

# Tuberculosis, Challenges and Status with Special Reference to Jammu and Kashmir: A Way Forward

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DOI: [10.36348/sjls.2022.v07i07.001](https://doi.org/10.36348/sjls.2022.v07i07.001)

| Received: 21.04.2022 | Accepted: 30.05.2022 | Published: 03.07.2022

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## Abstract

Tuberculosis (TB) is one of the most ancient disease of mankind and is one the ten major cause of mortality worldwide particularly in developing countries. It is an infectious disease caused by bacteria *Mycobacterium tuberculosis*. It usually affect the lungs but can also affect other organs of body. In spite of various measures taken to eliminate the TB by Govt .of India by 2025. The trend of TB cases and drug resistant cases in India is very disturbing .The article is compiled with the objective to study the present status and challenges in India with special reference to Jammu and Kashmir.

**Keywords:** Tuberculosis, India, Jammu and Kashmir, Drug resistant.

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## INTRODUCTION

Tuberculosis (TB) is a contagious disease that usually affects the lungs, though it can affect any other organ in the body [1]. It is caused by *Mycobacterium tuberculosis*. Most infections show no symptoms in such case it is known as latent tuberculosis [1]. It has been reported that around 10% of latent infections progress to active disease which if left untreated, kill about half of those affected [1].

This disease has existed since antiquity [2] The oldest unambiguous detected *M. tuberculosis* gives evidence of the disease in the remains of bison in Wyoming dated to around 17000 years ago [3]. However whether tuberculosis originated in bovines, then transferred to humans or whether both bovine and human tuberculosis diverged from a common ancestor remains unclear. It has been observed that genes of *M. Tuberculosis* complex (MTBC) in human did not acquire MTBC from animal during animal domestication, where as both strain of the tuberculosis bacteria share a common ancestor which has infected humans even before the Neolithic Revolution [4]. Skeletal remains shows some prehistoric humans (4000BC) had tuberculosis and researchers have found tubercular decay in the spines of Egyptian mummies dating from 3000 to 2400 BC [5]. Besides the genetic studies suggest the presence of TB in the Americans from

about AD100. Although Richard Martin established the pulmonary form associated with tuberculosis as a pathology in 1689. Benjamin Marten conjectured in 1720 that consumption were caused by microbes which were spread by people living in close proximity to each other. In 1819 Reve Laennec claimed that tubercles were the cause of pulmonary tuberculosis, whereas J.L. Schonlein first published the name tuberculosis [6] in 1832. In 1865 Jean Antonie Villemin demonstrated that tuberculosis could be transmitted, via inoculation, from humans to animals and among animals [7]. These findings were later on confirmed by John Burdon-Sanderson in 1867. The identification and description of bacillus causing tuberculosis was done by Robert Koch, *M. tuberculosis* on 24th of March 1882 for which he received the Nobel prize in Physiology or Medicine in 1905 for this discovery [9]. Koch did not believe that the cattle and human tuberculosis disease were similar, which delayed the recognition of infected milk as a source of infection. On 24th of March each year world Tuberculosis Day is observed, the anniversary of Koch's original scientific announcement.

The first genuine success in immunization was achieved by Albert Calmette and Camille Guerin against tuberculosis in 1906 using attenuated bovine strain tuberculosis. It was called bacille Calmette-Guerin (BCG). This vaccine was first used in humans in

1921 in France [10], later was used widely in US, Great Britain and Germany only after World War II [11]. Tuberculosis caused widespread public concern in the 19<sup>th</sup> and early 20<sup>th</sup> centuries as the disease became common among the urban poor. By 1918 TB still caused one in six deaths in France. After TB was determined to be contagious in the 1880s it was put on a notifiable disease list in Britain. Therefore campaigns started to stop people from spitting in public places, and poor people infected with the disease were “encouraged to enter sanatoria that resembled prison (The sanatoria for the middle and upper classes offered excellent care and constant medical attention [12]. The formation of Medical Research Council in Britain in 1913 focused on tuberculosis research.

During 1600 to 1800 the tuberculosis began to rise on peak level and results in nearly 25% of all deaths [13]. By 1950s mortality in Europe had decreased about 90% because of improvement in sanitation, vaccination and other public health measures began significantly reducing rates of TB even before the arrival of streptomycin and other antibiotics.

All the countries of the world and age groups are affected by TB, but in most cases (90%) in 2016 were adults. Of 90% almost 2/3 was accounted for by eight developing countries with India contributing 27% of 10.4 million cases [14]. In 2017 only 64% of the global estimated incident cases of TB were reported, the remaining 36% of missing cases were undiagnosed, untreated or unreported. These missing TB cases have generated much hype for the challenges they present in achieving the end TB strategy [15]. Many people with TB along with symptoms do not access to adequate initial diagnosis. In many countries TB diagnosis is still reliant on sputum microscopy, a test with known limitations. Because of the emergence of multidrug resistance tuberculosis (MDR-TB), surgery has been reintroduced for certain cases of TB infections. It involves the removal of infected chest cavities (Bullae) in the lungs to reduce the number of bacteria and to increase exposure of the remaining bacteria to antibiotic in the blood stream [16]. Wide spread misuse of antituberculosis drugs has also resulted in emergence of drug resistant TB [MDR-TB] and Extensively Drug Resistant TB (XDR-TB) globally. Indian contribute the highest number of MDR-TB cases in the world. Moreover it is difficult to diagnose MDR-TB and XDR-TB as compared to regular TB [17].

### Challenges

The effects of TB could be felt at the individual, family, society and country level. The TB patient community is compromised and make the patient susceptible to other disease as well as reduces the

life expectancy. Poor socioeconomic status and living conditions are considered as strong risk factors linked with latent tuberculosis infection in addition to malnourishment. As BCG vaccine is commonly available against tuberculosis. This vaccine offers some protection against this disease in childhood, but its protective effect wanes with age [18]. It has also been reported that latent TB is also becoming a major issue in aged population. The missing TB cases is another challenge in achieving the end TB strategy. Many people with TB symptoms or symptomless do not have access to adequate initial diagnosis. In India particularly major challenge to control TB includes poor primary health care infrastructure in rural areas of many states, unregulated private health care, lack of political will and mismanagement in administration. The invention of new drugs against the tuberculosis is also one of the reasons for the tuberculosis elimination obstruction. However these are yet to reach community, and access remains a major challenge for patients in low and middle income families. The main effect of TB on the family was loss of income of family due to which the family is slipped into poverty and their quality life is affected. It has also been observed that if the sole bread winner of the family contracts the disease than the family loses its only source of income and the family is forced to spend all its meager monetary resources in the treatment of the patient. Besides this the other family members are also at a higher risk of contracting this contagious disease. Also the social stigma attached to the disease cannot be ignored. The social reasons like overcrowding, congested cities due to urbanization, smoking and alcoholism is another cause of TB menace. The effect of the TB in the society is such that it affects the national economy due to decreased workforce and ultimately effect the GDP.

The other challenges that comes in the way of TB eradication programme includes the inadequate budgetary allocation for the same, lack of proper infrastructure, manpower and poor implementation of the programme. There is gap in the system to reach the target person i.e patient. The primary health system in the rural areas needs to be improved and problem of malnutrition is to be addressed. Another major challenge posed by Covid-19 pandemic from March 2020, as due to this pandemic less attention was given to TB by Government, NGOs and health department. Both these diseases are highly contagious, air borne and severely impact families and communities.

### States of Tuberculosis in India with special references to Jammu and Kashmir:

According to the latest data of 2021 by WHO an estimated incidence figure of 2590,000 million case. This is a rate of 188 per 1000 population [19].

**Indian State TB statistics**

| S. No | Name of states, UT                   | Population (lakhs) 2021 | TB patients infected in public sector |
|-------|--------------------------------------|-------------------------|---------------------------------------|
| 1.    | Andanom and Nocobar Island           | 4                       | 590                                   |
| 2.    | Andra Pradesh                        | 529                     | 90000                                 |
| 3.    | Arunachal Pradesh                    | 17                      | 3450                                  |
| 4.    | Assam                                | 355                     | 51100                                 |
| 5.    | Bihar                                | 1271                    | 90000                                 |
| 6.    | Chandigarh                           | 12                      | 6900                                  |
| 7.    | Chattisgarh                          | 305                     | 35000                                 |
| 8.    | Dadra and Nagar Haveli and Daman Diu | 8                       | 1450                                  |
| 9.    | Delhi                                | 193                     | 80000                                 |
| 10.   | Goa                                  | 16                      | 2400                                  |
| 11.   | Gujarat                              | 708                     | 128000                                |
| 12.   | Haryaana                             | 299                     | 60000                                 |
| 13.   | Himachal Pradesh                     | 76                      | 13500                                 |
| 14.   | Jammu and Kahsmir                    | 148                     | 10900                                 |
| 15.   | Jarkhand                             | 402                     | 43000                                 |
| 16.   | Karnatka                             | 724                     | 80000                                 |
| 17.   | Kerla                                | 346                     | 22000                                 |
| 18.   | Ladakh                               | 3                       | 460                                   |
| 19.   | Lakshdweep                           | 1                       | 20                                    |
| 20.   | Madhya Pradesh                       | 857                     | 150100                                |
| 21.   | Maharashtra                          | 1272                    | 160000                                |
| 22.   | Manipur                              | 32                      | 2500                                  |
| 23.   | Meghalaya                            | 37                      | 5250                                  |
| 24.   | Mizoram                              | 13                      | 3850                                  |
| 25.   | Nagaland                             | 21                      | 4250                                  |
| 26.   | Odhisa                               | 468                     | 55000                                 |
| 27.   | Poundicherry                         | 15                      | 4400                                  |
| 28.   | Punjab                               | 310                     | 52000                                 |
| 29.   | Rajasthan                            | 812                     | 152200                                |
| 30.   | Sikkim                               | 7                       | 1480                                  |
| 31.   | Tamil Naidu                          | 824                     | 90000                                 |
| 32.   | Tilanagna                            | 382                     | 49200                                 |
| 33.   | Tripura                              | 40                      | 3450                                  |
| 34.   | Uttar Pradesh                        | 236                     | 375000                                |
| 35.   | Uttrakhand                           | 118                     | 20300                                 |
| 36.   | West Bangal                          | 1009                    | 105000                                |

Information from TB facts.org

India being a developing nation is home to large number of impoverished individuals who are susceptible to developing severe TB infections such as miliary TB. The protection provided by BCG vaccine faded off within 10-20 years after childhood BCG immunization. The natural Tuberculosis elimination Programme (NTEP) which is the main government organization prepared national strategic plan (NSP) for TB elimination 2017-2025, which guides the national and state governments, civil society organization, development partners, international agencies, research institution, private sector etc. for this noble cause. The NSP was developed by the NTEP and World Health Organisation (WHO) during the joint monitoring mission conducted in 2019. The NSP 2017-2025 which takes lesson from the last NSP and put forward novel aggressive steps required to move India towards TB elimination [20]. This move of elimination TB by 2025,

however Covid-19 pandemic has adversely affecting the goal both directly and indirectly. To diminish the effect of COVID -19 pandemic crisscross TB, consistent practices are required to highlight the TB burden amidst the covid-19 pandemic while taking urgent steps such as (a) supporting and organizing innovative national and state level TB control programs. (b) minimising hospital visits to prevent nosocomial infections including covid-19 by promoting house visit and follow ups to ensure medication compliance. In this present situation integrating TB and covid-19 to augment India's health outreach is also recommended by collaborating with national STOP TB programme.

According to official data there is drastic decline TB in Jammu and Kashmir. In 2018 as many as 4,774 TB cases were in J & K. In 2019 it was down to 4080 and in 2021 the cases have gone down to 3000. As

per the report issued by the Ministry of Health and Family Welfare under the Government of India's National TB Elimination programme for the year 2021 the three district of Kashmir division i.e Kupwara, Anantanag and Pulwama have shown 60-80/ reduction in TB cases in the last five years and were awarded gold medals by the Central Government, whereas Udhampur district got bronze medal. According the data around 165 persons per 100000 are assessed to have medically treated tuberculosis .It was observed that prevalence of medically treated tuberculosis is slightly higher among women (175) than among men (154) and is higher in rural areas(187) than in urban areas(111) [21]. Budgam district in Jammu and Kashmir has recently been declared the country's first TB free district [22].

## CONCLUSION

In India TB is still one of the most commonly prevalent disease as far as mortality and morbidity is concerned. This is due to the fact of non reporting in the initial stage of infection or due to misdiagnosis and also by increasing the burden of drug resistant TB. The outbreak of Covid -19 pandemic also slows the pace of achieving the target .In spite of all this Govt.of India is making a lot of efforts to bring down this disease through revised plans and its implementation across the country .But there is long way to achieve a significant reduction in high incidence and prevalence of TB in India. Factors like poor infrastructure, lack of awareness and resources, increasing drug resistance cases (MDR-TB and XDR-TB), poor notification and overall negligence are the challenges. Being a contagious it can affect anyone. Poverty elimination, address to undernourishment problem education of masses and to eliminate the stigma attached with TB can help for a disease free future.

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