



KNOWLEDGE AND AWARENESS OF THE TUBERCULOSIS IN TUBERCULOSIS PATIENTS AT A TERTIARY CARE CENTRE IN NORTH WEST RAJASTHAN, INDIA

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ABSTRACT

Introduction- The awareness and knowledge about TB vary in different geographical locations and a relationship exists between knowledge and prevention of disease. Hence we planned to conduct the study to assess it in TB patients in North West Rajasthan, India.

Method- A cross sectional, questionnaire based epidemiological study was conducted in 510 TB patients of age group 16-78 years for 9 months from April 2010 to January 2011 in the Department of TB & Chest, S.P. Medical College, Bikaner, Rajasthan, India.

Results- Majority of patients (87.2%) patients got the information of TB from health workers and only 19.6% knew that TB is caused by germs. About 50.9% patients of TB knew mode of spread of TB through the air when coughing, 81.3% knew that cough the most common symptom of TB. Only 16.6% patients heard about vaccine of TB and not a single patient knew the name of this vaccine. Only 9.8% patients knew about DOTS but 73.5% knew that treatment is available at government health centre free of cost. Approximate 80% patients believed that TB is a serious disease, infectious disease and major problem of India but is curable. Illiteracy and low per capita income significantly impacted the knowledge and awareness of TB in negative direction.

Conclusion- Apart from the multi-drug therapy, poor knowledge and awareness regarding TB among TB patients is alarming sign for nation.

Key words: Tuberculosis, Pulmonary TB, knowledge, Awareness

INTRODUCTION

Though India is the second-most populous country in the world, one fourth of the global incident tuberculosis (TB) cases occur in India annually. In 2012, out of the estimated global annual incidence of 8.6 million TB cases, 2.3 million were estimated

to have occurred in India.¹ TB is the seventh most common cause of mortality worldwide.²

Since 1992, RNTCP (Revised National Tuberculosis Control Programme) is essentially a patient focused programme for control of tuberculosis in India. The programme believes that cured patient act as one of the best motivators promoting case

detection and patient adherence to treatment. The current focus of the RNTCP of Government of India uses Directly Observed Treatment Short Course (DOTS) to achieve and maintain a cure rate of over 85% and augmentation of case finding activities to detect at least 70% of estimated cases.³ Achieving these goals requires active community participation by creating awareness on the etiology, symptomatology, management, preventive measures, and information of availability of services, etc.

Lack of knowledge about the disease and stigmatization causes underutilization of the services, delay in seeking diagnosis, and poor treatment adherence.⁴ Non-adherence to treatment often results from inadequate knowledge or understanding of the disease and its treatment.⁵ On the other hand greater knowledge about TB may increase the acceptance to the control measures with the resultant decrease in the spread of the disease.⁶ By educating the patients and removing their misconceptions, patient compliance with therapy and spread of disease is likely to improve.⁷ Studies across the world revealed misconceptions and limited knowledge about the disease and its treatment.⁸⁻⁹

Few studies conducted to know about the awareness of TB found that awareness and knowledge vary from place to place. As awareness and knowledge about TB vary in different geographical locations and a relationship exists between knowledge and prevention/compliance, so it is worthwhile to conduct this type of study in the remote area especially in Northern Rajasthan. Hence, this study is a sincere effort to throw light on socio-demographic profile, knowledge, and awareness of TB among TB patients.

MATERIAL & METHODS

This descriptive analytical cross sectional epidemiological study was conducted for 9 months from April 2010 to January 2011 in the Department of Tuberculosis & Respiratory Diseases, S.P. Medical College, Bikaner, Rajasthan, India. The study was got approval from the institutional ethics committee before enrolling the subjects in the study. Each Patient was informed about the purpose of the study and written informed consent was taken. The study was conducted on all TB patients who visited OPD or admitted in TB ward during study period and given written informed consent. The Sample size was 510 (Five hundred and ten patients) as per complete enumeration technique. The Interview based questionnaire was designed at the beginning of the study and pretested. It contained both open and close ended questions. The study demographic variables and the questions which

assessed the Knowledge and awareness of the patients were same as given in Table-1 & 2. The responses given by the study group were compiled and analyzed according to socio-demographic structure. The collected data were analyzed using statistical package for social science (IBM SPSS Statistics Version 20) and inferences were drawn using χ^2 -test.

RESULTS

Of 510 patients, 335 (65.7 %) were males aged from 16 to 78 years. Majority of respondents (39.2%) were in the age group of 31-45 years. About 3/4 th patients belonged to rural areas and illiterate. Almost all females were housewives and majority of males were farmers. (Table-1)

Table- 1: Distribution of patients according to demographic variable

Demographic variable	Division	Patients (n=510) (%)
Sex	Male	335 (65.7)
	Female	175 (34.3)
Age group (Years)	15-30	165 (32.4)
	31-45	200 (39.2)
	46-60	100 (19.6)
	>60	45 (8.8)
Religion	Hindu	475 (93.1)
	Muslim	35 (6.9)
Residence	Rural	385 (75.4)
	Urban	125 (24.5)
Education	Illiterate	370 (72.5)
	literate	140 (27.5)
Per capita income (Rupee)	< 1500 per month	345 (67.6)
	>1500 per month	165 (32.4)
Occupation	Farmer	175 (34.3)
	Unskilled labourer	70 (13.7)
	Housewives	150 (29.4)
	Students	15 (2.9)
	Unemployed	5 (0.9)
	Other professions	95 (18.6)

In our study 100% respondents had already heard about the disease tuberculosis and the main source of information about tuberculosis was health workers (87.2%). About 77.4% respondents considered tuberculosis as a serious disease. There was a significant gap between the opinions of male (83.6%) and female patients (65.7%) about seriousness of disease. Most of the patients (71.5%) agreed that tuberculosis is a major problem in India and approximate same number of patients (77.4%) considered tuberculosis to be an infectious disease. But some (22.6%) did not consider it as an infectious disease. About 50.9% respondents told that tuberculosis spreads through the air while coughing. Some other responses were that tuberculosis can be transmitted through use of patients personal things (40.2%), Physical contact (14.7%), genetics (7.8%),

sexual contact (5.8 %) and blood (3.9%). Total 21.5 % patients gave "Do not know" response. Female were unaware about the mode of transmission and responded maximum for through use of patients

personal things (45.7%) and 34.3% did not have any idea about it. Maximum no of patients thought that tuberculosis is caused by weakness (38.2%), bad diet (21.5%) and infection by germs (19.6%).

Table-2.1: Sex Distribution of patients according to awareness and knowledge of tuberculosis

Questions for knowledge	Total patient- 510 (%)	Male (%)	Female (%)
Source of information about TB			
Friends or relatives	95 (18.6)	55 (16.4)	40 (22.9)
Media	75 (14.7)	60 (17.9)	15 (8.6)
Health workers	445 (87.2)	300 (89.6)	145 (82.9)
Books	20 (3.9)	20 (6)	0(0)
Lectures	5 (0.9)	0(0)	5 (2.9)
Others/Don't know	15(2.9)	10 (3)	5 (2.9)
TB spreads by			
Through the air when coughing	260 (50.9)	220 (65.7)	40 (22.9)
Blood borne	20 (3.9)	10 (3)	10 (5.7)
Physical contact	75 (14.7)	50 (14.9)	25 (14.3)
Sexual contact	30 (5.8)	30 (9)	0
Use of patients personal things	205 (40.2)	125 (37.3)	80 (45.7)
Genetic	40 (7.8)	20 (6)	20 (11.4)
Others	0 (0)	0(0)	0(0)
Don't Know	110 (21.5)	50 (14.9)	60 (34.3)
What causes TB			
Smoking	80 (15.6)	65 (19.4)	15 (8.6)
Weakness	195 (38.2)	105 (31.3)	90 (51.4)
Infection by germs	100 (19.6)	80 (23.9)	20 (11.4)
hard work	35(6.8)	35 (10.4)	0(0)
Bad diet	110 (21.5)	80 (23.9)	30 (17.1)
Alcohol	80 (15.6)	70 (20.9)	10 (5.7)
Gods curse	35(6.8)	30 (9)	5 (2.9)
Don't know / Others	140 (27.4)	60 (17.9)	80 (45.7)
Tuberculosis affects which organ*			
Lung	380 (74.5)	265 (79.1)	115 (65.7)
Heart	0 (0)	0(0)	0(0)
Liver	0 (0)	0(0)	0(0)
Kidney	0 (0)	0(0)	0(0)
Brain	20 (3.9)	20 (6)	0(0)
Abdomen	15(2.9)	10 (3)	5 (2.9)
Any organ of the body	40 (7.8)	30 (9)	10 (5.7)
Don't know	80 (15.6)	40 (11.9)	40 (22.9)
Tuberculosis can be identified by symptoms*			
Cough	415 (81.3)	270 (80.6)	145 (82.9)
Fever	175 (34.3)	120 (35.8)	55 (31.4)
SOB	195(38.2)	135 (40.3)	60 (34.3)
Weight Loss	115(22.5)	75 (22.4)	40 (22.9)
Hemoptysis	39 (7.6)	14 (4.7)	25 (14.3)
Chest Pain	125 (24.5)	85 (25.4)	40 (22.9)
Others	0 (0)	0(0)	0(0)
Tuberculosis can be diagnosed by			
X-ray chest	330 (64.7)	230 (68.7)	100 (57.1)
Sputum Examination	305 (59.8)	220 (65.7)	85 (48.6)
Blood Examination	165(32.3)	110 (32.8)	55 (31.4)
Urine Examination	30 (5.8)	10 (3)	20 (11.4)
Others/don't know	50(9.8)	5 (1.5)	45 (25.7)

Although in the patients group, male responded equal for infection by germs (23.9%) and alcohol (23.9%) but female more inclined towards weakness (51.4%). 45.7% female did not have any idea about it. Out of total 510 respondents 380 (74.5%) think that tuberculosis affects the lungs. 15.6%

respondents did not know as to which organ is affected by tuberculosis. 7.8 % respondents said that it can affect any organ of the body but nobody was of the view that tuberculosis can affect heart, kidney or liver. Majority of patients (81.3%) considered cough is the most common symptom of

tuberculosis. The results also suggested that 64.7% patients agreed that tuberculosis can be diagnosed by x-ray chest while 59.8% considered that it can be diagnosed by sputum examination. (Table-2.1 & 2.2)

About 375 (73.5%) patients thought that treatment of tuberculosis is available at government health centre at free of cost whereas only 9.8% have heard of DOTS. As far as duration of treatment is concerned 55.8% patients considered that the duration of the

treatment of tuberculosis is 6-12 months while 13.7% did not know about this. Most of the respondents (84.3%) agree that tuberculosis is curable whereas 69.6% respondents think that tuberculosis patient can live a normal life. It is observed that 83.4% patients have not heard of vaccination for tuberculosis and only 6.8% patients were vaccinated. It is also observed that 100% patients didn't know about the name of the vaccine for tuberculosis. (Table-2.2)

Table-2.2: Sex distribution of patients according to awareness and knowledge of tuberculosis

Questions for knowledge and awareness	Patient- 510 (%)	Male (n=335) (%)	Female (n=175) (%)
Heard about tuberculosis	510 (100)	335 (100)	175(100)
TB is a serious disease	395 (77.4)	280 (83.6)	115 (65.7)
Tuberculosis is a major problem in india	365 (71.5)	255 (76.1)	110 (62.9)
Tuberculosis is infectious disease	395 (77.4)	280 (83.6)	115 (65.7)
Treatment of tuberculosis is available at government health centre at free of cost	375 (73.5)	290 (86.6)	85 (48.6)
Heard of DOTS	50 (9.8)	40 (11.9)	10 (5.7)
Duration of treatment for tuberculosis			
< 6 months	145 (28.4)	90 (26.9)	55 (31.4)
6-12 months	285 (55.8)	195 (58.2)	90 (51.4)
> 12 months	15 (2.9)	10 (3)	5 (2.9)
Life time	0 (0)	0(0)	0(0)
Don't know	70 (13.7)	40 (11.9)	30 (17.1)
Tuberculosis is curable	430 (84.3)	275 (82.1)	155 (88.6)
Do you think patient of TB can live a normal life	355 (69.6)	240 (71.6)	115 (65.7)
Have you heard of vaccination for tuberculosis?	85 (16.6)	60 (17.9)	25 (14.3)
Are you vaccinated for tuberculosis	35 (6.8)	25 (7.5)	10 (5.7)
Name of vaccine for tuberculosis			
BCG	0 (0)	0(0)	0(0)
DPT	0 (0)	0(0)	0(0)
OPV	0 (0)	0(0)	0(0)
Don't know	510 (100)	335 (100)	175 (100)
Others	0 (0)	0(0)	0(0)

Table 3: Correct responses about knowledge of tuberculosis in patients according to their literacy and per capita income

Responses	Education Level		P Value	Per Capita Income		P value
	Illiterate (n=370)	Literate (n=140)		>1500 (n=345)	<1500 (n=165)	
T.B. is a serious disease	300(81.1)	95 (67.9)	P<0.001**	320(92.8)	75 (45.5)	P<0.001**
T.B. is major problem in India	238(64.3)	104(74.3)	P=0.034*	270(78.3)	95(57.6)	P<0.001**
T.B. is an infectious disease	251(67.8)	114(81.4)	P<0.001**	295(85.5)	100(60.6)	P<0.001**
T.B. is spread by air when coughing	180(48.6)	80(57.1)	P=0.092	205(59.4)	55(33.3)	P<0.001**
T.B. caused by infection by germs	60(16.2)	40(28.6)	P=0.002*	55 (15.9)	45(27.3)	P=0.003*
Availability of free treatment at govt health centre	270 (73)	105(75)	P=0.655	280(81.2)	95(57.6)	P<0.001**
Heard of DOTS	35 (9.5)	15 (10.7)	P=0.738	45 (13)	5(3)	P<0.001**
T.B. is curable	277 (75)	123 (88)	P=0.001*	300(87)	130(78.8)	P=0.019*
TB patient can live a normal life	245(66.2)	110(78.6)	P=0.007*	240(69.6)	115(69.7)	P=1.00
Heard of vaccination for tuberculosis	50 (13.5)	35 (25)	P=0.002*	65(18.8)	20 (12.1)	P=0.074
BCG is a vaccine for tuberculosis	0 (0)	0 (0)	-	0 (0)	0(0)	-

P value is calculated by Chi-square test (** P<0.001-Highly significant, * P<0.05-Significant, P>0.05-Not significant)

The results also showed that there was a significant difference in the knowledge of the TB between illiterate and literate tuberculosis patients and high per capita income and low per capita income groups. [Table 3] It was significantly more aware-

ness in literates and high per capita income regarding communicability, cause, mode of transmission, symptoms, diagnosis, prevention and curability of TB as well as name, duration and place of treatment.

DISCUSSION

Tuberculosis causes enormous burden of disease and death around the world. Lack of knowledge about the disease may lead to misconceptions & attitude about the disease which subsequently form a stigma.

Maximum numbers of respondents were in the age group 31-45 year (39.2%), which is an economically productive age group for the society. In our study majority of the respondents were from rural area (75.4%). When we considered the educational status 72.5% were illiterate respondents, indicating low educational status of the population in the locality. Female respondents were mostly illiterate. In our study 67.6% patients were in <1500 Rs per capita income group which is very low socioeconomic status group. High rate of illiteracy and poverty are common findings amongst tuberculosis patients.¹⁰ The social conditions which arise from poverty have been known to provide a favorable environment for the tubercle bacillus.

In our study all respondents (100%) were aware of the name of the disease 'tuberculosis'. In a study done by Jermy Devey¹¹ 93.2% of those interviewed had heard of tuberculosis. In other study conducted by Rami et al¹² showed 72.18% for same. In our study, the main source of information about tuberculosis was health workers (87.2%). Apart from this the other important sources were friends or relatives (18.6 %) & media (14.7%). Results are similar to one study done by E.R. Wandwalo¹³, 45.3% of patients were getting information from health worker, 14.9% from friends and relatives, 23.3% by radio/ newspaper. In contrast, according to a baseline KAP study under RNTCP project done by R.K. Swamy¹⁴ the major source of information was hospital, television (media), friends and relatives. In other study by Rami et al¹² 33.7% patients got information from health workers. In our study only 14.7% respondents were getting information from media, 3.9% from books and 0.9% from lectures. This is because of poor literacy and socioeconomic status of the respondents. In our study, 77.4% respondents considered tuberculosis as a serious disease. This finding may be interpreted in two ways. On the one hand, this may be considered to be encouraging, as we would expect individual to seek health care for a disease as early as possible when they consider it to be serious. On the other hand, it may reflect their fear, apprehension and stigma towards the disease.

Most of the respondents (77.4%) considered tuberculosis to be an infectious disease. One similar study done by A. Jurcev Savicevic¹⁵ 86% patients gave response that tuberculosis is a contagious disease. When we asked about the spread of tuberculosis, only 50.9% respondents were able to give

the correct response that is through the air while coughing. One study done by N. Sharma et al¹⁶ reported that 71.8% of respondents gave the response that tuberculosis is transmitted by cough.

In present study the cause of tuberculosis told by the respondents was weakness (38.2%) followed by bad diet (21.5%) and infection by germs (19.6%). Contrast to our results, in the earlier study done by T.K. Koay¹⁷ reported 50.80% of responses as infection by germs.

In our study 74.5% patients responded that tuberculosis affects lungs. Majority (58%) of respondents knew correctly that common part of the body infected by TB is the lungs according to study done by Bhatt CP et al¹⁸. 81.3% respondents considered cough to be the most common symptom of tuberculosis, while 38.2% and 34.3% respondents mentioned Shortness of breath and fever respectively are the most common symptoms. In a previous study Subramanian T. *et al*¹⁹ reported cough (60%), hemoptysis (15%), fever (8%), loss of weight (13%), anorexia (6%) as primary symptoms of tuberculosis. **R. Malhotra et al**²⁰ reported that the primary symptoms of tuberculosis told by respondents were cough 73.7%, hemoptysis 30%, fever 34.3% by which tuberculosis can be identified. There are very much discrepancy in the results of various studies

Our results suggested that 64.7% respondents agreed that tuberculosis can be diagnosed by x-ray chest followed by 59.8% considered sputum examination then 32.3% respondents considered through blood examination whereas only 5.8% respondents considered urine examination. In a study done by Maria Christina et al²¹ reported that sputum examination 45.20%, chest x-ray 91.90% blood examination 9.70% were the diagnostic modalities for diagnosis of tuberculosis.

375 (73.5%) patients think that treatment of tuberculosis is available at government health centre at free of cost whereas only 9.8% have heard of DOTS. It is clear that despite the all efforts on IEC (information, education and communication) activities and DOTS therapy there is still a lacuna in the knowledge of treatment facilities at government health centre. In a baseline KAP study done by Central TB Division more than 50% of respondents were aware that medicines are free of cost under DOTS¹⁴. Knowledge and awareness of DOTS and its success would be the first step in dispelling a patient's stereotypic views of the public healthcare system. Our study highlights lacunae in public awareness of DOTS. Similar results were obtained at a pilot study of information, education and communication (IEC) campaign in Delhi, India, that found the knowledge of the people concerning tuberculosis and DOTS to be grossly lack-

ing. While the level of awareness and a change in health-seeking behavior did change after the pilot IEC campaign, the change was primarily among the literate and those from a higher economic stratum.²² When asked about the duration of treatment of tuberculosis 55.8% patients told that the duration of the treatment of tuberculosis is 6-12 months, 28.4% told for <6 month and 2.9% told for >12 month while 13.7% did not know about this. In a study done by Krishan Das Bhattacharya et al²³ they reported that duration of treatment 6-12 months for tuberculosis is told by 75% of respondents, less than 6 months is told by 18.30%. The duration of the treatment is important as the patients and family members would be well prepared and this will help to reduce the default as from treatment. Earlier tuberculosis treatment used to continue for years however with the present drug regimes, treatment duration is drastically reduced. The misconception about the treatment duration for tuberculosis in the present study requires same adjustment through proper health education.

Most of the respondents (84.3%) were agree that tuberculosis is curable. In similar studies done by D.S. Hashim et al²⁴, Maria Cristina et al²¹ and Rami et al¹² reported that 90%, 96.8% and 59.6% of patients respectively agreed that tuberculosis is curable. In our study 69.6% respondents think that tuberculosis patient can live a normal life. In a study done by Ali Khan Khawaja et al²⁵ reported that 31% respondents responded that tuberculosis patient can live a normal life.

It is also observed that 100% patients didn't know about the name of the vaccine for tuberculosis and majority of patients (83.4%) had not heard of vaccination for tuberculosis. Only 6.8% patients were vaccinated. 6.8% was very low status of vaccination despite intensive IEC activity and immunization programme by government of India. Low literary level has been regarded as a major factor in lack of knowledge of BCG vaccination. One similar study done by S.P. Yadav et al²⁶ supported and reported that only 0.80% of respondents knew about the BCG as a vaccine for tuberculosis prevention. This difference in knowledge is largely attributed to educational status of the population. The rural population is generally illiterate and less aware of the various programmes conducted by the government.

Uneducated patients gave less correct responses compared to educated patients. This difference is statistically significant ($p < 0.05$). Thus literacy was an important factor for acquiring information and knowledge of tuberculosis. The factor of literacy is confirmed by various studies in the knowledge of tuberculosis.^{12, 16, 24} When income of the respondents were taken in to consideration then it is ob-

served that high income group of patient had a more knowledge than the low income group patients. This difference was also statistically significant ($p < 0.05$). When gender was taken into consideration for the knowledge of tuberculosis male patient had more knowledge than the female and the difference is significant statistically. Studies also found that there was gender difference in knowing TB. As reported by Agboatwalla²⁷ in Pakistan and Shetty²⁸ in London, knowledge of TB was generally deficient in women, particularly in rural women.

CONCLUSIONS

The overall knowledge and awareness about the TB in TB patients was low in western rajasthan area of india. The educated respondents had more knowledge about tuberculosis than uneducated. The same was more in male than female patients. High per capita income patients gave the more correct responses than low per capita income group patients. Provision of DOTs to the affected patients is not the only solution in controlling TB since a large number of patients are expected to continue suffering from the disease due to lack of awareness, social stigma, misconceptions and discriminatory attitude towards them hampering their treatment seeking behaviour. Despite the existence of RNTCP since last ten years in this locality, the level of knowledge among these people was not satisfactory. There is strong need to strengthen the IEC (Information Education and Communication) activities by mass media campaign, inclusion of information about tuberculosis in the textbooks and by giving health education to the patients and their family members by health workers.

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