

# Strengthening the Delivery of Essential Services for Tuberculosis Care during the Ongoing Coronavirus Disease-2019 Pandemic

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## Abstract

The ongoing coronavirus disease-2019 (COVID-19) pandemic has changed the dynamics of the health sector. The purpose of the current review was to explore the relationship between COVID-19 and tuberculosis (TB), the impact of COVID-19 on TB, and identify the strategies that can be adapted to contain both infections effectively. An extensive search of all materials related to the topic was carried out on the PubMed search engine, and a total of 44 articles were selected based on their suitability with the current review objectives. Keywords used in the search include COVID-19 and tuberculosis in the title alone only. The findings of the report and research articles have reported that people with COVID-19 infection who have co-infection with TB are more likely to have poor outcomes, including death, compared with people who have only COVID-19 infection. Considering the public health magnitude of TB, we cannot undermine the importance of regular screening, preventive, diagnostic, and therapeutic activities that target TB disease, as it will save millions of lives. In conclusion, as we continue our fight against the COVID-19 pandemic, there is an immense need to maintain services directed toward the prevention and control of TB. The policymakers should explore all the options that will enable the implementation of joint strategies for the better containment of both the infections without compromising the safety of health professionals.

**Keywords:** Coronavirus disease-2019 pandemic, essential services, tuberculosis

## INTRODUCTION

The ongoing coronavirus disease-2019 (COVID-19) pandemic has changed the dynamics of the health sector, and with the emergence of novel mutant strains of the virus, the disease continues to endanger the lives of everyone.<sup>[1]</sup> The global estimates report that as of January 09, 2022, over 304 million confirmed cases and more than 5.4 million deaths have been attributed to the infection.<sup>[1]</sup> As the policymakers and stakeholders continue their battle against the novel viral infection, it becomes crucial to ensure that we do not ignore the delivery of other essential services.<sup>[2,3]</sup> This is important as any irregularities on our part will jeopardize all the progress that we have made so far and will push us off-target as we aim to move forward toward the attainment of sustainable development goals and universal health coverage.<sup>[2,3]</sup> The purpose of the current review was to explore the relationship between COVID-19 and tuberculosis (TB), the impact of

COVID-19 on TB, and identify the strategies that can be adapted to contain both infections effectively.

## METHODS

An extensive search of all materials related to the topic was carried out on the PubMed search engine. Relevant research articles focusing on COVID-19 and tuberculosis published in

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**How to cite this article:** Shrivastava SR, Shrivastava PS. Strengthening the delivery of essential services for tuberculosis care during the ongoing coronavirus disease-2019 pandemic. *Indian J Respir Care* 2022;11:101-5.

**Received:** 11-11-2021 **Revised:** 12-01-2022

**Accepted:** 16-01-2022 **Published:** 08-04-2022

### Access this article online

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DOI:  
10.4103/ijrc.ijrc\_159\_21

the period 2020 to 2021 were included in the review. A total of 48 studies similar to current study objectives were identified initially. Four were excluded (three due to unavailability of the complete version of the articles, and one article was excluded in the French language). Overall, 44 articles were selected based upon their suitability with the current review objectives and analyzed. Keywords used in the search include COVID-19 and tuberculosis in the title alone only (namely COVID-19 [ti]; COVID-19 [ti] AND tuberculosis [ti]; COVID-19 [ti] AND essential services [ti]; COVID-19 [ti] AND tuberculosis [ti] AND essential services [ti]; COVID-19 [ti] AND stigma [ti]; COVID-19 [ti] impact [ti] AND tuberculosis [ti]; COVID-19 [ti] telemedicine [ti] AND tuberculosis [ti]; and COVID-19 [ti] healthcare workers [ti]). The articles published in only English were included in the review [Figure 1]. The collected information is presented under the following subheadings, namely COVID-19 and Tuberculosis, Tuberculosis and risk of COVID-19, implications of COVID-19 on essential TB services, Suggested potential solutions, targeted actions for TB control during the ongoing pandemic, Safe workplace and patient care, and Additional considerations.

## CORONAVIRUS DISEASE-2019 AND TUBERCULOSIS

TB is another long-standing health concern that has accounted for the impairment in the quality of the lives of billions of people and has even claimed millions of lives. In fact, in 2020, a cumulative total of 10 million cases and 1.5 million deaths were reported worldwide in the year 2020.<sup>[4]</sup> The similarity between COVID-19 and TB is that both are transmitted via droplets and during close contact with the case of the disease and that patients of both infections tend to present with similar sorts of clinical manifestations (namely cough, difficulty in breathing, and fever). This calls for the need to go for population-centered, innovative strategies and combined action plans to control the spread of both infections.<sup>[5,6]</sup>

Like any other disease, even in the case of TB, routine prevention, control, diagnosis, and management activities have been affected due to the ongoing pandemic.<sup>[7]</sup> A significant decline in the notification of TB was reported in 2020 due to the restrictions imposed because of COVID-19 and the reallocation of available resources to contain the

pandemic.<sup>[4]</sup> Further, it has been anticipated that due to the diagnosed patients' inability to access appropriate medications, an additional half a million confirmed cases of TB might lose the battle against the disease.<sup>[4]</sup> Moreover, a number of mathematical models have been employed as a part of various studies, of which one reported that in case COVID-19 pandemic accounted for one-fourth reduction in the number of TB cases detected; we will be witnessing more than 25% rise in the TB-related mortality rate, as reported in 2012.<sup>[8,9]</sup>

## TUBERCULOSIS AND RISK OF CORONAVIRUS DISEASE-2019

The findings of the report and research articles have reported that people with COVID-19 infection who have co-infection with TB are more likely to have poor outcomes, including death, compared with people who have only COVID-19 infection.<sup>[7,10]</sup> Further, it has also been reported that a history of TB in the past or a person with active TB infection tends to take longer to recover from the COVID-19 infection.<sup>[11]</sup> Moreover, considering that COVID-19 predominantly affects the lungs, there is a definite chance of poor outcomes among the patients whose lungs have been damaged in the past due to TB or some other lung disease.<sup>[7,11]</sup>

At the same time, both infections also share similar risk factors (namely diabetes or elderly population) for an unfavorable outcome.<sup>[12,13]</sup> However, regardless of all these attributes, it is quite essential that TB patients should continue with their anti-TB treatment during these pandemic times and strictly adhere to the preventive strategies (namely practice physical distancing, adhere to cough etiquettes, use a face mask, periodic handwashing, and avoiding unnecessary travels or going outside) recommended to not acquire the infection.<sup>[14,15]</sup> As the number of studies that have explored the presence of COVID-19 infection among TB patients is still less in number, we are still on the path of uncovering many crucial findings.<sup>[10-13]</sup>

## IMPLICATIONS OF CORONAVIRUS DISEASE-2019 ON ESSENTIAL TUBERCULOSIS SERVICES

We must understand that COVID-19 has emerged as a global public health emergency in the last couple of years, while TB has been affecting humankind for decades and continues to account for the loss of human lives and the massive burden on health-care delivery system.<sup>[16,17]</sup> Thus, we cannot undermine the importance of regular screening, preventive, diagnostic, and therapeutic activities that target TB disease, as it will save millions of lives.<sup>[17,18]</sup> The emergence of COVID-19 infection, the rapid pace with which it spreads to different parts of the globe, and the acute deaths attributed to the infection, compelled the public health authorities to take an unprecedented emergency response to contain the infection.<sup>[18,19]</sup> We can note that such a public health emergency

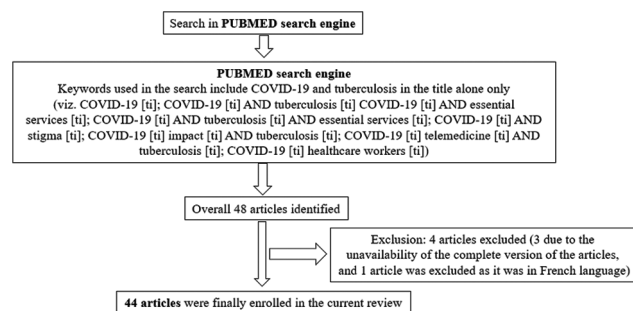


Figure 1: Flowchart for selection of research articles

response accounted for minimizing the impact of the infection, nevertheless in the process, we indirectly ignored the delivery of essential services, including those required for TB.<sup>[17-19]</sup>

Definite reports and evidence suggest that owing to the reallocation of human resources, the involvement of healthcare professionals in providing COVID-19 related care and support service accounted for significant disruption in the routine services.<sup>[19-21]</sup> These TB-related essential services include screening, diagnosis, initiation of treatment, the continuation of treatment, and various aspects of prevention, and interruptions are being reported in both developing and developed nations.<sup>[19-22]</sup> At this stage, we should also acknowledge that despite multiple strategies and initiatives, TB continues to have some social stigma among the minds of the general population.<sup>[4]</sup> The COVID-19 outbreak has also been linked with social stigma as it spreads by close contact, and thus once again, the stigma has also played its part in disrupting essential services of TB.<sup>[23-25]</sup>

## SUGGESTED POTENTIAL SOLUTIONS

The need of the hour is to adopt all measures to ensure that all the essential services required to contain TB infection are in place to benefit the general population.<sup>[6,26]</sup> Regardless of the nature of other public health emergencies, the health sector should have a plan to sustain these essential TB services.<sup>[26]</sup> In the current settings, it becomes crucial to execute services for prevention, diagnosis, and treatment for TB and COVID-19 infection simultaneously.<sup>[26,27]</sup> The services have to strengthen preventive measures to contain the spread of both infections in gatherings or health-care establishments. It can be accomplished by adhering to the standard infection prevention and control measures, including practicing cough etiquettes.<sup>[26-28]</sup>

As the diagnostic tools for both infections are different, it is the responsibility of the program managers to ensure that these are available and easily accessible to the general population, either free or at affordable costs.<sup>[27,28]</sup> The outcome of these diagnostic facilities can be enhanced by building a network among them and streamlining the ongoing activities. About the treatment of TB, as already mentioned, the standard treatment guidelines and drugs should be adhered to irrespective of the infection. Once again, it becomes the responsibility of the policymakers to maintain the supply and chain delivery system anticipating the number of TB cases.<sup>[27-32]</sup> There is a need to plan appropriately and monitor the procurement and supply of diagnostic tools and drugs for both infections without causing any interruption.<sup>[28,30,33]</sup>

As there is an augmented risk of acquiring COVID-19 infection while visiting health-care establishments, it becomes essential that adequate stocks of TB drugs are provided to patients to ensure the continuation of therapy at home.<sup>[7,27,34]</sup> Similar to other fields, there is ample scope for the employment of digital technologies, including telemedicine, to strengthen different aspects (such as information management, creating awareness, teleconsultation, and monitoring of directly observed treatment) of the TB program.<sup>[35]</sup> Further, the outreach workers

involved in contact tracing of COVID-19 can simultaneously do the same for TB and extend care, support, and rehabilitation services to the patients of both infections.<sup>[29-33]</sup> Finally, for better outcomes and to minimize the loss of human lives, it becomes an indispensable requirement to create a robust system and better financial support. Thus, policymakers and welfare donor agencies should support ongoing prevention, control, and research activities.<sup>[24,36,37]</sup>

## TARGETED ACTIONS FOR TUBERCULOSIS CONTROL DURING THE ONGOING PANDEMIC

To continue our progress and expedite the same to attain the set targets for TB, there is an immense need to take strategic steps and work in collaboration.<sup>[7]</sup> These actions have to begin at the policymakers' level, demonstrating their total commitment and initiating a multisectoral approach to contain the infection.<sup>[7,14]</sup> There is a need for capacity building and to maintain an adequate procurement and supply of laboratory diagnostics and drugs. To fulfill these targets, we essentially require financial support, which will also aid in carrying out research and development activities.<sup>[38,39]</sup>

The next action will be to enhance access to affordable and quality assured health-care services to keep moving forward toward our goal of universal health coverage.<sup>[7]</sup> In addition, there is a need to prepare ourselves for the challenge of responding to different forms of drug-resistant TB and bridging the existing gap.<sup>[40]</sup> It is also important to scale up services to strengthen TB prevention and eliminate the stigma and discrimination associated with the disease.<sup>[23-25]</sup> Furthermore, in the battle against TB during and after the COVID-19 pandemic gets over, we will need the support of the general population, and thus, we all have to work together.<sup>[7,39]</sup>

## A SAFE WORKPLACE AND PATIENT CARE

One of the main reasons for interruption of essential services, including TB, was that both health workers and patients developed an immense amount of fear that they would also acquire the COVID-19 infection, which had serious implications, especially in the initial stages (namely no vaccine, no potent drug, shortage of beds, infrastructure, and lack of preparedness of the governments) of the pandemic.<sup>[28,30,31,33]</sup> Thus, if we want to ensure delivery of essential services for TB and at the same time continue the ongoing battle against COVID-19 infection, it is very much important to make it safe for health workers (namely doctors, health-care professionals, laboratory staff, outreach workers, and auxiliary staff) and the patients.<sup>[2,3,26,41]</sup>

In the case of health professionals, it is important to create awareness about COVID-19 infections, how it is being transmitted, the high-risk settings (intensive care units), the concept of triage (wherein respiratory symptomatic patients are given preference to get consulted earliest), and the need to practice teleconsultation.<sup>[42,43]</sup> Obviously, awareness will

not alone work. In this regard, the hospital authorities should demarcate places for COVID-19 patients from other patients, structural modifications in the hospitals to maintain good ventilation in both waiting rooms and clinical areas, maintain an adequate supply of personal protective equipment, and reduce workload by restricting the work hours' duration or providing quarantine leave or posting in COVID-19 wards on a rotation basis, etc.<sup>[43-45]</sup>

From the perspective of TB patients, the imposition of lockdown and the interruption in the continuation of routine outpatient department services proved detrimental to their outcome.<sup>[46,47]</sup> Acknowledging the vulnerabilities of TB patients, there is a solid ground for the program managers to implement collection of the sputum sample from home settings for diagnosis or assessing the status of the infection.<sup>[7,47]</sup> On the treatment front, we have to implement home-based treatment and adopt more of a decentralized approach, wherein community workers play a crucial role. All these outreach workers should be supplied with an adequate stock of personal protective equipment and screened promptly for COVID-19 if they become respiratory symptomatic.<sup>[42,43]</sup>

## ADDITIONAL CONSIDERATIONS

The introduction of COVID-19 vaccines is an important breakthrough in the battle against the novel viral infection, and we will surely be able to minimize the eventual outcome of the disease.<sup>[7]</sup> As far as TB is concerned, regardless of being a case of TB presently or in the past, there are no contraindications for a COVID-19 vaccine. All TB patients should be immunized with COVID-19 vaccines at their turn or as per the national health priorities.<sup>[7,10]</sup> As both TB and COVID-19 have droplet transmission, there have been incidents wherein it has been advocated to evaluate a person for TB who has tested COVID-19 positive and vice versa.<sup>[6]</sup> However, the rationale for the same can be taken based on the local epidemiology of the infections, clinical manifestation, and other predisposing risk factors in the given patient. Nevertheless, we all should be committed toward our aim of early diagnosis of both these infections to prevent the transmission of infection to other susceptible contacts.<sup>[7,14,26,29]</sup>

## CONCLUSION

As we continue our fight against the COVID-19 pandemic, there is an immense need to maintain services directed toward the prevention and control of TB. The policymakers should explore all the options that will enable the implementation of joint strategies for the better containment of both the infections without compromising the safety of health professionals.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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