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Original Research Article

Perception of local health functionaries regarding the impact of COVID-19 on health-seeking behaviour of presumptive tuberculosis patients in tricity

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ABSTRACT

Background: The COVID-19 pandemic has affected every domain of human life globally and has presented an unprecedented challenge to public health, work, education, and social life. The healthcare services were prioritized and indirectly affected by that. The current study assumed the perception of healthcare functionaries regarding the impact of COVID-19 on the health-seeking behavior of presumptive TB patients in tricity (Chandigarh, Panchkula, and Mohali).
Methods: A concurrent mixed method study design was conducted among 100 randomly selected healthcare functionaries from public health facilities in tricity. A self-structured and validated questionnaire was used and analyzed using SPSS v24 by both qualitative (frequencies, Chi-square, odd ratio) and quantitative (themes) approach.
Results: Among 100 respondents 62% participants responded that there was a disruption of the normal functioning of testing and treatment under the National Tuberculosis Elimination Program (NTEP). The logistics and manpower were shifted to COVID-19 management and testing of PTB patients was mostly affected. The in-depth interview found that factors like social stigma, downplaying of TB disease, and less knowledge about TB were the reasons behind the disruption of PTB services. The health functionaries also gave suggestions for the betterment of PTB services if these kinds of pandemics arise in the future.
Conclusions: Having national programs such as NTEP should be not kept on back foot while dealing with the pandemic, as TB is considered to be the greatest challenge for Health System and human beings as well.

Keywords: Presumptive TB, Health care facilities, Health care workers, Testing

INTRODUCTION

Tuberculosis (TB) is one of the major causes of morbidity and mortality worldwide. TB is a communicable disease caused by *Bacillus Mycobacterium tuberculosis.* It is a droplet infection spread by TB-infected people when they cough without following cough etiquettes thus expelling bacteria into the air.[1] This disease typically affects the lungs (pulmonary TB) but can also affect the other sites of the body (extra pulmonary TB). Presumptive TB refers to the presence of symptoms and signs suggestive of TB including cough >2 weeks, fever >2 weeks, significant weight loss, hemoptysis, swelling of lymph nodes, joints any and abnormality in chest radiography.[2] Out of various domains of human life, COVID-19 has greatly affected the health-seeking behavior of people worldwide. A wide range of safety measures taken by the government such as strict lockdown restrictions on movement, mandatory face

masks, installed quarantine, and social physical distancing made healthcare service difficult. There is evidence that the pandemic response adversely affected high-priority National Health Programs. Due to lockdown or movement restrictions, fear of contracting COVID-19 infection in hospital settings, and diversion of TB services, patients with TB symptoms had difficulty accessing healthcare services during the first and second wave of COVID-19 pandemic.[3]

Both COVID-19 and Tuberculosis (TB) primarily target the same organ of the body-the lungs. Both diseases have similar symptoms such as cough, fever, and difficulty breathing. These similar symptoms create diagnostic confusion.[4] Undiagnosed/ misdiagnosed TB is one of the major challenge facing the Control of TB. It has been portended that low case detection of TB would be exacerbated by the COVID-19 pandemic due to the diversion of resources. Tuberculosis stigmatization is a problem in many settings, more in LMICs. Therefore, it was highly likely to rise and be confounded by COVID-19. Stigma is associated with fear, and fear of COVID-19.[5] Misinformation leads to discrimination within communities, workplaces, and educational institutions, further leading to social isolation and neglec.[6] TB infection and disruption due to the pandemic lead to loss of jobs and earnings which causes a decline in food consumption and can lead to worsening of the problem of under-nutrition, which in turn can increase TB incidence.[7] Due loss of their livelihood migrants and shelter during COVID-19 was pushing the migrants back home.[8] Local healthcare functionaries are the link between the service provider i.e. government and the consumer i.e. patients. They have knowledge about the health system as well as about the behavior of people who come for seeking health care services. The current study was done to understand the perception of local health functionaries on the effect of COVID-19 on the health services of PTB in different healthcare centers of tricity. This knowledge and perception about the health care service delivery can be valuable and important in strengthening the health care service.

METHODS

A common study design was chosen for the current study. The study was done in the public health care facilities of tricity (Chandigarh, Panchkula and Mohali). The study was conducted from March 2022 to July 2022. An arbitrary sample size of 100 was selected for interviewing HCF. The healthcare facilities were stratified into two groups, public healthcare centers, and private healthcare centers. The data was collected only from public health care centers. The study was done among 100 local health functionaries at public health care facilities. 50 health care facilities were randomly selected from the line list. From each healthcare facility one doctor, one lab technician, one Auxiliary Nursing Midwifery, and one TB health volunteer were selected for an interview without repetition. Medical Specialists (Orthopedics, Neurologist, and Psychiatrist) etc. Hospital attendants, Tuberculosis patients, and presumptive TB patients were not included in this study. The healthcare functionaries were enrolled in such a way that there was uniform involvement of all the healthcare functionaries responsible for TB care. Prior notification to the chosen healthcare facilities was given and permission was sought from the in change of the healthcare facility for the study. The HCFs were briefed about the objectives of the study before interviewing them. The data was collected using a self-structured and validated questionnaire. A one-to-one method was adopted for collecting the data. Both quantitative and qualitative data were collected from the HCF involved in the study. The objectives of the study were explained to the participants. The data was collected only after taking written consent from all the participants.

Statistical analysis

The data was analyzed in Statistical Package for Social Science (SPSS) software V 24. The data was checked for its normal distribution. Chi-square test was applied to find the association between outcome and independent/ predictor variables. An odd ratio was used to measure the strength of association between independent/ predictor variables. For quantitative data, descriptive analysis was done using frequency, percentage, mean and standard deviation. Thematic analysis was done for quantitative data.

RESULTS

There were 65 (65.0%) female and 35 (35%) male respondents. The overall mean age of respondents was 34.74±10.3 (SD). Around 52% of respondents were from civil dispensaries while 33% were from the primary health center, 12% from civil hospitals, and 3% from the community health center. The majority of respondents listed themselves as doctor 50% while others were TB health volunteers 24%, lab technicians 13%, ANMs 12% and nurses 1%.

Around 62% of respondents responded that the normal functioning (testing and treatment) of the National Tuberculosis Elimination Program (NTEP) got disrupted during COVID-19. 50% of respondents opinioned that during COVID-19 there was a disruption in logistics and manpower also which are available routinely for the adequate functioning of the DOTS program. 66% of respondents observed that there was a decrease in the number of TB patients who were coming for seeking services related to tuberculosis.

Majority of the respondents opinioned (77%) that testing of presumptive TB patients was affected during the COVID-19 pandemic. Around 75% responded that there was a change in the number of presumptive tuberculosis patients who used to come for testing their tuberculosis status during the COVID-19 period as compared to pre-COVID times and 39% of respondents believed that the

TB services could have been improved during COVID-19 pandemic.

Table 1: Opinion of respondents (HCF) regarding the disruption in functioning of PTB during COVID-19 pandemic.

Variables	N (%)
Did COVID-19 pandemic disrupt the normal functioning testing and treatment of the National tuberculosis elimination program	
Yes	62 (62.0)
No	25 (25.0)
Don't know	13 (13.0)
Did the logistics and health workforce which is available routinely for adequate functioning of program got disrupted during COVID-19 pandemic	
Yes	50 (50.0)
No	33 (33.0)
Don't know	17 (17.0)
Did you observe any change in the number of patients coming for seeking services (testing and treatment) related to tuberculosis	
Yes	77 (77.0)
No	17 (17.0)
Don't know	06 (6.0)
If yes, then what was the change?	
Decrease in the number of TB patients	66 (66.0)
Don't know	23 (23.0)
Increase in the number of TB patients	11 (11.0)

The type of healthcare facility and the availability of logistics and manpower were the variables associated with the perception of health functionaries in TB service for PTB people in tricity.

Qualitative analysis

We identified five themes for answering our research question: organization of treatment, care of presumptive TB, and service delivery, stigma, knowledge about the disease and treatment, logistics and manpower, downplaying of disease and future preparedness which also characterized into three sub-themes.

Organization of treatment, care of presumptive TB, and service delivery

Patients did not visit the hospitals due to restrictions on the movement of both public and personal vehicles. Most of the hospitals were either locked or available only for COVID-19 testing and treatment. Migratory patients moved from one city to another decreasing the screening for tuberculosis. "Lockdown ke samaya bus,taxi,auto,yha tak ki neeji vahan ki aavaaajaahee par partiband lga hua tha to presumptive TB patient testing aur medicine lene DOTS center aata he nhii tha". "Logo ko lag raha tha ki hospital shirf COVID-19 ki seva ke liye uplabdh hai is kaarann wo hospital mai aate he nhi the"

Stigma

Both COVID-19 and TB have similar symptoms, patient refused to do a test due to the fear being of quarantined. Poor people were scared that in event of becoming tested COVID-19 positive, they would lose their livelihood. Migrant workers/in slum areas people did not have proper shelter if their COVID-19 and tuberculosis test positive, they would be driven out by their landlords. "Ek saptah se jyada khansi wale praavasee shramik mareej testing ke liye aage aate nhi the kyuki unhe dar tha unhe unka makan malik aur kaaryasthal se bahar na nikal diya jaaye". "Pehle se TB wajh se logo ke sath vedhvaav hota tha, upar se COVID-19 positive logo ke sath zyada vedhvaav hone lga".

Table 2: Opinion of respondents regarding the disruption in PTB service during COVID-19 pandemic.

Variables	N (%)
Which of the following Tuberculosis services in your opinion were affected during the COVID-19 pandemic?	
Testing presumptive patients	73 (73.0)
Direct benefit transfer	08 (8.0)
Dispensing medicines to the ongoing confirmed TB patients	04 (4.0)
None	15 (15.0)
Do you believe that there is a change in the number of presumptive tuberculosis patients who used to come for testing their tuberculosis status during the COVID-19 period as compared to earlier times?	
Yes	75 (75.0)
No	11 (11.0)
Don't know	14 (14.0)
Do you believe that the TB services could have been improved during the COVID-19 pandemic?	
Yes	39 (39.0)
No	23 (23.0)
Don't know	38 (38.0)

Knowledge about the disease and treatment

Symptoms of TB and COVID-19 are similar; thus tuberculosis was misdiagnosed. Poor and less educated people were unable to differentiate between the symptoms of tuberculosis and COVID-19. They were confused between the sputum test and the COVID-19 test. People presumed that they did not have any contact with TB-positive patients and may be the symptoms might be because of COVID-19 disease. "Slum area ke zyada tar logo ko TB ke bare mai pta he nhi tha ki ye bimari kaise hoti hai aur kya lakshan hai, wo log swasthya karmi ko apne lakshan ke bare mai bta he nhii pate hai". "Logo ne maana ki unka TB rogi ke sath koi sampark nhii tha kyuki lakshan COVID-19 ke ho sakte hai, COVID-19 ke nishchit upchar ke abhaav mai, ve khud ko pareekshan krvane ke bajayaee ghr rehna oochit smjhte hai".

Table 3: Association between perception of change in PTB services and demographic factors.

Variables	Change in presumptive TB		P value	Odd ratio
	Yes, N (%)	No, N (%)		
Gender				
Female	48 (64)	17 (68.8)	0.717	0.873
Male	27 (36.0)	8 (32.0)		
Type of health facility				
Civil dispensary	33 (44.0)	19 (76.8)	0.027	-
Civil hospital	9 (12.0)	3 (12.0)		
Community health center	3 (4.0)	0 (0.0)		
Primary health center	30 (40.0)	3 (12.0)		
What is the position of interviewed staff				
Auxiliary nursing midwifery (ANM)	11 (14.7)	1 (4.0)	0.242	-
Doctor	36 (48.0)	14 (56.0)		
Lab Technicians	9 (12.0)	4 (16.0)		
Nurse	0 (0.0)	1 (4.0)		
TB health volunteer	19 (25.3)	5 (25.0)		
Age (years)				
≤30	31 (41.3)	12 (48.0)	0.560	0.763
≥30	44 (58.7)	13 (52.0)		
Functioning disruption				
Yes	49 (65.3)	13 (52.0)	0.234	1.740
No	26 (34.7)	12 (48.0)		
Logistics and the manpower				
Yes	45 (60.0)	5 (20.0)	0.001	6.000
No	30 (40.0)	20 (80.0)		
TB services				
Yes	64 (85.3)	13 (52.0)	0.001	5.371
No	11 (14.7)	12 (48.0)		

Logistics and the man force

OPD was closed during the COVID-19 pandemic health workers from TB were posted for COVID-19-related work. Lab technicians were occupied more in Rapid Antigen Testing and COVID-19 surveillance. There was no separate team for COVID-19 and tuberculosis. Many staff members were COVID-19 positive and died due to COVID-19 infection and vacancies were not filled to replace them, creating more workload on the existing workforce. “Humare hospital mai bhut se health workers COVID-19 positive the aur wo quarantine ho gye, kuch health workers ki COVID-19 infection se death ho gye”. “Shuruaat ke mahino mai COVID-19 ke karan health workers par kaam ka bhut bhoj tha kyuki hume COVID-19 bimari aur iske karano ke baare mai theek se pta nhi tha”.

Downplaying of disease

Patients were not going for TB diagnosis because of the widespread COVID-19 pandemic, TB has provisional diagnosis and had become secondary due to the ongoing widespread COVID-19 pandemic. People thought that TB can be cured but there is no medicine or vaccination for COVID-19. COVID-19 was presented as the deadliest disease which downplayed even TB. “Logo ko lag rha tha ki TB theek ho sakta hai par COVID-19 ki naa koi dwai hai na vaccination to COVID-19 kabhi theek nhi ho sakta”. “COVID-19 pandemic ke samaya COVID-19 infection ka bada khauf tha, log atirikat saavdhani baratee, isliye ko hospital aane ki jagh ghr par rehna zyada zaruri samjha”.

Opinion regarding future preparedness

Services (testing and treatment): Door-to-door service (testing and treatment) can increase the diagnosis of presumptive TB patients, free testing facilities should be made available. Medicine (isoniazid prophylaxis) could be provided monthly so that frequent visits during the pandemic could be avoided. Mobilize the presumptive patient to continue treatment, especially in remote areas. A helpline number should be generated and proper functioning of that should be ensured. Provide a PPE kit and other safety equipment so that there will be no shortage of any safety equipment for testing the sample. Diagnostic facilities should be improved molecular testing for presumptive TB patients should be preferred.

Logistics and the manpower: Immediately hire more doctors, lab technicians, nurses, TB health volunteers, and DOTs providers on a contract basis if this type of pandemic arises in the future. Provide extra finance/TA/DA to the center and HCF as well as for door-to-door service. There should be a separate team for

pandemic management, no workforce related to TB or any other prevalence should be compromised. Ensure the proper functioning of equipment and also the result of the TB test immediately. Information education counseling: More stress on Information Education and counseling through mass media. Use online portals for health consultation (e-sanjeevani) and also available internet and online service for poor patients. Convey and share information about the difference between COVID-19, other similar pandemics, and TB symptoms. Spreading awareness about the severity of tuberculosis and the consequences of not being diagnosed adequately causing symptoms of tuberculosis through mass media and telecommunication. Proper counseling of people regarding TB screening and symptoms, for early initiation of DOTs should be ensured. Educate the people about respiratory hygiene/cough etiquette to prevent the transmission of respiratory infections.

DISCUSSION

The study identified the perception of healthcare functionaries regarding the health-seeking behavior of PTB during the COVID-19 pandemic. During COVID-19 logistics and manpower was shifted from the TB centers to the COVID-19 care centers. The diagnostic services for TB were affected most out of all the services being provided to TB patients. It also identifies potential interventions, as recommended by healthcare professionals, to improve TB service use among presumptive TB patients and situations similar to this in the future. In our study, it was the opinion by respondents that there was a decrease in the number of patients seeking tuberculosis-related services (testing and treatment) compared to the pre-COVID-19 era. The majority of respondents stated that there was a delay in Tuberculosis diagnosis. A study by Arentz et al characterized the difference between TB case notifications in India from March 2020 through April 2021.[9] Due to the COVID-19 pandemic, there has been a decline in TB notifications worldwide including in India because of the complete closure of public and most private transport made it difficult, and the horror stories of patients with chronic conditions dying before they could make it to a doctor.[10] Tests, medical refills, and medical consultation are essential activities for the patient but were severely disrupted due to a lack of transportation, lockdown measures, and an overwhelmed health system.[11]

The normal functioning of the National tuberculosis elimination program's (NTEP) diagnosis and treatment for PTB was disrupted due to lockdown, social stigma, and a lack of awareness about the disease's testing and treatment. The study by Munro et al stated that the patient access to HCFs depended on distance and available transport as well as their physical condition. The patients do not have adequate means to go to the health cente.[12] Our study found that during COVID-19 there was a shifting of logistics and manpower from routine duties to COVID-19 duties. Many healthcare workers were infected with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and died during the pandemic leaving the post vacant which added further constraints in manpower. A study by Behera et al stated that health facilities and the workforce was diverted and were assigned a wide variety of activities related to controlling the pandemic. These compromised, other essential health services.[13] Medical staff rerouted to COVID-19 duty from their existing line of work found themselves completely change their daily routine. There was high increase in workload on HCF.[14] More health facilities had cut down their outdoor, laboratory and radiology services. Laboratory technicians were busy testing COVID-19. Patients were discourage from walking into facilities and were often not examined or tested. The preoccupation with COVID-19 was leading diagnosis while that of TB being missed on several occasion due to pressure in health care system.[15] Having TB is a stigma in our society, and during this period, COVID-19 added more to the stigma, so if a person tests positive for COVID-19, they will face severe discrimination from the community. A study by Xu et al stated that the stigma attached to TB in China leads to the imposition of socio-physical distance and participatory restrictions on those suffering from the disease.[16] According to the National Tuberculosis Elimination Program (NTEP) report in September 2018, heads of state and government met at the United Nations High-level meeting on TB, and in the resulting Political Declaration on the Fight to End TB, they committed to promoting and supporting an end to TB stigma and all forms of discrimination.[17]

In the current study people became confused between COVID-19 and tuberculosis symptoms, due to overlapping symptoms between the two diseases, and tuberculosis was misdiagnosed. A study by Min et al found that the health delay of TB during the first wave of the pandemic significantly increased compared to the before-pandemic period in Korea, due to similar respiratory symptoms present in TB and COVID-19, Almost all patients with cough and fever were redirected to COVID-19 screening clinics.[18] Due to a lack of understanding of TB, its symptoms, and how it spreads, people frequently confused it with other respiratory illnesses including asthma and COVID-19.[19] The COVID-19 pandemic taught us that existing health care service delivery mechanism are not fit to be used for delivering service in a similar scenario, if occur in the future. The current study highlights few recommendation from HCF who suggested door-to-door TB service, medication (isoniazid prophylaxis) can be given for more than a monthly basis. Digital service such as teleconsultation can be used for health consultation. A study by Behera et al suggested that increasing testing capacity, active screening, and implementation of strategies for easy identification of TB hotspots ensuring uninterrupted drugs supply for treatment through heedful planning of local and regional distribution and transportation will

especially help cater to the vulnerable population who are at high risk of suffering from adverse outcomes of TB.[13] The End TB strategy is envisioned in India by 2025, five years ahead of the global Sustainable Development Goal (SDG) target of 2030. To achieve TB Mukt Bharat, WHO India is preparing to implement Gatiman to augment technical assistance in the area of public-private partnership, TB surveillance, knowledge management, implementation research, drug-resistant TB, laboratories, TB infection management, and advocacy.[20] The current study used a mixed method design which is a better study design for seeking a detailed answer to the qualitative response. The study involved HCF who were involved with routine healthcare service, as well as the service, being declined during the COVID-19 pandemic, thus giving a better picture of the difference in service during that pandemic period. In the current study the data was collected from government healthcare facilities only, but the functioning of private healthcare is different from public healthcare facilities. Social desirability might seem in research participants to bias their responses in the survey to appear favorable to others. The perception of HCF was taken into account for assuring the service gaps for PTB patients instead of directly answering the PTB patient. This may result in surrogacy bias.

CONCLUSION

COVID-19 has resulted in the disruption of the NTEP and made it more difficult to reach the 2025 target for TB eradication. The COVID-19 era presents several challenges for managing PTB, such as strict lockdown, movement restriction, mandatory RTPC report and fear of losing jobs. In addition, social stigma against tuberculosis, lack of knowledge about TB, and an underestimation of TB diseases has affected testing and treatment of PTB. However, the study put forward few suggestions such as there is need to established suitable policies and programs, such as door-to-door services, teleconsultation, providing information education and guidance for those with PTB. The front-line TB intervention in India needs to be strengthened in the context of combating similar pandemic in the future.

Recommendations

The study found that there is scope for revamping the screening policies in NTEP for PTB patients given situations like pandemics/ epidemics. The study recommends the need of using teleconsultation for online consultation, door-to-door services for testing, and providing prophylaxis to those who need it. Information education and guidance to the general population. In context to achieve the goal of TB eradication by 2025, the front-line TB intervention such as increasing the diagnosis of TB or early detection of TB and distribution of drugs (INH) in India needs to be strengthened in the context of combating similar pandemics in the future.

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