A STUDY ON KNOWLEDGE OF PULMONARY TUBERCULOSIS AND DOTS AMONG PULMONARY TUBERCULOSIS PATIENTS IN WEST TRIPURA DISTRICT, INDIA

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ABSTRACT

Introduction: A study was conducted for six randomly selected designated Microscopy Centre areas of West Tripura District of India with objectives to assess the knowledge regarding Pulmonary Tuberculosis (PTB) and DOTS among the PTB patients and to identify the factors determining the knowledge.

Methodology: This cross-sectional study was conducted among 220 PTB patients registered for treatment with DOTS therapy during July 2011 to June 2012.

Results: The study showed that 29.10% of the patients had satisfactory knowledge of the disease and its treatment. Only 14.10% patients had the correct knowledge regarding the cause of the disease and 53.60% of the patients had the knowledge regarding the mode of transmission and measures for prevention. Again, 6.40% of the patients had the knowledge regarding the drug dosage schedule and 52.70% patients knew the duration of treatment. Satisfactory knowledge was found to be significantly higher among patients with education level of Higher Secondary or above, and patients who had prior knowledge of tuberculosis [OR-17.60(1.68-183.90)]. Again patients who had less income had 86% [OR-0.14 (0.03-0.64)] less chance of having satisfactory knowledge.

Conclusion: The overall knowledge level among the patients is unsatisfactory and there is urgent need of advocating educational activities among the patients.

Key words: Tuberculosis, DOTS, Knowledge, India

INTRODUCTION

Tuberculosis is a chronic infectious disease that primarily affects the lungs and causes pulmonary tuberculosis.[1] It is well acclaimed that the perceptions regarding tuberculosis among the patients suffering from the disease influence their health seeking behaviour and increase the acceptance to the control measures and decrease the spread of the disease in community. But, a mass survey carried out by Central TB Division, Ministry of Health, Government of India, reported poor level of awareness regarding tuberculosis among general population and very poor awareness among disadvantaged section of the society.[2]

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However, no information was available in West Tripura District regarding the awareness of the disease among the pulmonary tuberculosis patients registered under Revised National Tuberculosis Control Program (RNTCP), which can reflect the current status of the patients in this district. Hence, the present study was conducted with the objective to assess the knowledge regarding the pulmonary tuberculosis and Directly Observed Treatment Short course (DOTS) chemotherapy among the patients; and to identify the factors determining the knowledge.

METHODOLOGY

This is a Cross-sectional study conducted among Pulmonary TB patients registered under RNTCP

in West Tripura District, Tripura, India. The district has 12 Designated Microscopy Centers (DMC), out of which six DMC was chosen by simple random sampling and the study was conducted among PTB patients registered for treatment, in all the 50 (fifty) DOT centers under the six selected designated microscopy centers. The study was conducted during November 2011 to October 2013.

Considering the adequate knowledge of pulmonary tuberculosis and its treatment among the PTB patients to be 69.75 percent (P), as found in a study conducted by Vijay S. et al[3] and an allowance of an error (E) of 10 percent of the knowledge and level of significance as 5 percent, the minimum required sample size for assessing the knowledge of pulmonary tuberculosis and its treatment among the patients was calculated to be 167, using the formulae:

$$\frac{Z^2_{\alpha/2} pq}{E^2}$$

However, the present study included 220 PTB patients registered under RNTCP within July 2011 to June 2012, in the six DMC, through systematic random sampling considering every second patient registered in the tuberculosis register maintained in each DMC.

The study included pulmonary tuberculosis patients who were ≥15 years of age and registered for treatment with DOTS therapy at least 3 months before from the date of interview. Those patients who were transferred out or transferred into the DMC area, who did not gave consent for the interview and who could not be traced to their homes in spite of making 2 home visits were excluded from the study.

Data was collected by interviewing the randomly selected pulmonary tuberculosis patients in their home, using a structured, pre-tested, interview schedule and treatment documents of the patients; after taking written informed consent from them.

Data analysis has been done using Epi info version 7.0. Data were expressed in frequency, percentage and statistical analysis has been done using multiple logistic regression analysis.

Measurement of knowledge: Knowledge was assessed through seven basic questions about the disease tuberculosis and its treatment (name of the disease prior to acquiring it, causative agent, disease infectivity, mode of transmission, curability, preventive measures taken by the patient and duration of treatment) as used by Mohammad Al et al.[4] A scoring system was designed to assess the level of satisfactory knowledge and each correct answer was awarded one point and each wrong answer was awarded as zero. Answering four out of the seven questions correctly was taken as a cut –off point between satisfactory and unsatisfactory knowledge since the median score was found to be four. Those scoring above four were considered to have satisfactory knowledge and those scoring 0 to 4 were considered to have unsatisfactory knowledge.

This study is a part of an original study which was sponsored by the Department of Biotechnology and was approved by the institutional ethics committee of Agartala Govt. Medical College.

RESULTS

The present study conducted among 220 pulmonary tuberculosis patients registered under RNTCP revealed that majority of the patients were between 15 to 45 year age group and 76.40

Table 1. Socio-demographic profile of the study respondents

		Frequency (N=220)	%
Age group (in years)	15-30	73	33.20
	31-45	74	33.60
	46-60	48	21.80
	>60	25	11.40
Sex	Male	168	76.40
	Female	52	23.60
Educational status	Illiterate	67	30.40
	Primary	89	40.50
	Secondary	45	20.50
	H/S and above	19	8.60
Occupational Status	Unskilled	58	26.40
	Skilled	58	26.40
	Business	42	19.10
	Service/Pension	23	10.00
	Student	16	7.30
	Housewife	24	10.90

		Frequency (N=220)	%
Per capita income per month	<=500	81	36.81
	501-1000	63	28.63
	1001-1500	27	12.27
	1501-2000	19	8.63
	2001-2500	11	5.00
	>2500	19	8.63

Regarding the knowledge of pulmonary tuberculosis prior to acquiring it, 92.28 percent study participants had acquaintance to the name of the disease and majority of them heard of it, from the community (35.90%), and health personals (32.30%).

Regarding the knowledge of pulmonary tuberculosis, the study showed that 14.10 percent patients had the correct knowledge regarding the cause of the disease as microbial agent, and considered it an infectious disease, whereas majority of the patients (62.30%) had no idea regarding the causation of the disease. (table 2) The study also revealed that 53.60 percent of the patients had the correct knowledge regarding the mode of transmission and measures for prevention of the disease. Regarding the knowledge of the symptoms, all of the patients could mention one or the other symptom of tuberculosis, but the most common symptom known to them was cough (86.40%) followed by fever (50.50%). Regarding the knowledge of the curability of the disease majority of the respondents (95%) had the knowledge that the disease is curable with treatment, table 2.

The study also revealed a poor knowledge regarding the name of the programme and the name of the therapy among the patients. However, 61.40 percent patients had the knowledge that the medicine has to be taken under supervision of the DOT provider and 52.70 percent of the patients had the correct knowledge regarding the duration of treatment. But the study also showed that majority (61%) of the patients had no idea whether the treatment can be stopped or not when the symptoms subside. Again the study also revealed that only 6.40 percent of the patients had the knowledge regarding the drug dosage schedule, which is an alarming fact, as the continuation phase of treatment mostly goes unsupervised, table 2.

Regarding their overall knowledge of pulmonary tuberculosis and DOTS, the study revealed that 29.10 percent of the patients had satisfactory knowledge of the disease and its treatment (figure 1).The mean Knowledge score of the participants was 3.76 $\pm$ 1.65 (range 0 to 7, median score= 4).

Table 2. Distribution of patients according to the knowledge of Pulmonary Tuberculosis and DOTS

		Frequency (N=220)	%
Is TB an infectious disease	Yes	31	14.10
Cause of Tuberculosis	Microbes	31	14.10
	Smoking and alcohol	33	15.00
	Others	19	8.63
	Don't Know	137	62.30
Mode of transmission	Coughing and sneezing	118	53.60
	Physical Contact	37	16.80
	Sharing Utensils	16	7.30
	Others	14	6.36
	Don't know	72	32.70
Mode of Prevention	Cough etiquettes	118	53.60
	Safe disposal of sputum	29	13.20
	Avoiding Physical Contact	42	19.10
	Avoiding Sharing Utensils	34	15.50
	Don't know	54	24.50
Symptoms	Cough	190	86.40
	Fever	111	50.50
	Weight loss	32	14.50
	Chest pain	34	15.50
	Blood stained sputum	48	21.80
	Shortness of breath	13	5.90
Disease Curable	Yes	209	95.00
Name of the Program	Known as RNTCP	1	0.50
Name of the therapy	Known as DOTS	38	17.30
Supervised therapy	Knowledge present	135	61.40
Dosage Schedule	Knowledge present	14	6.40
Duration of therapy	Correctly said	116	52.70
Treatment can be stopped when symptoms subside	Yes	134	61.00

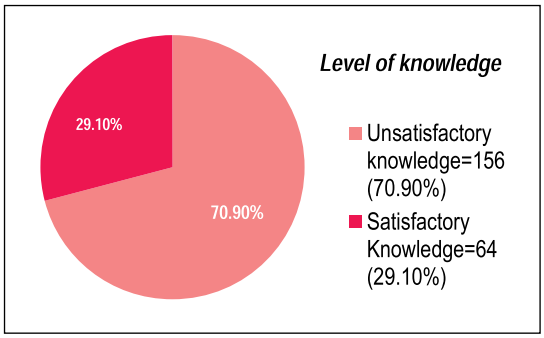

Figure 1. Pie chart showing the level of knowledge among the patients regarding PTB

Multiple logistic regression analysis showing factors affecting satisfactory knowledge revealed that, patients who were illiterate or had primary or secondary education had 95 percent [OR- 0.05 (0.00-0.33)], 89 percent [OR- 0.11 (0.02-0.57)] and 81 percent [OR- 0.19 (0.04-0.85)] less chance respectively of having satisfactory knowledge compared to those who were educated up to Higher Secondary or above, table 3.

Table 3. Multiple Logistic Regression analysis showing factors affecting satisfactory knowledge of pulmonary tuberculosis and DOTS

		P value	Odds Ratio (OR)	95% Confidence Interval for OR	
Age group (in years)	15-30	0.10	3.71	0.76	18.09
	31-45	0.67	1.38	0.30	6.36
	46-60	0.16	3.05	0.62	14.80
	>60	.	.	.	.
Sex	Male	0.50	0.70	0.24	1.99
	Female	.	.	.	.
Education	Illiterate	0.00	0.05	0.00	0.33
	Primary education	0.00	0.11	0.02	0.57
	Secondary education	0.03	0.19	0.04	0.85
	H/S and above	.	.	.	.
Occupation	Labor	0.00	4.75	1.56	14.45
	Household work	0.42	1.76	0.43	7.17
	Student	0.41	2.22	0.33	14.61
	Service / Business	.	.	.	.
Per capita family income (in Rupees)	<=500	0.01	0.14	0.03	0.64
	501-1000	0.36	0.52	0.12	2.11
	1001-1500	0.07	0.23	0.04	1.18
	1501-2000	0.59	0.630	0.11	3.48
	2001-2500	0.45	2.27	0.26	19.39
	>2500	.	.	.	.
Category of treatment	Cat- I	0.25	0.57	0.22	1.49
	Cat-II	.	.	.	.
Drugs taken in-	Home	0.15	1.91	0.77	4.72
	DOTS Centre	.	.	.	.
Prior Knowledge of TB	Yes	0.01	17.60	1.68	183.90
	No	.	.	.	.
Family History of TB	Yes	0.86	0.92	0.40	2.15
	No	.	.	.	.

The study also revealed that patients who were labor by occupation were found to be 4.75 times (1.56-14.45) more knowledgeable regarding tuberculosis compared to serviceman and businessman category. Again patients who had a per capita monthly income of ≤Rs 500 had 86 percent [OR- 0.14 (0.03-0.64)] less chance of having satisfactory knowledge compared to those who had a per capita monthly income of >Rs 2500. Table 3 also showed that those patients who had prior knowledge of tuberculosis before acquiring it, were 17.60 times (1.68-183.90) more knowledgeable regarding tuberculosis and its treatment.

DISCUSSION

The present study conducted among 220 pulmonary tuberculosis patients revealed that majority of the patients had heard of tuberculosis prior to acquiring it; and the major source of information were community and health personals followed by media. This is consistent with a study conducted in Bengal by Das P et al[5] which showed that 91.30 percent of the patients had the acquaintance prior to acquiring the disease and the source of information was mostly from community. Again in another study conducted in Vietnam[6] 93 percent of the patients had information regarding tuberculosis from health worker followed by media. Thus we can see that beside informal contacts, health worker and media can act as major source of information regarding the disease among people at the grass root level.

In the present study the cause of the disease was known to 14.10 percent of the patients as germs whereas majority (62.30%) replied that they had no idea regarding the causation of the disease. The knowledge regarding the cause of the disease was found to be higher in our study compared to a study conducted in Rajasthan by Yadav et al[7], where only 1.60 percent of the patients had the correct knowledge of the cause of the disease. But similar finding was obtained from studies conducted in Sudan[4] and Pakistan[8] where only 1.90 percent and 7.00 percent patients had the knowledge regarding the cause. But the study finding is lower than studies conducted in Aligarh[9], Vietnam[6], Libya[10], Croatia[11] and Delhi[12] where 47.70 percent to 95 percent of the patients were aware regarding the cause of the disease.

The present study revealed that 53.60 percent of the patients had the knowledge regarding the transmission of the disease. The knowledge was higher compared to studies conducted in Pune[13], Aligarh[9] and Bihar.[14] But the knowledge was lower than a study conducted in Vietnam[6] where 69.78 percent of the patients had the knowledge regarding the mode of transmission. Regarding the measures of prevention majority of the patients had the knowledge that by avoiding uncovered coughing (53.60%) and by safe disposal of sputum (13.20%) the disease transmission can be prevented. In a study conducted in Aligarh[9], uncovered cough as a measure of prevention was said by 25 percent of the patients and safe disposal of sputum was said by 29.50 percent of the patients. Again the present study also revealed that many of the patients had the wrong concept that by avoiding physical contact (19.10%) and avoiding sharing utensils (15.50%), they could prevent the disease transmission. Similar finding was obtained in a study conducted in Libya[10] where 22.60 percent patients considered avoidance of the patient as a mode of prevention. This study thus showed that even in our state, there is an existing gap in the knowledge of the mode of transmission and the measures of prevention, showing an urgent need to advocate IEC activities to prevent transmission of infection in the community. The present study also showed that the most common symptom known to the patients was cough and fever. Similar finding was obtained from a study conducted in Aligarh[9] and Croatia.[11]

Regarding the curability of the disease 95 percent of the patients in West Tripura District had the knowledge that tuberculosis is curable. This finding is consistent with studies conducted in Aligarh[9] and Surat[15] where 95.50 percent of the pulmonary tuberculosis patients had the knowledge regarding the curability of the disease. Similarly, few studies conducted outside India in Croatia [11], Bangladesh[16], and Moroccan region [17]also showed that more than 95 percent of the patients considered the disease curable. Thus like other parts of the world the present study also revealed that the knowledge regarding the curability of the disease among the patients was very high.

The study again revealed that the patients had a poor knowledge regarding the name of the programme under which they were receiving the

free treatment, and also regarding the name of the therapy and the drug dosage schedule. But the patients had a fair knowledge that the medicine has to be taken under supervision.

Again, 39.10 percent of the PTB patients in the present study had the perception that the treatment can be stopped when symptoms subside. This was much higher than what has been found in Pakistan[8] where 18 percent patients had the same wrong perception. The correct duration of treatment was known to 52.70 percent of the patients in the present study. This finding is similar to a study conducted at Safdarjung Hospital, New Delhi, where 53.30 percent patients had the knowledge of the duration of treatment.[18] The study findings were also similar to what has been obtained from Sudan[4], Vietnam,[6] and Aligarh[9]. But this was much bellow from what has been found in a study conducted in Croatia[11] and Nepal[19] where 82 percent and 82.40 percent of the patients had the correct knowledge regarding the duration of treatment respectively. Thus this study shows a definite gap regarding the knowledge among the patients on duration of the treatment and the necessity of advocating IEC activities among the patients.

When the knowledge of the patients was categorized into satisfactory and unsatisfactory, the present study showed that 29.10 percent of the patients had satisfactory knowledge regarding tuberculosis and DOTS therapy. Similarly a study conducted in Sudan by Mohammad A.I. et al[4] showed that 36.20 percent of the patients had satisfactory knowledge about tuberculosis and its treatment. Thus, the present study also showed that the knowledge of pulmonary tuberculosis and its treatment among the PTB patients is poor, like different studies conducted in different parts of the world.

The present study also revealed that satisfactory knowledge among the patients was significantly higher among educated patients, and patients with higher income. Similarly, education and income had significantly higher scores in a study conducted in Libya.[10] Similar finding was obtained from a study conducted in Vietnam[6], where the knowledge of the patients were significantly associated with age and education of the patients.

The study also showed that those patients, who had prior knowledge of tuberculosis before acquiring it, were 17.60 times more knowledgeable regarding tuberculosis. Similar finding was obtained from a study conducted in Tanzania by Wandwalo E.R. et al20 which showed that patients with prior knowledge of tuberculosis were 9.28 times more knowledgeable regarding tuberculosis and its treatment.

CONCLUSION

Thus this cross-sectional study highlighted that there is a definite knowledge gap among the patients regarding the cause, mode of transmission, preventive measures of the disease, and the duration and dosage schedule of the therapy; which should be definitely addressed by the DOTS providers and IEC materials.

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