

Original research article

Awareness and knowledge about tuberculosis in patients of tuberculosis in a tertiary care hospital

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Abstract

Objective: Tuberculosis has remained a disease of public health importance since ages and is known to inflict large quantum of socioeconomic cost on the society. The compliance for treatment can be increased if patient is well aware about the disease, treatment and preventive measures. Hence, a study was done to evaluate the knowledge and awareness of TB among TB patients in a tertiary care institute.

Methods: This cross sectional study was conducted in a tertiary care institute, Maharishi Markandeshwar Medical College & Hospital, Kumarhatti, Solan for period of 1 year. Data was collected on pre-designed, pre-tested and semi structured schedule by the interview technique by the investigator himself. Appropriate statistical tests were applied for evaluation of data from 112 patients

Results: Majority (68.8%) had heard of tuberculosis before diagnosis. Nearly one fourth (23.2%) had knowledge about cause of tuberculosis while three fourth of the subjects (76.8%) were unaware of the cause. The most sought answer for investigation was chest x-ray (73.2%). Nearly one third knew the proper duration of treatment (35.7%). Majority of patients i.e. (53.6%) believed that tuberculosis is not a curable disease. Regarding knowledge of prevention of spread of infection to others 75% of the subjects were not aware.

Conclusion: There is a definite knowledge gap among the patients regarding the cause, mode of transmission of tuberculosis, duration and dosage schedule of the therapy, which should be definitely addressed by the DOTS providers and IEC materials.

Keywords: Tuberculosis, Direct Observed Treatment short Course (DOTS), Knowledge gap, Socioeconomic cost

Introduction

Tuberculosis, MTB, or TB (short for tubercle bacillus), in the past also called phthisis, phthisis pulmonalis, or consumption, is a widespread, infectious disease caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis*. Tuberculosis generally affects the lungs, but can also affect other parts of the body. It is spread through the air when people who have an active TB infection cough, sneeze, or otherwise transmit respiratory fluids through the air. Most infections do not have symptoms, known as latent TB. About one in ten latent infections eventually progresses to active disease which, if left untreated, kills more than 50% of those so infected.

Tuberculosis has remained a disease of public health importance since ages and is known to inflict large quantum of socioeconomic cost on the society. Despite the availability of effective facilities, one death takes place every two minute in India.

Though India is the second-most populous country in the world one-fourth of the global incident TB cases occur in India annually. According to global TB report 2016, out of the estimated global annual incidence of 10.4 million TB cases, 2.8 million were estimated to have occurred in India ^[1].

The compliance for treatment can be increased if patient is well aware about the disease, treatment and preventive measures. A study regarding awareness about TB conducted in Surat, a region in south Gujarat, India, showed that 80% people knew about symptoms of TB ^[2]. Another study conducted by Indian Chest Society showed that 84% subjects were aware of the free treatment available for TB under National Program ^[3]. A study conducted in slum areas of Delhi showed that 83.6% population knew about TB ^[4].

Since inception of RNTCP (Revised National Tuberculosis Control Programme) in 1997 and covering the whole country by March 2006, the RNTCP has made significant progress in TB control over the last

decade through the countrywide DOTS implementation [5].

No programme for TB control can be effective unless erroneous beliefs among the masses are identified and removed.

Methods

The study was conducted in a tertiary care institute, Maharishi Markandeshwar Medical College & Hospital, Kumarhatti, Solan for the purpose of teaching, training and research activities for medical undergraduates.

Data was collected on pre-designed, pre-tested and semi structured schedule by the interview technique by the investigator himself.

Written and informed consent was taken from all the subjects before initiating the interview. The confidentiality of the information was assured. Health education talks regarding TB awareness was conducted. Ethical approval was taken from Institutional Ethics Committee.

Collected data were entered in the MS Excel spreadsheet, coded appropriately and later cleaned for any possible errors. Analysis was carried out using SPSS (Statistical Package for Social Studies) for Windows version 20.0 and online Graph Pad software (Prism 5 for Windows) version 5.01. During data cleaning, more variables were created so as to facilitate association of variables. Clear values for various outcomes were determined before running frequency tests.

Categorical data were presented as percentages (%). Pearson's chi square test was used to evaluate differences between groups for categorized variables.

Normally distributed data were presented as means and standard deviation, or 95% confidence intervals (CI). Student's t test for independent samples was used for comparison between quantitative variables. All tests were performed at a 5% level of significance, thus an association was significant if the p value was less than 0.05.

Results

This cross sectional study was conducted in a tertiary care institute, Maharishi Markandeshwar Medical College & Hospital, Kumarhatti. All patients registered during the study period (January 2016-December 2016) were evaluated for their awareness and knowledge.

Table 1: Distribution of patients according to their socio-demographic profile (N = 112)

Sociodemographic variable	Frequency (percentage)
Gender	
Male	71 (63.4%)
Female	41 (36.6%)
Age group (years)	
15-30	22 (19.6%)
31-45	27 (24.1%)
46-60	35 (31.3%)
> 60	28 (25.0%)
Marital status	
Married	95 (84.8%)
Others	17 (15.2%)
Education	
Illiterate	37 (33.1%)
Primary school	19 (16.9%)
Middle school	16 (14.3%)
Higher and above	40 (35.7%)
Occupation	
None	40 (35.7%)
Farmer	41 (36.6%)
Business	8 (7.2%)
Service (Govt./pvt.)	23 (20.5%)
Family type	
Joint	40 (35.7%)
Nuclear	62 (64.3%)
Residence	
Rural	89 (79.5%)
Urban	23 (20.5%)

Table 1 shows the socio demographic profile of the patients. The maximum percentage (31.3%) of patients were in the age group of 46–60 years, followed by >60 years (25%). The male population was more predominant (63.4%) as compared with female subjects (36.6%). According to education status majority of the subjects had higher and above (35.7%) education, followed by illiterate (33.1%), primary (16.9%) & middle school (14.3%). The family framework showed dominance of nuclear families with

64.3% while 35.7% were living in joint family. As per residence, 79.5% were living in rural areas and 20.5% were living in urban areas. On basis of occupational status most of the subjects were farmer (36.6%), followed by unemployed (35.7%), service (20.5%), and business class (7.2%).

Table 2: Distribution of patients according to type of TB (N = 112)

Type of TB	Frequency (percentage)
Pulmonary	97 (86.6%)
AFB Negative	8 (8.3%)
Scanty	2 (2.1%)
Grade I	55 (56.7%)
Grade II	18 (18.5%)
Grade III	14 (14.4%)
Extra- Pulmonary	15 (13.4%)

Table 2 shows distribution of study subjects according to type of tuberculosis. Pulmonary tuberculosis accounted for 86.6% and extra pulmonary TB for 13.4%. Grading of AFB stain revealed maximum patients were in Grade I followed by Grade II and III.

Table 3: Distribution of patients according to personal habits (N = 112)

Personal habits	Frequency (percentage)
None	79 (70.5%)
Tobacco (Smoking /smokeless)	23 (20.5%)
Alcohol	30 (26.8%)
Both	20 (17.8%)

Table 3 depicts nearly one fourth of the patients were consuming alcohol (26.8%) and about one fifth had tobacco addiction (20.5%).

Table 4: Distribution of patients according to co-morbid conditions (N = 112)

Co-morbid conditions	Frequency (percentage)
Diabetes Mellitus	
Yes	14 (12.5%)
No	98 (87.5%)
HIV	
Yes	2 (1.8%)
No	110 (98.2%)

As shown in Table 4, Diabetes Mellitus was present in 12.5% of the patients and 1.8% subjects were HIV positive.

Table 5: Knowledge & awareness regarding aetiology & clinical features of TB among study subjects (N=112)

Character	Frequency (percentage)
Heard of TB (before onset of disease)	
Yes	77 (68.8%)
No	35 (31.2%)
Knowledge about Cause of TB	
Yes	26 (23.2%)
No	86 (76.8%)
Knowledge about Mode of spread	
Inhaled droplets	30 (26.7%)
Food borne	4 (3.6%)
Blood borne	6 (5.4%)
Don't know	72 (64.3%)
Knowledge about symptoms*	
Cough	76 (67.9%)
Fever	81 (72.3%)
Weight loss	54 (48.2%)
Breathlessness	16 (14.3%)
Pain chest	3 (2.7%)
Others	3 (2.7%)

Out of 112 patients, majority (68.8%) had heard of tuberculosis before diagnosis. Nearly one fourth (23.2%) had knowledge about cause of tuberculosis while three fourth of the subjects (76.8%) were unaware of the cause. Around one fourth (26.7%) recognized inhaled droplet as the common source of

infection. Regarding the symptomatology, fever (72.3%) was the most sought answer followed by cough (67.9%) and weight loss (48.2%).

Table 6: Knowledge & awareness regarding management of TB among study subjects (N=112)

Character	Frequency (percentage)
Knowledge about investigation	
Sputum examination	72 (64.3%)
Chest X-ray	82 (73.2%)
Montoux test	8 (7.1%)
Blood test	12 (10.7%)
Don't know	28 (25.0%)
Knowledge about duration of treatment	
Yes	40 (35.7%)
No	72 (64.3%)
Knowledge about curability of disease	
Yes	52 (46.4%)
No	60 (53.6%)
Knowledge about prevention of spread of infection to others	
Yes	27 (24.1%)
No	85 (75.9%)
Knowledge about DOTS center for treatment of TB	
Yes	63 (56.2%)
No	49 (43.8%)

One fourth of the patients were not aware of investigation carried out for the diagnosis of disease. Nearly one third of patients reported sputum examination (64%) to be the criteria for diagnosis. The most sought answer for investigation was chest x-ray (73.2%). Nearly one third knew the proper duration of treatment (35.7%). Majority of patients i.e. (53.6%) believed that tuberculosis is not a curable disease. Regarding knowledge of prevention of spread of infection to others 75% of the subjects were not aware. Interestingly 56.2% have heard about DOTS center for treatment of tuberculosis.

Table 7: Awareness regarding IEC activities of TB among study subjects (N=112)

Character	Frequency (percentage)
Source of information about TB*	
Doctor	22 (19.6%)
Health workers	56 (50.0%)
TV /Radio	31 (27.6%)
Newspaper	18 (16.1%)
Pamphlets/banners	26 (23.2%)
Friends/Relatives/neighbours	42 (37.5%)
Brand Ambassador for TB known	
Yes	20 (17.9%)
No	92 (82.1%)

Table 7 depicts awareness regarding IEC activities of tuberculosis among study subjects. Main source of information were health care workers (50.0%) followed by friends/relatives/neighbours (37.5%), TV/radio (27.6%), pamphlets/banners (23.2%). Surprisingly, most of the patients (82.1%) did not know the brand ambassador of tuberculosis (Amitabh Bachchan).

Discussion

Our study assessed the knowledge and awareness among tuberculosis patients aged between 15-60 years. In our study, 33.1% of the patients had not received any formal education. The family framework showed dominance of nuclear family with 64.3% and as per the residence, majority of the people belonged to rural area with 79.5% than urban area.

Our study showed that all forms of tobacco intake was 20.5%, consumption of alcohol was found to be 26.8%, which can lead to tuberculosis, lung cancer and other pulmonary diseases. In a similar study by Bansal *et al.* [6] in Meerut depicted higher percentage of tobacco consumers (47.5%) and less alcohol consumers (4%) than our study.

In our study, more than 2/3rd respondents heard about tuberculosis before they were diagnosed which less as compared to other studies is. Bansal *et al.*, [6] had major proportion of nearly 3/4th who were unaware about tuberculosis and Rami *et al.* [11] in Gujarat stated that about 72.18% patients heard about tuberculosis. A study conducted by Das R *et al.* [8]. Mentioned regarding the knowledge of pulmonary tuberculosis prior to acquiring it, 92.28% study participants had acquaintance to the name of the disease.

Majority of the patients (76.8%) in our study did not know the cause of tuberculosis. A similar study conducted by Yadav *et al.*^[12] showed that only 1.60% had perception about cause of tuberculosis which is much less in comparison to our study. Study by Das R *et al.*^[8] showed that the cause of the disease was known to only 14.10 percent of the patients. Whereas in a study by Palash *et al.*^[9] around 5/6th of the respondents knew the cause. Contrary to our study, the higher percentage of patients knowing the cause was demonstrated by study of Ahmad *et al.*^[7] and Rami *et al.*^[11]. Which is 80% and 59%, respectively.

Regarding knowledge of mode of spread of tuberculosis infection, our study showed that 26.7% patients suggested inhaled droplets to be the most important mode of transmission whereas 3.6% and 5.4% said food borne and blood borne as the mode of spread of disease. Remaining 64.3% did not know the answer. In the study conducted by Rami *et al.*,^[11] regarding the mode of spread of tuberculosis, the correct response (cough, spit, sputum –droplets, air - borne) was given by 41.05% patients which is higher than our study.

On the other hand, the study conducted by Palash *et al.*^[8], acknowledging the mode of spread of tuberculosis, the correct response (cough, spit, or sputum droplet, air-borne) was told by 31.47% of patients. Eating with tuberculosis carriers (08.62%), talking face-to-face (05.17%), and unhygienic conditions (05.17%) were also reported. Remaining, 49.57% of patients didn't have any idea about mode of spread of tuberculosis. Hence this study has higher percentage of patients having knowledge about mode of spread of tuberculosis when compared to our study.

The two studies conducted by Ahmad *et al.*^[7] and by Das R *et al.*^[8], showed that around 50% patients had knowledge about mode of spread of tuberculosis which was higher in comparison to our study.

Regarding knowledge about symptoms of tuberculosis, there were multiple responses by patients in our study. Nearly, 72% believed fever to be the most common symptom, followed by cough 67.9%, weight loss 48.2%, breathlessness 14.3%, chest pain and other 2.7% each.

A study conducted by Palash *et al.*^[9] majority of the participants perceived cough with sputum 62%, followed by hemoptysis 30% and fever 25%. There were multiple responses by patients in this study too.

Another study on the basis of knowledge about symptoms was conducted by Das R *et al.*,^[8] 86.40% perceived cough as the common symptom followed by fever 50.50%.

In the study conducted by Ahmad *et al.*,^[7] showed that the maximum knowledge was for cough (60.5%) as an important symptom. About 30.75% gave other options as symptoms, particularly, weight loss, breathlessness, and weakness.

Majority of the patient's i.e 73.2% in our study, agreed that tuberculosis can be diagnosed by chest X-ray, while 64.3% considered that it can be investigated by sputum examination. Rest suggested montoux test to be 7.1% and blood test to be 10.7% for the diagnosis of tuberculosis. Whereas similar study conducted by Jangid *et al.*, suggested that 64.7% patient believed chest X-ray as an important diagnosis and sputum examination was found to be 59.8% of the total study group.

Another study conducted by Bansal *et al.*, on knowledge regarding investigation among 23% patients revealed chest X-ray as an important diagnosis whereas 17% said sputum examination to be the foremost investigation.

As per the knowledge about duration of treatment in our study, majority of the patients i.e 64.3% did not know the duration of treatment. Surprisingly, in the similar study conducted by Bansal *et al.*,^[6] had much lower percentage of the patients (20%) knowing the duration of treatment. Whereas the study of Jangid *et al.*, stated that 55.8% patients knew the duration of treatment.

In our study, we found that, roughly 53% did not know about curability of disease, however, on comparing to the study by Jangid *et al.*^[10], showed that majority of the patients i.e 84% knew about curability of tuberculosis.

Our study surprisingly had major percentage of the patients knowing about DOTS centre i.e 56.2% as compared to study by Ahmad *et al.*,^[7] which revealed that only 13.7% subjects knew about DOTS centre. Another study done by Palash *et al.*,^[9] declared that 2% had the knowledge about DOTS centre.

In our study, the major source of knowledge about tuberculosis was social health workers which was approximately 50%, followed by friends/relatives/neighbors which was found to be 37.5%, TV/radios by 27.6%, banners/pamphlets by 23.2% and doctors by 19.6%. The same study conducted by Palash *et al.*,^[9] showed that their major source of information was community and health personnel. This is consistent with the study conducted by Das R *et al.*^[8] stating that 91.3% of patient had acquired knowledge from the community.

Conclusion

This cross sectional study highlighted that the knowledge and awareness about tuberculosis among tuberculosis patients in this part of Solan was average. There is a definite knowledge gap among the patients regarding the cause, mode of transmission of tuberculosis, duration and dosage schedule of the therapy, which should be definitely addressed by the DOTS providers and IEC materials. But a major part of study population was aware about the various symptoms of tuberculosis. Apart from pharmacological treatment, poor knowledge of tuberculosis among patients of tuberculosis also needs

great attention. An attempt could be made in future to improve awareness among illiterates to remove myths and misconceptions, to allay the social stigma attached with it, and to decrease tuberculosis transmission.

References

1. World Health Organization (WHO) Global Tuberculosis Report 2016. Geneva. 2016.
2. Vidhani M, Vadgama P. A study among patient taking treatment of TB in rural area of Surat in Gujarat. *Natl J Med Res.* 2012;2(4):452-55.
3. Chinnakali P, Ramakrishnan J, Vasudevan K, Gurumurthy J, Upadhyay RP, Panigrahi KC. Level of awareness about TB in urban slums: implications for advocacy and communication strategy planning in the National Program. *Lung India.* 2013;30(2):139-42.
4. Malhotra R, Taneja DK, Dhingra VK, Rajpal S, Mehra M. Awareness regarding TB in a rural population of Delhi. *Indian J Community Med.* 2002;27:62–8.
5. Central TB Division, Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India. TB India 2010 RNTCP Status report. 2010.
6. Bansal R, Ahmed S, Goel K, Kaur G. Knowledge and misconceptions of Pulmonary Tuberculosis patients at DOTS Centre, Urban Meerut. *Indian Journal of Community Health.* 2013;119-125.
7. Aslami AN, Nelson V, Jobby A, Ahmed MS, Simon S. Awareness of tuberculosis among general patients of a tertiary-care hospital in Kollam, Kerala. *Int J Med Sci Public Health.* 2015;4:1685-1690.
8. Das R, Basu M, Dutta S, Das D. Perception of tuberculosis among general patients of tertiary care hospitals of Bengal. *Lung India.* 2012;29(4):319–24.
9. Basu M, Das P. Assessment of knowledge regarding tuberculosis in the context of revised national tuberculosis control program among budding doctors. *Chron Young Sci.* 2014;5:59-64.
10. Jangid VK, Agrawal NK, Yadav GS, Pandey S, Mathur BB. Knowledge and Awareness of the Tuberculosis in Tuberculosis Patients at a Tertiary Care Centre in North West Rajasthan, India. *Ntl J Community Med.* 2016;7(4):262-268.
11. Rami K, Thakor N, Patel A. Awareness and knowledge about tuberculosis in patient of tuberculosis at GMERS Medical College and Hospital Dharpur, Patan, Gujarat. *Int J Med Sci Public Health.* 2015;4:906-909.