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**EFFECT OF PANDEMIC ON DOTS TREATMENT
DURING COVID-19 LOCKDOWN- A CROSS-
SECTIONAL STUDY**



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Abstract

Background: Tuberculosis (TB) is still the most common infectious disease globally, affecting 1.5 million people per year.¹ Prior to COVID-19 outbreak, India was struggling with a rampant attack of Tuberculosis. With the surge of COVID-19, implementation of all national health programs including NTEP was disrupted. Prioritization of services, availability of drugs, the challenges to reaching all types of communities and the role of stigmatization, and the possibility of increased disease transmission were few problems in the implementation of DOTS during the lockdown.

Aim: To assess effect of pandemic on DOTS treatment during COVID-19 lockdown. **Methods:** A cross-sectional study was conducted among 254 tuberculosis patients who were under DOTS during Covid-19 lockdown in Belagavi district. Participants who were on DOTS during 2019 to 2021 period. **Result:** Of 254 participants, only 5 (2.0%) were supervised while taking drugs, 67(26.4%) of subject's empty blister packs were taken back by health personnel and 106(41.7%) participants were regularly followed up for treatment by health department. The variables like gender, literacy status, socioeconomic status, and occupation were all significantly associated with hampered access to DOTS during the lockdown period at $p<0.05$. **Conclusion:** This study concluded that the participants had hampered accessibilities to DOTS during lockdown

INTRODUCTION

Tuberculosis (TB) is still the most common infectious illness in the world, affecting 1.5 million people per year.¹ India is the world's largest TB burden country.² Before COVID-19 becoming a global pandemic, India was struggling with an outbreak of TB, which had infected 2.64 million Indians in 2019 and killed almost 4,50,000 individuals. That's approximately 1,000TB mortality every day.³

China first disclosed a group of instances of uncommon pneumonia associated with SARS-CoV-21 on Dec 31, 2019. The incidence of COVID-19 cases across India had begun to rise since Mar 2020. India declared a lockdown to control it from Mar 25, 2020.⁴

India had achieved tremendous effort toward its goal of eliminating tuberculosis until March 24, 2020. When the country-wide lockdown was imposed due to COVID-19, it disrupted all important strategic interventions, resulting in a nearly 60% reduction in TB case detection during lockdown time.⁵ Similarly, about 5.7 lakh instances (62% decline in notifications) were unable to be notified against the expected objective of NTEP from January to June 2020.⁵

During lock-down times, health facilities observed a reduction in

the proportion of patients undergoing treatment on time due to the fear of getting SARS-CoV-2 virus infection. This might have had serious difficulties for tuberculosis control, particularly drug-resistant TB. The re-allocation of testing facilities and health care services to combat COVID-19 may have affected TB detection and treatment unintentionally. Other difficulties may have arisen under the TB program as a result of the pandemic, including a shortage of finance for Tuberculosis intervention, disruptions in utilization, and accessibility to drugs and supply.⁶ Reduced availability of conventional modes of transportation and increased transportation expenses constituted hurdles to accessing healthcare centers for both healthcare practitioners and patients.⁷ Lockdown has caused delays in diagnosis, treatment, and disease transfer to household contacts. It also has created disruption in treatment as many employees migrated back to their native places.³ Even routine activities like TB case detection, active case finding, contact tracing, etc were held up not only in India but also in other countries. Different virtual approaches were considered to provide services.⁵ The World Health Organization (WHO) recently released statistics from more than 80 nations that revealed a 21% drop in treatment during the 1st year of the pandemic compared to 2019. More than 469 million people had been infected with COVID-19 as of March 22, 2022, with over 6 million deaths. (WHO Report 2022) The COVID-19 pandemic has now surpassed all other health concerns around the planet. The objective of this study was to assess the Effect of pandemic on DOTS treatment during COVID-19 lockdown.

METHODOLOGY

The present study was cross-sectional study conducted between November 2021 to April 2022. This was carried out by using a semi-structured questionnaire. This study was conducted in 3 talukas of Belagavi (Hukkeri, Gokak & Belagavi), and involved 254 participants. Proportionate sampling technique was used to select participants from 3 talukas and from each taluka participants were recruited using simple random sampling after line listing. Data obtained were tabulated, chi-square test was used to assess the effect of pandemic on DOTS treatment during lockdown.

Inclusion Criteria:

- Patients enrolled for treatment under NTEP (RNTCP) programme.
- Tuberculosis patients who were above 18 years above and willing to give informed consent.

Exclusion Criteria:

- Patients who were seriously ill.
- Patients who were not under DOTS during the lockdown period.

Ethical Committee:

- Ethical clearance was obtained from the Institutional Ethical Committee (I.E.C) of J.N. Medical College, KAHER, Belagavi. Ref

no:MDC/DOME/263
 • Permission was taken from State Task Force Operational Research Committee, NTEP to conduct a study. Ref no: LWSTC/NTEP/PPM/07/2021-22

RESULTS

Table no.1 shows that the participant's ages ranged from >18 to 83 years. Most of the participants 147 (57.9%) were males and 107 (42.1%) were females. The majority of them, that is 30(11.8%) participants had completed their graduation, 94(37%) of them had completed their higher secondary education, 83(32.7%) had completed their primary education and 47(18.5%) were illiterate. 105 (41.3%) were from joint families, and 149(58.7%) were from nuclear families, majority were from rural region 175(68.9%) and 79(31.1%) inhabited urban regions.

Out of 254 participants 241 received DOTS treatment, only 5 (2.0%) of the all participants were supervised by a DOTS provider while taking drug, only 5 (2.0%) were supervised during the lockdown, 67(26.4%) of participants empty blister packs were taken back by health personnel, 97(38.2%) of participants skipped their course one or more days, 119(46.9%) of participants said that they were disappointed due to inaccessibility, 136(53.5%) had been communicated by health personnel, Regular follow-up of treatment from the health department was 106(41.7%).(Table 2.)

- There were 7 questions related to hampered access to DOTS, mean of these 7 questions was considered to categorize in to three categories based on the mean and standard deviation (SD)
- Among 254 participants, the mean and SD of hampered access to DOTS was 4.6 and 1.27 during lockdown.
- Among all participants 15 had low hampered access to DOTS during lockdown. Similarly, 225 participants during lockdown were in the category of average hampered. Similarly, 14 were high hampered.

During lockdown gender, occupation, literacy status, and socioeconomic status are the variables that are statistically significantly associated with hampered access to DOTS at $p<0.05$. (Table.3) The remaining variables like age, type of family, type of house, and residency status were not statically significant.

DISCUSSION

This chapter provides an insight into the discussions of the study's major findings while comparing it to the findings proposed in the previous studies.

Socio-demographic variables of participants:

In the present study, the age of participants was in the range of 18 to 83 years. Surveys conducted in Brazil, Italy reported that study participants' age was between 18 and 60 years.^{8,9}

In our study majority are males, similarly a study conducted in Zambia had 53% male participants and 47% females,¹⁰ but a study at Brazil had 57% female participants and the remaining were male.⁸ The present study revealed that majority had completed primary and secondary education (32.7%, 37%), few studies had similar findings.^{8,11}

In this study 8.3% were laborers, 29.1% were agriculturists, 16.5% were private employees and 3.1% were government employees. Another study conducted in Ethiopia shows that 19.8% were laborers by occupation, 17.0% were government employees and 0.9% were agriculturists.¹²

During lockdown Variable

In our study, 69.5% of patients or their family members feared to reach the hospital during lockdown. 22.05% of participants conveyed about changes made in TB treatment services due to the COVID-19 pandemic According to the other study carried out by

Alexandra J. Zimmer et al 55% of participants expressed that they had fear for to visit the hospital.¹⁰ Study conducted in Ethiopia shows that 81.6% of participants expressed they were treated differently during Covid time.¹²

5.1% of participants experienced challenges in accessing DOTS TB treatment in our study, but 49% of participants had difficulty to access of TB treatment in a study conducted by Alexandra J. Zimmer et al.¹⁰

In the present study, most of the patients underwent Chest X-rays (33%) to confirm their TB, but a study conducted by the WHO European region expressed that, six countries used GeneXpert machines for COVID-19 testing instead of diagnostic testing for TB.¹³

In the current study, 86.2% of participants expressed they were panicked about being infected with coronavirus. In other studies, most of the participants feared contracting Coronavirus.^{9,10}

In the current study, 9.85% of participants missed their follow up test at the end of their treatment course, which is less as compared to study conducted in Ethiopia where 41% of their participants missed their follow up test.¹²

RECOMMENDATIONS

It can be recommended that there should be a doorstep supply of medicines or special transportation facility for the vulnerable population like pregnant women, bedridden, and elderly people during a special situation like pandemic lockdowns.

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Conflict of Interests: No conflict of interests.

Table No-1: Demographic details of the study

Variable	Category	Frequency	%
Age	<= 30	93	36.6
	31 - 42	59	23.2
	43 - 54	42	16.5
	55 - 66	45	17.7
	67 - 78	14	5.5
Gender	Male	147	57.9
	Female	107	42.1
Literacy status	Illiterate	47	18.5
	Primary	83	32.7
	Secondary	94	37
	Graduate and above	30	11.8
Occupation	Labour	21	8.3
	Agriculture	74	29.1
	Private employee	42	16.5
	Government employee	8	3.1
	Others	109	42.9
Socio economic status	Upper class	15	5.9
	Upper middle class	82	32.3
	Middle class	91	35.8
	Lower middle class	61	24.0
	Lower class	5	2.0
Type of Family	Joint Family	105	41.3
	Nuclear Family	149	58.7

Residency	Rural	175	68.9
	Urban	79	31.1
Type of house	Pucca	71	28.0
	Kaccha	183	72.0

Table. No.2: Distribution of participants experiences during lockdown

Sl No	Questions	During lockdown			
		Yes		No	
		Fq	%	Fq	%
1)	Did you receive DOTS treatment?	241	94.9	13	5.1
2)	Did the DOTS provider come to supervise while taking drugs?	5	2.0	249	98.0
3)	Have empty blister packs been taken back by health personnel while giving medicine?	67	26.4	187	73.6
4)	Did you ever discontinue taking TB drugs?	97	38.2	157	61.8
5)	Due to the inaccessibility of DOTS drugs were you depressed/disappointed?	119	46.9	135	53.1
6)	Is there any Regular communication with health personnel?	136	53.5	118	46.5
7)	Is there any Regular follow up treatment from the health department	106	41.7	148	58.3

Table. No.03: Association between Socio-demographic data with During Lockdown variables of Hampered access

Sl no	Variables	During Lockdown			Chi-square	p-Value	
		Low	Average	High			
1	Age in years	<= 30	3	81	9	10.010	0.440
		31 – 42	4	52	3		
		43 – 54	2	40	0		
		55 – 66	5	39	1		
		67 – 78	1	12	1		
		79+	0	1	0		
2	Gender	Male	8	133	6	14.563	0.021*
		Female	7	92	8		
3	Occupation	Labor	1	19	1	13.481	0.006*
		Agriculture	3	71	0		
		Private employee	3	35	4		
		Govt employee	2	5	1		
		Others	6	95	8		
4	type of family	Joint	6	92	7	2.463	0.793
		Nuclear	9	133	7		
5	type of house	Pucca	4	62	5	3.449	0.799
		Kaccha	11	163	9		
6	Residence	Rural	9	155	11	1.166	0.558

7	literacy status	Urban	6	70	3	16.973	0.001* *
		Illiterate	1	45	1		
		Primary Education	9	72	2		
		Secondary education	1	85	8		
8	socio economic status	Degree and above	4	23	3	19.844	0.011*
		Upper class	4	10	1		
		Upper middle class	6	70	6		
		Middle class	4	84	3		
		Lower middle class	0	57	4		
		Lower class	1	4	0		

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