ October, 1901, No. 96-103/ NAI, New Delhi
efficient state machinery failed on the front of public health grounds. There was a tendency to pass on the responsibility to the other subordinate authority that did not have the means and methods to implement the regulations. Municipalities in British India could work without having any by-laws but if they formulated any it needed the approval of the provincial and the central government. Whatever by-laws existed; they were inadequate and existed only on paper but could not be enforced in practice. One of the reasons for such a situation was highlighted as the ‘helplessness’ of the Chief Medical Officer of Health as he used to be on the mercy of the local authority. In Madras, the Chief Medical Officer was a government servant, but was unable to take the necessary action from a public health viewpoint. Secretary of state in India responded to the resolutions passed in Britain in a manner that can be taken as one way to approach the problem “a great many of those proposals are not possible of general adoption in India, ... adopted as the basis of the policy for the suppression of tubercular disease, and if little can at present be done in India, these resolutions will perhaps stimulate Superintendents of Jails and Civil Surgeons to renewed efforts on the lines indicated...".101

Public health measures required direct intervention from the government for almost all channels right from notification to implementation of building bylaws to check overcrowding in public space. Indians were aware about the fact that the formulation of bye-laws itself was bound to be ineffective unless the Government of India took direct interest in the implementation of such bye-laws to reduce overcrowding and end close streets and other such measures. S.K. Mullick’s appeal to the Governor General of India in the year 1918 regarding formulation and

101 Home/ Medical –A/ October, 1901, No. 96-103/ NAI, New Delhi
implementation of building bye-laws to reduce overcrowding was one among numerous such suggestion given to Government of India. He stated,

...has the energy and we know from his personal efforts in the crusade against Malaria, Hookworm disease that question of sanitation occupy his foremost thought .... We are oriental people and the man in the street understands the personality and the hookkum of the Lat Sahib far better than the promulgation of the best meant bye-laws of corporation.102

Despite this kind of appreciation of earlier work of the state, the government’s intervention in eradication of tuberculosis was not effective and there was a silent antagonism and sometime vociferous opposition to this. The letter from the Muslim Association, Peshawar was probably the most direct when it argued that,

The association apologize for remarking that had the present situation of increasing mortality occurred in any country in Europe it is a fact that the King and the Government of the country would naturally have felt extreme anxiety for their Nation and would have made immediate arrangement to meet with the requirements of the case. It is indeed a bad luck for the people of India that the present government treat them differently and not with the same degree of sympathy as they would in England even in a matter which concerns their life and death.103

These kinds of reports perhaps were not sufficient to motivate the government to take action despite the fact that in writing Government of India welcomed the suggestion regarding the efforts that could be taken up to combat the disease. The Governor General said in reply to one such letter from the State of Patiala that “... his Excellency (Viceroy) informed advice is always welcome to our council, and personally I have never lost time in following it”.104

The responses from different provincial governments to the suggestion on implementation of the bye-laws became more realistic by 1940. Central Advisory

103 K.S. Qazi, F. Ahmad Khan in 1931 through a letter to the chief secretary, NWF province, Health-B/ September 1931/ No. 365-366/ NAI, New Delhi.
104 Home/ Medical – B/ July 1912/ No. 2, NAI, New Delhi.
Board of Health in 1941 put up a note with regard to the effect of bad housing and over-crowding on tuberculosis to Government of India. Various provincial governments gave a positive reply regarding implementation of the bye-laws and highlighted the co-operation shown by government, local bodies and non-profitable organizations involved in tuberculosis control programme. Central province and Berar government in 1941 accepted the suggestion to implement the recommendation of Central Advisory Board of Health and stated that there is co-operation among Provincial Tuberculosis Association, Director of Public Health and Local Self-government Department. Punjab government proposed its new Municipal Act to empower municipal committees to limit the number of persons, who may occupy a house. Madras government, too, proposed enactment of the Madras Town Planning Act in 1920 to improve the sanitary conditions of the city.\footnote{Health / 1940/ 29-12/40 – H/ NAI, New Delhi}

Constitution of various anti-tuberculosis leagues and holding conferences at the national level throughout the country and provincial level seminars in different provinces played an important role in controlling the menace to certain extent at least with regards to spreading awareness among professionals. The first such league was the ‘consumptive home society’ of Bombay, which was responsible for the functioning of the first ever sanatorium in the country at Dharampore. The efforts remained confined mainly to philanthropy and the government on some or the other pretext denied or deferred the holding of such seminars despite allowing discussion on whether or not there should be a conference at national level in the national assembly. On March 7th 1927, Mr. Haroon Jaffer initiated a debate in the Council of State suggesting to the Governor General to take immediate steps to call a conference to discuss the question of the provision of Tuberculosis hospitals, sanatoria and
institutions for a comprehensive immediate action. The extract of the council debate
was circulated to all provinces and Public Health commissioner noted that

There is no question of research *per se* involved in the attack on Tuberculosis. . . . this is largely one concerned with the economic upliftment of the people. His original proposition for establishing a chain of sanatoria only meets small part of eh difficulties.\(^{106}\)

The basis of his opinion was negative reports from the provinces of Madras and Delhi and an indifferent report from Uttar Pradesh. The positive reports of other provinces with some remarkable suggestions like involving of social reformers in the eradication programme were ignored not without purpose.\(^{107}\) The Secretary in the department of Heath, Education and Land agreed with the view of the Public Health Commissioner and wrote that “a conference should be held this year only if His Excellency has decided to launch an appeal in connection with a Tuberculosis campaign; a conference and an appeal would go well together”.\(^{108}\) This was the opinion of the state when a conference was to be held in the country, but a contrasting report was found when the British Congress on Tuberculosis was to be held and it was noted that the Indian Princely States should be respectfully invited because they were ‘of very great support’ to the last Hygiene Congress.\(^{109}\)

### 3.6 Conclusion

The debate on the various conceptions of tuberculosis and the measures that were taken to combat the menace clearly indicate towards two diverging systems of health and medicine. The earlier identified division between ‘medicine of the species’

\(^{106}\) Health - B/ May 1928/ N0. 203-216/ NAI, New Delhi
\(^{107}\) ibid
\(^{108}\) ibid
\(^{109}\) Home/ Medical / July 1901, No. 97-108, NAI, New Delhi
and 'medicine of space' found to be prevailing.\textsuperscript{110} Medicine of species, which is concerned with the biomedical tradition and pertained to the strong emphasis in western medicine upon classifying diseases, diagnosing and treating patient and finding cures, was getting highlighted by the first few decades of twentieth century in India. While, medicine of social space that is concerned with preventive measures by improving the social, physical, and behavioural surroundings through interventions from governmental and civic bodies, remained confined only in the reports that were submitted to the then government.

- India was a colony of Britain during the period when Europe had experienced two separate developments: a) there was reduction in mortality and morbidity due to increase in the general level of nutrition; and, b) there was incidence of diseases in the temperate world of other ecological surroundings, the so-called 'tropical diseases', due to an increasing interaction between the tropical and temperate regions.

- The environment in India changed in all aspects in terms of physical environment as well as the social environment. The change in activities like agriculture and the crafts, which were located in villages to industry and trade, which started to be concentrated in the crowded cities, did have an impact on the 'disease ecology' in the country.

- Cases of tuberculosis were on the rise. There was also an increased visibility of combative measures along with high-echoed debates at various levels. The obvious debate regarding tuberculosis during the colonial period remained

centred around three themes, namely 'question of severity', 'the causative factors' and 'the possible combative measures'.

- The purity of data was thoroughly suspected by the professionals and the government representatives. However, there were little efforts to collect the data, which could be reliable and comparable across the regions that were under the control of the British Empire.

- There were efforts to generate some kind of records for the jails and the cantonments, which consisted of not more than 2 percent of the total population. Rest of the population probably did not count for the Empire as their listing was not done. No information is available that can be taken as a reference point for the morbidity of the general population.

- The transition from the indigenous to the western system of medicine was taking place simultaneously when there was an occurrence of the epidemics like cholera and plague. There were efforts, philanthropic or otherwise to combat such diseases. The debate concerning these diseases and related combative measures involved the medical, political and social spheres of society. However, it would be naïve to think that the entire social life or political spectrum or for that matter all medical men were involved in the process. The debate remained centred in the urban areas and the measures, especially the ones related to public health remained limited to urban centres.

- Tuberculosis, despite being epidemic in character did not attract the required attention in the public health debate or in the planning of combative measures. The cases were generally reported late. The cure was available only in the form of prevention and there was no cure for late detection.
• The evil travelled to the rural hinterland silently but severely and increasingly. The increasing movement of people from the rural areas to the urban centres for the new kinds of jobs and the enhancing communication of the rural hinterland with the urban centres played as a catalyst to the process. The desire of the sick to die at the birthplace also added to the ongoing spread.

• The combative measures that started with the establishment of sanatoria, too, facilitated the spread of the disease, by exposing the virgin land and the virgin people to the bacillus. The opening up of sanatoria in the favourable climate and approving locations brought the diseased to the so called favourable location for the treatment.

• The correspondence between the professionals and political circles showed that the ideas of exposure or the threat to infection was already there. At the time of opening of the first sanatorium at Dharampore, the medical officer of the area suggested that the institution should not be brought here, as the diseased people coming here for the treatment would become the cause of the infection to the innocent people living here.

• The suggested measures to combat tuberculosis included education about tuberculosis, defining working space for the factory workers (The Factory Act, 1894), checks on overcrowdings, clearing of the houses on dead end of the streets, checking indiscriminate spitting and seclusion of infected children from school and infected person in the army and prisons.

• These responsibilities, however, were passed on from one authority to another, like clearing of houses, and complying building by-laws were left to local bodies. In some of the cases, doctors were told to notify the disease. But,
when they asked from the state to hand over to them the sanitary powers for fruitful implementation of their proposals, it was not done. These measures, whether taken or suggested, were targeted efforts to control the spread of the bacillus and make people safe by restricting the exposure.

- The contrasting position of professionals regarding the incidence of the disease in different parts of the country is noticed. The general view among the professionals and the available evidence do suggest that there was an increase in the number of infected people across the country. The increase in the incidence was reported in India at a time when Europe had already witnessed a decline in the rate of infection and also in total infected cases. A similar trend was noticed in America. The fall in the phthisis was achieved much before tuberculin bacillus was discovered.

In India the cases of tuberculosis were on the rise as there were neither any serious public health efforts nor the economic condition of the mass was getting better inspite of surplus of revenue collected from agriculture in some of the years. The economic history of the late nineteenth century of the country suggests that there was a decline in the real income of the people and price of food-grains was escalating. The average income in real sense was going down. Report on an enquiry into working class of Bombay by Bombay Labour Office in 1923 highlighted that daily food-grain consumption of a common worker was lower than the level of food-grain consumption in the jails or even the consumption of cereals during famine.