

Original Research Article

Health seeking behavior of in pulmonary tuberculosis patients during COVID-19 pandemic and lockdown in a tertiary care center

Arivudai Nambi Veerappan Periasamy^{1*}, Yazhlini²

¹Department of Respiratory Medicine, KAPV and MGM Medical college Hospital Tiruchirappalli, Tamil Nādu, India

²Madurai Medical College, Madurai, Tamil Nādu, India

Received: 03 January 2023

Accepted: 10 February 2023

*Correspondence:

Dr. Arivudai Nambi Veerappan Periasamy,
E-mail: arivudain@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in India in 2020 having originated from China in late 2019. There is no study on the impact of covid management burden on tuberculosis (TB) management. Study on the effect of lockdown on TB management is also unknown. This is a pilot study.

Method: It is hypothesised that only people who are severely symptomatic will get tested for TB and severely sick patients will get admitted during the lockdown period. Data from outpatient TB clinic and inpatient ward were analysed.

Results: During the lockdown of 5 months saw severe fall in the attendance of the outpatient to 727 patients which was almost 44.44% of the pre lockdown patients, sputum positive among them were 160, positivity rate was 21.69. The total inpatients admission in the lockdown period of 6 months was 130 with average of 26 per month (36% of normal). The Wald chi-square for outpatient $p=0.00$ with CI=43.30-63.81. The Wald chi-square test for inpatient admission $p=0.00$ with CI=31.66-49.52. The results of inpatients admission showed that only sick and serious patients approached hospital in the lockdown period.

Conclusions: The results in the outpatient setting showed that mild to moderate symptomatic patients may not seek consultation only severe cases approached healthcare leading to spread.

Keywords: TB, TB and lockdown, TB in patients, Health behaviour

INTRODUCTION

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) responsible for this pandemic emerged in January, having originated from China in late 2019.¹⁻

³ Although COVID-19 continues to dominate both the scientific literature and the media, other communicable diseases including TB should not be neglected.⁴

Much has been written on the potential interactions between COVID-19 and TB following the world health organization (WHO) declaration of COVID-19 as a public health emergency of international concern, initially based on assumptions, modelling and scientific evidence.⁵⁻¹²

Studies on the impact of covid pandemic lockdown, and safety precautions like masks, hand sterilization social distancing on TB like communicable disease will help in the elimination of the disease.

Even if it is trivial, the perceived nature of the threat if it is bigger will lead to a reaction of human nature.

People will react to the present disease and may forget the existing disease.

Studies on the impact of covid pandemic a short incubation period acute infection on the chronic infection like TB is an unknown situation and effect of lockdown on TB like communicable disease will helps in

circumstances where accessibility to healthcare was quite tough. This study is a pilot one since impact of pandemic on chronic indolent infection like TB is literally unknown.

The surge of infection was fast and because of the acute nature and short incubation period of the disease lockdown measures and safety precaution in the stipulated time could control the spread of the disease. Hence lessons learnt on the acute respiratory infection can be applied to the chronic infection like TB.

The inner fear of acquiring a deadly infection like covid 19, among any patients having another chronic or indolent infection made them to neglect their own symptoms leading to evolution to severe infection which eventually led them to seek medical consultation. This was also proved in the study.

The aim of the national program was to eliminate the disease by early diagnosis and prompt treatment. Time is important in this pandemic. There should be robust mechanisms to detect the patients even in times where they will not be able to present to the health facility.

METHODS

Retrospective observational cohort study

It is hypothesized that only people who are severely symptomatic will get tested for tuberculosis and severely sick patients will get admitted during the lockdown period.

Hence patients with mild and moderate symptoms may not seek medical consultation will be spreading disease until severe enough to seek consultation.

This was tested with the data.

Study period-2020 January to November

Evaluated patient attendances in TB health care units in a tertiary care center comparing the volume of TB-related healthcare activities in the first 11 months of the COVID-19 pandemic (January-November 2020). both the outpatient TB activities and inpatient TB admission 3 months before lockdown, 5 months during lockdown and 3 months after lockdown were evaluated.

We evaluated the health seeking behavior of TB patients by collecting the outpatient attendance in TB clinic.

Positive TB patients admitted with co morbidities and culture positive sputum negative TB admission from January to November 2020 were analyzed.

Statistics were computed using excel and power point.

SPSS 21 was also used.

Inclusion criteria

All adult TB patient's sputum positive and nucleic acid test (CBNAAT) positive TB patients attending TB clinic in the tertiary care medical college hospital TB clinic of Madurai government Rajaji hospital in the year 2020 (January -November).

Exclusion criteria

All COVID patients (NAAT) RTPCR positive were excluded from the study. TB patients with COVID infection were excluded from the study. COVID Tb co infection is an unknown entity.

RESULTS

Results of January to March=pre lockdown period. April to august=lockdown corona wave peak period. September to November=post lockdown period.

During the first 3 months of 2020 the tertiary care TB center received 1635 patients in the Outpatient clinic and positive patients were 195. Positivity rate was 11.92 (Table 2) (Figure 2). The lockdown period lasts from April 2020 to August 2020.

During the lockdown, the next 5 months saw severe fall in the attendance of the outpatient to 727 patients which was almost 44.44% of the pre lockdown patients, sputum positive among them were 160, positivity rate was 21.69 (Table 2) (Figure 2).

After lockdown with ease of restriction and probable movement, migration of patients the outpatient attendance in the next 3 months increased to 663, with average OP of a month improving to 221.

The sputum positivity improved to 122, with a rate of 18.49 (Table 2) (Figure 2).

The total inpatients admission in the pre lockdown period of 3 months of 2020 was 214 with average monthly admission of 71.33 (Table 3).

During the lockdown, the inpatient admission for 5 months fell to 130 with an average monthly admission of 26 which is 36% of the normal admission (Table 3).

After lockdown, the inpatient admission in the next 3 months was 132 with an average monthly admission of 44 which was still only 61 percent of normal pre lockdown admission (Table 3).

Monthly inpatient TB patient admission depicted graphically in the bar chart of Figure 3. The total inpatients admission in the pre lockdown period of 3 months of 2020 was 214 with sputum positive pulmonary TB of 163 patients (Figure 4).

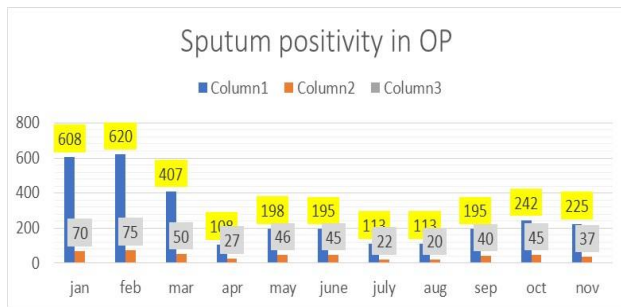


Figure 1: Sputum positivity in outpatient clinic.

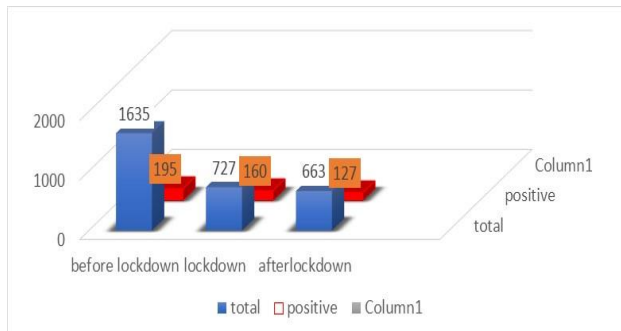


Figure 2: Bar chart depicting outpatient attendance and sputum positive TB patients.

43266	4001	9 %
-------	------	-----

Figure 3: Inpatient admission.

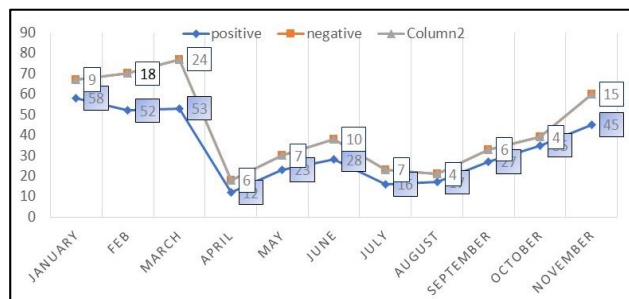


Figure 4: Inpatient during phases of lockdown.

During the lockdown, the inpatient admission for 5 months fell to 130 with 96 among them being pulmonary tuberculosis (Figure 4).

After lockdown, the inpatient admission in the next 3 months was 132 with 107 being pulmonary TB (Figure 4).

It is hypothesized that only people who are severely symptomatic will get tested for tuberculosis and severely sick patients will get admitted during the lockdown period.

The Wald chi-square test showed for positivity in the lockdown period was significant with the $p=0.00$ with $CI=43.30-63.81$ (Table 4).

The Wald chi-square test showed for inpatient admission in the lockdown period was significant with the $p=0.00$ with $CI=31.66-49.52$ (Table 5).

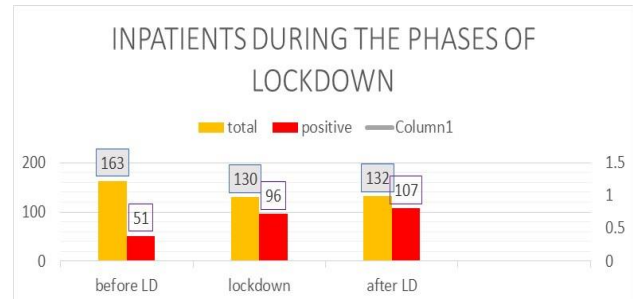


Figure 5: Inpatient during each month of 2020.

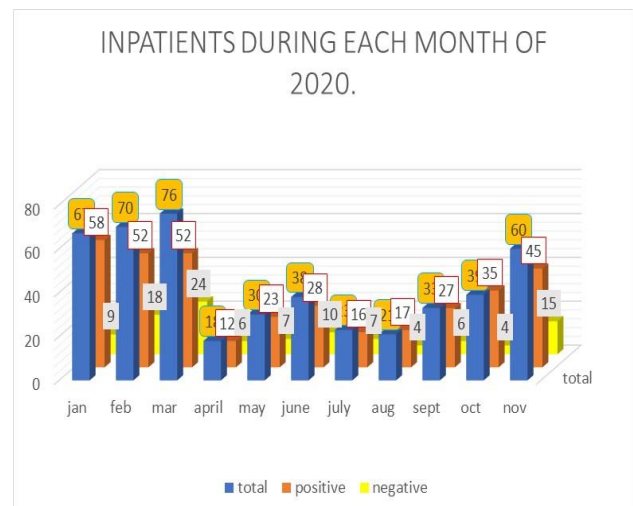


Figure 6: Inpatients during each month of 2020.

Table 1: Positivity rate during the pandemic.

Month	Total symptomatic patients tested	Positive	Rate (Positive)
January	608	70	11.51
February	620	75	12.09
March	407	50	12.28
April	108	27	25
May	198	46	23.23
June	195	45	23.07
July	113	22	19.46
August	113	20	17.69
September	195	40	20.51
October	243	45	18.51
November	225	37	16.44

Table 2: Positive TB in outpatient clinic during lockdown.

Phase of lockdown	Total cases tested	Positive	Rate
Before lockdown	1635	195	11.92
lockdown	727	160	21.69
After lockdown	663	122	18.40

Table 3: TB inpatients in tertiary care during pandemic.

Phase of lockdown	Total inpatients	No. of months	Avg. cases/month
Before lockdown	214	3	71.33
lockdown	130	5	26
After lockdown	132	3	44

Table 4: Out patients positivity.

Wald chi-square test B	Confidence interval	Significance
53.65	43.30-63.81	0.00

Table 5: Inpatient admission.

Wald chi-square test B	Confidence interval	Significance
40.45	31.66-49.52	0.00

DISCUSSION

The pre lockdown period admission and outpatient attendance was equal to those seen the previous year (COVID naïve year).

The study showed confirmed drop in the TB diagnosis in the outpatient setting with fall of 65 sputum positive cases in a month in pre lockdown period to 32 cases in a month during a month almost 50% reduction in detection (Table 2).

The monthly OP attendance and positive TB fall can be explained due to the overall fall in the OP attendance of the whole region during the pandemic (Table 1).

After lockdown with ease of restriction the positive detection improved to 41 cases per month which is 62% of prelockout detection (Table 1).

Monthly admission of all TB cases in the tertiary care center in the pre lockdown period of 3 months in 2020 was 214 with monthly average of 72 cases (Table 3).

Monthly admission of all TB cases in the lockdown period of next 5 months in 2020 were 130 with monthly

average of 26 cases, which is 36% of the normal monthly admission (Table 3).

Monthly admission of all TB cases after lockdown period of next 3 months in 2020 were 132 with monthly average of 44 cases, which is 61% of the normal monthly admission (Table 3).

The Wald chi-square test showed for positivity in the lockdown period to be significant the $p=0.00$ with $CI=43.30-63.81$ (Table 4).

The Wald chi-square test showed for inpatient admission in the lockdown period to be significant the $p=0.00$ with $CI=31.66-49.52$ (Table 5).

The results in the inpatients admission show that only sick and serious patients approached the hospital in the lockdown period.⁵⁻¹⁰

Lack of access to health care can also be a cause to the reduction in inpatient admission. This is a valid reason in the country where economic incentives were provided to the needy patients who are adherent to the free treatment.

Fear and ignorance about the pandemic are also a cause for late treatment.

Lack of telemedicine is a big factor in a high burden low resource country.

Impact of Mask on the spread cannot be determined as adherence could not be objectively measured.

In some centers, personnel initially attributed for TB service provision were re-prioritized to COVID-19. In addition, the decreased attendance to TB clinics was associated with patient fear of exposure to COVID-19 in the community or with disruptions of the services or struggle in accessing health services during the lockdown.

The study shows the indirect impact of COVID-19 on TB care in a low-resource high TB-burden setting. The study suggests that India needs economic and technology support to strengthen its response to COVID-19 pandemic. Otherwise, all results achieved in recent years in the fight against TB may be lost.

Repeat lockdowns of varying degrees are reported in countries which have recurrent COVID-19 waves, and severe consequences to TB services are therefore expected.¹¹⁻¹⁷

Limitation

Retrospective observational cohort study and also a pilot study hence the observation in the study projected to the target population may not be precise but larger study may be needed to extrapolate the results.

CONCLUSION

COVID-19 can occur at any time during a patient's TB journey, with worse outcomes for patients affected by active pulmonary TB disease. More evidence is needed to understand the potential of COVID-19 to favor reactivation of an existing TB infection. The specific signs and symptoms common to COVID-19 and TB may facilitate rapid access to imaging services (chest radiography and/or computerized tomography) which may manifest signs of a pre-existing TB.

In the meantime, patients who had or have active TB especially people living with HIV co-infection should do their utmost to avoid getting COVID-19 and should be offered suitable vaccination when possible.

More information about the medium- and long-term effects of the COVID-19 pandemic on TB services after a specified time from the diagnosis of the first COVID-19 patient in each country is needed.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. JAMA. 2020;323(13):1239-42.
- Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet. 2020;395(10223):507-13.
- Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX. China Medical Treatment Expert Group for Covid-19 Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med. 2020;382(18):1708-20.
- Ong CWM, Goletti D. Impact of the global COVID-19 outbreak on the management of other communicable diseases. Int J Tuberc Lung Dis. 2020;24(5):547-8.
- World Health Organization. Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV); Geneva, Switzerland: 2005. Statement on the second meeting of the International Health Regulations. 2020.
- Stop TB Partnership, Imperial College, Avenir Health, Johns Hopkins University, and USAID. The Potential Impact of the COVID-19 Response on Tuberculosis in High-Burden Countries: A Modelling Analysis. Available at: https://stopthb.org/assets/documents/news/Modeling%20Report_1%20May%202020_FINAL.pdf. Accessed on 25 January, 2023.
- World Health Organization. World Health Organization; Geneva: 2020. Global tuberculosis report 2020. License: CC BY-NC-SA 3.0 IGO.
- Cilloni L, Fu H, Vesga JF, Dowdy D, Pretorius C, Ahmedov S. The potential impact of the COVID-19 pandemic on the tuberculosis epidemic a modelling analysis. E-Clin Med. 2020;28.
- Migliori GB, Thong PM, Akkerman O, Alffenaar JW, Álvarez-Navascués F, Assao-Neino MM. Worldwide Effects of Coronavirus Disease Pandemic on Tuberculosis Services, January-April 2020. Emerg Infect Dis. 2020;26(11):2709-12.
- Buonsenso D, Iodice F, Sorba Biala J, Goletti D. COVID-19 effects on tuberculosis care in Sierra Leone. Pulmonology. 2021;27(1).
- Tadolini M, Codecasa LR, García-García JM, Blanc FX, Borisov S, Alffenaar JW. Active tuberculosis, sequelae, and COVID-19 co-infection: first cohort of 49 cases. Eur Respir J. 2020;56(1).
- Motta I, Centis R, D'Ambrosio L, García-García JM, Goletti D, Gualano G. Tuberculosis, COVID-19, and migrants: Preliminary analysis of deaths occurring in 69 patients from two cohorts. Pulmonology. 2020;26(4):233-40.
- Stochino C, Villa S, Zucchi P, Parravicini P, Gori A, Raviglione MC. Clinical characteristics of COVID-19 and active tuberculosis co-infection in an Italian reference hospital. Eur Respir J. 2020;56(1).
- Abdool Karim Q, Abdool Karim SS COVID-19 affects HIV and tuberculosis care. Science. 2020;369(6502):366-8.
- Mandavilli A. The New York Times; 2020. 'The biggest monster' is spreading. And it is not the coronavirus.
- Ong CWM, Migliori GB, Raviglione M, MacGregor-Skinner G, Sotgiu G, Alffenaar JW. Epidemic and pandemic viral infections: impact on tuberculosis and the lung: A consensus by the World Association for Infectious Diseases and Immunological Disorders (WAidid), Global Tuberculosis Network (GTN), and members of the European Society of Clinical Microbiology and Infectious Diseases Study Group for Mycobacterial Infections (ESGMYC) Eur Respir J. 2020;56(4).
- Sheerin D, Abhimanyu Wang X, Johnson WE, Coussens A. Systematic evaluation of transcriptomic disease risk and diagnostic biomarker overlap between COVID-19 and tuberculosis: a patient-level meta-analysis. medRxiv. 2020;11.

Cite this article as: Periasamy ANV, Yazhlini. Health seeking behavior of in pulmonary tuberculosis patients during COVID-19 pandemic and lockdown in a tertiary care center. Int J Clin Trials 2023;10(2):146-50.