

Understanding Awareness of Tuberculosis in Population of Maharashtra, India

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Abstract

Tuberculosis (TB) is a communicable disease and one of the foremost reasons of poor health, due to microorganism - Mycobacterium tuberculosis that most usually have an effect on the lungs or even different frame elements as properly. Throughout the year 2020, statistics had been reported from 198 nations and territories that accounted for greater than 99% of the world's population and predicted number of TB cases. Globally, an estimated 10.0 million (range, 8.9–11.0 million) humans were diagnosed with TB in 2019, and this number has been declining very slowly in recent years.

The study was conducted by doing a survey amongst the people of Maharashtra, India covering various regions from Urban to Rural, to understand the awareness amongst people. As right awareness would be the first key to success in controlling the community spread. DOTS being an initiative of Indian Government and it has been proved to control and treat tuberculosis at its best, but are the benefits of the same percolated to the interiors of the country and is the awareness enough where all required people can get the benefit out of that?

Data received showed good awareness amongst people about the disease as well as about DOTS, where 94% were aware about the disease with 72.66% were aware of DOTS, almost 40% believed DOTS to be a good treatment but only 27% knew that it comes for free.

More spread of awareness will help in controlling and managing the disease better across the region and across the country.

Keywords: TB Awareness; Tuberculosis; DOTS; TB in Maharashtra

Abbreviations

DMC: Designated Microscopy Center; DOTS: Directly Observed Treatment Short-course; GOI: Government of India; RNTCP: The Revised National Tuberculosis Control Program; TB: Tuberculosis; WHO: World Health Organization

Introduction

Tuberculosis (TB) is a communicable disease and one of the foremost reasons of poor health, due to microorganism - Mycobacterium tuberculosis that most usually have an effect on the

lungs or even different frame elements as properly. Tuberculosis can be cured and prevented. Mycobacterium tuberculosis is transmitted in airborne particles referred to as droplet nuclei. When patients with lung (pulmonary) TB, cough, sneeze or spit, they release the TB germs into the surrounding air [1].

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diagnosed with TB in 2019, and this number has been declining very slowly in recent years [2].

In 1993, the World Health Organization (WHO) Global Tuberculosis Program declared tuberculosis a global emergency and began promoting a management strategy called directly observed brief therapy (DOTS). The Revised National Tuberculosis Control Program (RNTCP) was launched in 1997 and implemented a gradual expansion, reaching national program coverage in March 2006. The program is based on the internationally recommended Directly Observed Treatment Short-course (DOTS) strategy. By 2005, 187 countries had started implementing DOTS with 4.9 million TB cases treated with DOTS in that year alone. Under the DOTS strategy, anti-TB drugs are ingested by patients under the supervision of a medical professional (DOT), thereby ensuring that the appropriate medications are administered at the appropriate time intervals and in the correct doses. In addition, DOTS increases the accuracy of TB diagnosis by supporting sputum smear microscopy, thereby reducing the spread of TB. Indigent patients are cared for under the DOTS program as free drugs are provided and the duration of illness is shortened. The social stigma associated with DOTS is reduced, which encourages symptomatic individuals to seek medical care. This program now covers more than one billion (1164 million) populations in 632 districts in 35 out of 12 states and union territories [Tiberi 2022].

8 million TB patients on treatment, saving an additional 2.3 million lives [3]. In May 2012, the Government of India (GOI) launched the Tuberculosis Notification Web Portal (Nikshay) for digitizing and tracking TB patients. One of the main features of "Nikshay" is the generation of a unique Nikshay ID for each TB patient on the site. of diagnosis, which can help follow the patient from diagnosis to treatment outcome. Likewise, the program has begun to use Nikshay to refer patients to other parts of the country from the place of diagnosis. Once referred by a designated microscopy center (DMC) after diagnosis, the DTC the patient is referred to will receive a message with the patient's details (name, age, gender and telephone number, including village and tehsil) in Nikshay's mailbox. is started after verification (patient visit or health worker visit) and DTC will send feedback with start date of treatment via Nikshay. The Nikshay system has been implemented in the National Capital Territory of Delhi (hereafter referred to as Delhi) to treat tuberculosis patients since April 2018 [4]. This

system is expected to facilitate regular monitoring and provide information on the start of treatment of TB patients reported by diagnostic site. For India, little information is available indicating that Nikshay has simplified the follow-up of TB patients and strengthened the feedback mechanism [5].

Materials and Methods

The study was a survey-based model, where the questionnaire was prepared after a strong literature search and understand the need for an hour based on the available information.

A questionnaire having approx. 23 questions was prepared to understand awareness amongst general population. This designed questionnaire was validated considering the feasibility and comfort as well as the completeness status, which was done by rolling-out the questionnaire amongst 25 random individuals.

The questionnaires were rolled out using online portal as well as some surveys were received physically using hard copies as per the convenience of the participant. Participants were considered from the state of Maharashtra. Double data entry was preferred for the entries which were received using the physical survey forms, to avoid errors, followed by which the data was cleaned and validated. Data cleaning and validation was done for the surveys received via online portal as well. Post which the complete data was merged. Considering the complete data entry we managed to receive 428 replies from general public, which meets the calculated sample size, which was calculated using statistical methods and was validated with the help of statistician, i.e. 434 participants.

Complete pooled data of 428 participants was then taken for analysis, data being dichotomous in nature, basic percentile method was considered for analysis.

Results and Discussion

As we did not find any literature where we could do a head-to-head comparison, we will be discussing the data based on the obtained results.

The survey began with the most basic questionnaire i.e. Do you know what Tuberculosis is? To which we received negative reply from 5.84% (25 of 428) participants which was really appreciable as the areas considered for the conducted of the survey were not only urban, but also from the interiors of Maharashtra state (Figure

1). These 25 participants were not allowed to take the survey ahead as the questions further talk about the treatment pattern, the cost, symptoms, etc.

night sweat, loss of appetite and chills i.e., 86.10% (347 of 403), 81.64 (329 of 403), 72.70% (293 of 403), 51.86% (209 of 403), 52.36% (211 of 403), 67% (270 of 403) and 48.14% (194 of 403) respectively, Figure 3 explains the same graphically.

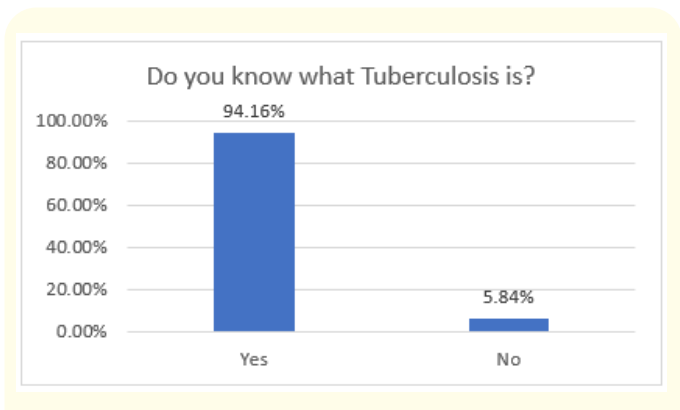


Figure 1: Do you know what tuberculosis is?

As one of the primary objective of the study was to know the awareness about tuberculosis in population of Maharashtra, it was also important to know amongst the ones who were aware of TB, how many of them know about the DOTS therapy which has proven to be a great success in the nation (India), to which it was observed that 77.17% (311 of 403) were aware of DOTS against which 22.83% (92 of 403) were not aware as to what DOTS is all about, graphically explained in figure 2.

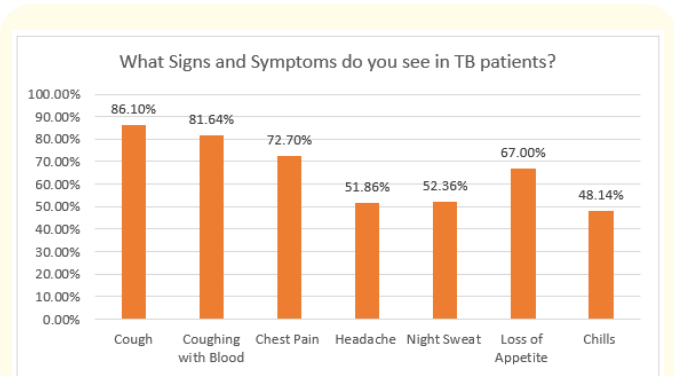


Figure 3: What Signs and Symptoms do you see in TB patients?

Knowing about DOTS is not sufficient, it was equally important to understand if people are aware of the DOTS center near them or in the region around, reply for this question was very poor as only 18.86% (76 of 403) individuals were aware of the centers in their respective region where 81.14% (327 of 403) had no idea about TB centers.

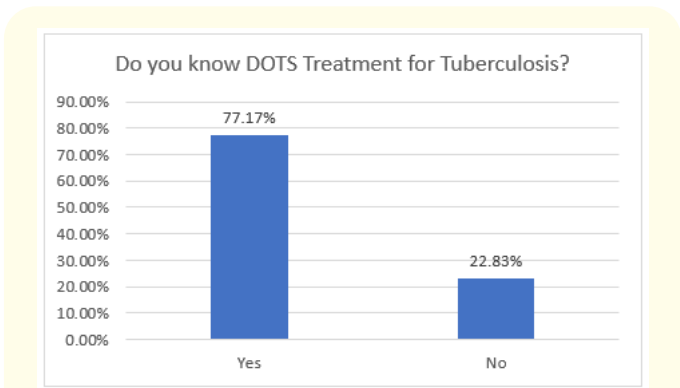


Figure 2: DO you know DOTS Treatment for Tuberculosis.

There are various diseases which are identified with the help of signs and symptoms, Tuberculosis is one of them, when asked to the participants, it was observed that the awareness was very good as we received even replies for almost all the given options which included cough, coughing with blood, chest pain, headache,

As the literature says that DOTS has proved to be the boon towards TB treatment and management and it is effectively managed by the government of India, but the question still continued to be is “Would you recommend a government center or would your still prefer to go with the private set-ups, whatever may be the reason, to which it was understood that 84.37% (340 of 403) would recommend a DOTS center and the remaining 15.63% (63 of 403) would prefer to go for a private center, figure 4.

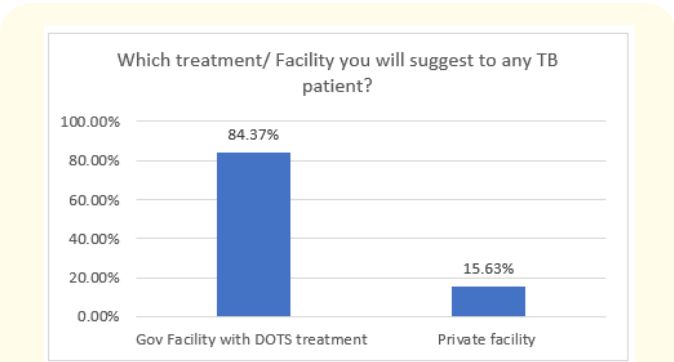


Figure 4: Which treatment/Facility you will suggest to any TB patient?

Of the complete participant when we figured out the perception about the government centers providing DOTS with perception as bad, good, better or best it was observed that 40.19% (172 of 428) felt it to be good and this was the highest voted, followed by 32.94% (141 of 428) for best, 18.69% (80 of 428) for better and only 5.84% (25 of 428) for bad (Figure 5).

Figure 5: Perceptions on Government's TB treatment/DOTS?

Initiative by the government of India for providing DOTS to TB patients was and has always been a free service with an effective outcome, but the concern was are people aware of the service been made available at no cost, it was understood that only 29.28% (118 of 403) participating individuals knew that DOTS comes for free to the TB patients, whereas the response was below 5% for the other given options i.e. between INR 1,000 to INR 5,000 having 2.73%, between INR 5,000 to INR 10,000 having 0.50% and 4.71% for more than INR 10,000, the remaining 62.78% (253 of 403) did not reply to the question, assuming they were not aware at all for it (Figure 6).

Figure 6: What is the cost according to you for TB Treatment for patients under DOTS (End to End cost).

Continuous awareness and the right awareness is very important amongst the people around, this will be one of the biggest key to success towards the new initiative by Indian Government i.e. Eradicate Tuberculosis by 2025. But is government taking the right, appropriate and enough initiative in spreading the right and best possible awareness (Figure 7).

Figure 7: What Measures Government is taking for TB awareness?

As we see above in figure 7, we understand that various initiatives are taken by the government of India like conducting awareness camps as that would help in the best awareness spread, free health check-ups which is not only help in identifying the infected individuals but also will certainly help in spreading the awareness amongst the society, Media advertisement has always proved to be the best source for spreading awareness, not only via television and radio, but also advertisements in movie theaters and road side hoardings will be a great help. People were aware of the initiatives by the government as 81.54% knew about Conducting TB Awareness Programs, 12.85% were aware of free Health Check Up Campaign, 83.64% for Media Advertisement being the highest and a couple them for others.

It is necessary for every treatment (for any disease) to be for the right duration to provide the best efficacy and the best legacy effect. DOTS also must be in the similar manner based on the severity of the disease. When asked to the participants of the survey it was observed that 39.95% (161 of 403) considered it to be for 1 year and above, 33.75% (136 of 403) receiving the second maximum votes for 24 weeks i.e., 6 months followed by 11.41% and 14.89% for 4 months and 2 months respectively.

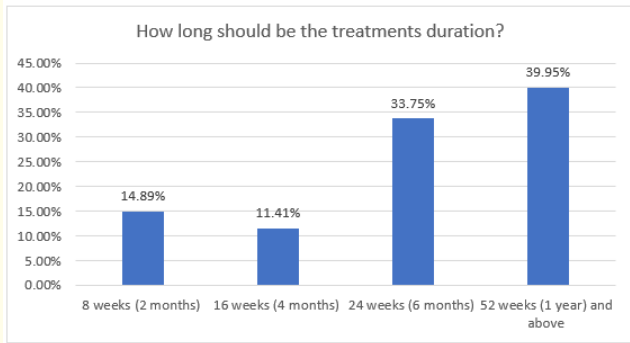


Figure 8: How long according to you is the treatments duration?

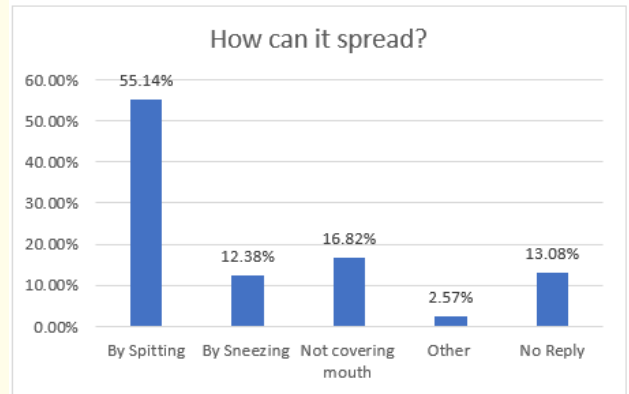


Figure 10: How can it spread?

The current pandemic i.e., COVID-19 made us learn the spread of disease and how to control the same, such kind of spread is not something that has raised today, this has been ongoing since decades, Tuberculosis was one of the major disease for which the spread had to be controlled and the highest awareness program that was successfully executed was by ensuring that people do not spit in public places. To know the awareness amongst the targeted population the basic question which was put fourth was “Do you think these patients can Spread Tuberculosis to another individual?” (results explained in Figure 9) followed by the leading question “If yes, how can it spread?” (results explained in Figure 10).

92.31% (372 of 403) were well aware of the spread of disease while only 7.69% (31 of 403) were not aware of the spread of TB. Based on the same with the leading question 55.14% (236 of 403) were well aware of it being spreading by spitting, while 12.38% (53 of 403), 16.82% (72 of 403) and 2.57% (11 of 403) voted for by sneezing, not covering mouth while coughing and others respectively. 13.08% (56 of 403) did not reply to the question this consisted of those who are not aware of Tuberculosis and the ones who do not believe that TB infected person can spread the same.

Last 2 questions of the survey were about the recovery rate and the death rate of individuals suffering with tuberculosis.

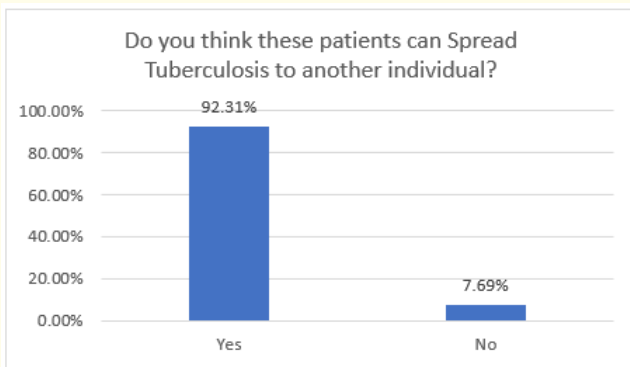


Figure 9: Do you think these patients can Spread Tuberculosis to another individual?

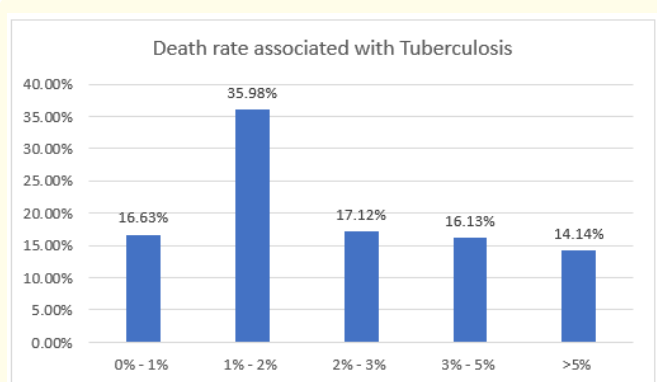


Figure 11: Are you aware of death rate associated with Tuberculosis?

As understood from the literature, death rate for tuberculosis in India is ranging from 1-3% when asked to the survey participants, maximum votes were received for the range of 1-2% i.e., 35.98% while the other ranges like 0-1%, 2-3%, 3-5% and >5% were in the range if 14-17%.

Similarly in the case of recovery rate, literature available states that it range from 90-95%, observed results should that approximately 30-33% people believed the recovery rate to be <80% or 95-99%, frequency range of 80-90% was voted by 21% the rest lied with 90-95% and 100% [6-10].

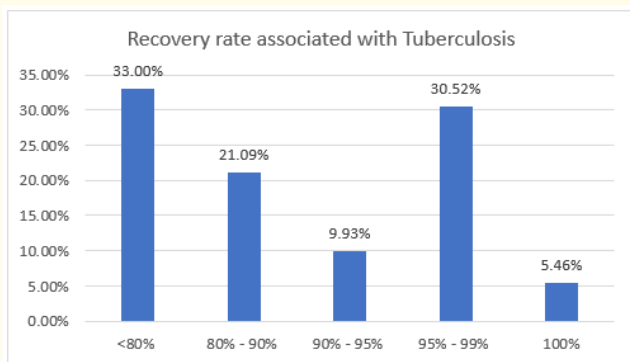


Figure 12: Are you aware of recovery rate associated with Tuberculosis?

Conclusion

Tuberculosis is a disease which can now be very well managed with the help of medications may it be at DOTS center by the government of India or be it at a private set-up. But managing the spread of the same will begin at home by not only having an awareness about the disease but having a right awareness for managing the same.

As we see from the survey conducted, awareness in people of Maharashtra is good, but still for certain parameters a better awareness will be more helpful to the society.

Eradicate Tuberculosis by 2025, an initiative by government of India will only be possible when the right awareness will be present in maximum individuals, such kind of surveys will help in building one. If eradicating Polio from the country can be possible, certainly we will be successful in eradicating Tuberculosis as well.

Conflict of Interest

No conflict of interest lies with any of the authors.

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