Research Article

Assessment of factors pertaining to tuberculosis knowledge among defaulters: a case control study

MS. Soumya*, Sulakshana S. Baliga, Maheshwar D. Mallapur

Department of Community Medicine KLE University's Jawaharlal Nehru Medical College, Belgaum, India

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*Correspondence:
Dr. MS. Soumya,
E-mail: mesoumya2709@gmail.com

ABSTRACT

Background: India has more new TB cases annually than any other country. Good general lay knowledge of tuberculosis, its causes and treatment is considered important for adherence to treatment. Lack of awareness and knowledge about tuberculosis, despite being curable ends up increasing the national morbidity and mortality.
Methods: Case control study; conducted on 90 tuberculosis patients - 30 defaulted patients (cases) and 60 treatment completed patients (controls) registered under RNTCP during January 2012 to June 2013 residing in both urban and rural field practice area.
Results: Assessment of some factors pertaining to knowledge about tuberculosis showed that among cases; 21(84 %) had no history of TB in their households compared with 35(70%) controls, 22(88%) cases and 42(84%) did not suspect TB at onset, while 18(72%) cases compared to 35(70%) controls had never read any material or attended any TB health education session before their illness. This difference in factors pertaining to TB knowledge among cases and controls was not statistically significant (p<0.05). On multivariate analysis lack of motivation, ignorance of normal duration of treatment and transportation cost were associated with default.
Conclusions: There is no difference among cases and controls in factors pertaining to knowledge of tuberculosis and adherence to treatment.

Keywords: Tuberculosis, Default, Knowledge, Risk factors, Case-control study

INTRODUCTION

Tuberculosis remains a major health problem, globally. It is the second leading cause of death from an infectious disease worldwide, after HIV.[1] India has more new TB cases annually than any other country. In 2011, out of the estimated global annual incidence of 9 million TB cases, 2.3 million were estimated to have occurred in India.[2]

India has Revised National Tuberculosis Control Programme for tuberculosis since 1993, however the treatment success rates are unacceptably low and default rates remain high which in turn results in persistence of infectious source, increased mortality, increased relapse rates, lesser cure rates, high mortality and facilitate the development of resistant strains, which in turn hamper the control of TB among defaulters in India.[3-5] A substantially high number of defaulters attribute their default to ignorance and inadequate knowledge about TB.[6]

Lack of knowledge about the disease and stigmatization causes underutilization of the services, delay in seeking diagnosis, and poor treatment adherence among defaulters.[7,8]

Receiving sufficient explanation on disease makes patients to understand treatment requirements, likely side

effects to be encountered when using anti-TB drugs and the need to comply with treatment.[6] Low education level and low DOT coverage suggest inadequate disease knowledge.[4]

Along with effective control measures currently available, it is essential to identify and target the factors pertaining to tuberculosis knowledge among treatment defaulters so as to tackle the heavy burden of the disease.

As per our knowledge very few community studies on knowledge regarding tuberculosis among defaulters have been conducted in India. Hence, the present study was undertaken to study the factors pertaining to tuberculosis knowledge among defaulters. Objective of the study was to study the factors pertaining to Tuberculosis knowledge among defaulters.

METHODS

Tuberculosis patients registered under RNTCP during January 2012 to June 2013 residing in both urban and rural field practice area of Department of Community Medicine, KLE University's Jawaharlal Nehru Medical College, Belgaum, India.

Study design and period: Case control study over a period of 2 months from April 2014 to May 2014

Study population: 90 tuberculosis patients - 30 defaulted patients (cases) and 60 treatment completed patients (controls).

Method of collection of data: Data was collected by interviewing the study participants (cases and controls) using predesigned and pretested questionnaire by home visits. Data regarding the registered cases of tuberculosis registered during the year Jan 2012 to June 2013 was collected using records (TB registers) of 3 urban health centers of field practice area of Dept. of Community Medicine of a medical college from which the study participants (cases and controls) were selected.

As per records (TB registers) of 3 PHC and 3 UHC there were 30 defaulters during Jan 2012 to June 2013 and accordingly all 30 defaulters were chosen for the study and they were matched with controls for age and sex. During the home visits it was found that 5 defaulters had died and accordingly 10 matched controls were excluded from the study. Hence, the data was collected from 25 cases and 50 controls matched for age and sex. These 5 defaulters who died were not replaced with any other defaulters as we had chosen the defaulters who had registered only during January 2012 to June 2013.

a) Selection of cases: Patients with smear positive pulmonary tuberculosis during Jan 2012 to June 2013 who took the treatment for minimum of 1 month, but interrupted the treatment for >2 months.[9]

b) Selection of controls: Patients who also had smear positive pulmonary tuberculosis but had started and completed the treatment during Jan 2012 to June 2013 and were matched for age and sex of the cases.

c) Matching: Controls were matched for age and sex. Group matching of cases and controls was done.

Study variables:

i) Socio demographic characteristics (age, sex, occupation, literacy status, religion etc.)

ii) Medical and treatment data (treatment observer, HIV status, treatment regimen, sputum smear microscopy results, date of treatment started and ended.)

iii) Assessment of factors pertaining to tuberculosis knowledge.

Inclusion criteria: Only defaulters and treatment completed tuberculosis patients during the period January 2012 to June 2013.

Exclusion criteria: Tuberculosis patients who have defaulted and completed treatment after June 2013.

Ethical clearance: The present study was approved by Institutional Ethics Committee on Human Subjects Research (Reference: IEC letter no. MDC/DOME/136 dated 24.12.2013)

RESULTS

In the present study, out of 90 study participants selected for the study, i.e. 30 cases (defaulters) and 60 controls (treatment completed), 5 cases had died and accordingly, 10 controls were excluded from the study. Hence, the data was collected from 25 cases and 50 controls matched for age and sex.

The mean age of the cases was 37.1±14.76 years and the mean age of the controls was 37.8±14.59 years. The difference in the mean age was not statistically significant (p=0.850).

In our study, among cases, majority 19 (76%) of the study participants were males and 6 (24%) were females. Among the controls 38 (76%) were male participants and 12 (24%) were female participants. However, this difference was not statistically significant (p=1.000). Out of total 16 (64%) of cases were unemployed and only 9 (36%) were employed. Among the control group 33 (66%) of the study participants were unemployed and 17 (34%) were employed.

In the present study, 9 (36%) of the cases and 15(30%) of the controls were illiterate, whereas 16 (64%) of the cases and 35 (70%) of the controls were literate. 8 (32%) of cases had no personal habits, 3(12%) of them were

smokers,1(4%) consumed alcohol, 11(44%) smoked as well as consumed alcohol. 25 (50%) of the controls had no personal habits, 3 (6%) consumed only alcohol, 7 (14%) of the controls smoked and consumed alcohol. The difference in personal habits among both the groups was statistically significant (p=0.002).

Table 1: Socio demographic characteristics of the study participants (n=75).

Socio demographic characteristics		Cases no. (%)	Controls no. (%)	P value
Gender	Male	19 (76%)	38 (76%)	1.00
	Female	6 (24%)	12 (24%)	
Employment status	Unemployed	16 (64%)	33 (66%)	0.864
	Employed	9 (36%)	17 (34%)	
Educational status	Illiterate	9 (36%)	15 (30%)	0.919
	Primary	9 (36%)	15 (30%)	
	High school	4 (16%)	10 (20%)	
	PUC/Diploma	1 (4%)	5 (10%)	
	Graduation	2 (8%)	5 (10%)	
Personal habits	None	8 (32%)	25 (50%)	0.002
	Smoking	3 (12%)	0 (0%)	
	Alcohol	1 (4%)	3 (6%)	
	Others	2 (8%)	14 (28%)	
	Smoking+ alcohol	11 (44%)	7 (14%)	
	Smoking+ alcohol+ others	0 (0%)	1 (2%)	
Socioeconomic status	Class I	0 (0%)	1 (2%)	0.122
	Class II	2 (8%)	4 (8%)	
	Class III	1 (4%)	13 (26%)	
	Class IV	12 (48%)	16 (32%)	
	Class V	10 (40%)	16 (32%)	

Table 2: Multivariate logistic regression analysis of factors independently associated with default.

Risk factors	Adjusted Odds ratio	95% Confidence intervals	P value
Lack of motivation	29.333	7.298-117.904	<0.001
Ignorance of normal duration of treatment	96	11.538-797.396	<0.001
Transportation cost	6	1.767-20.369	0.004

Among the cases 2 (8%) belonged to class II, 1 (4%) to class III, 12 (48%) to class IV and 10 (40%) to class V socio economic status and among the controls 1 (2%) belonged to class I, 4 (8%) to class II, 13 (26%) to class III, 16 (32%) to class IV and 16 (32%) to class V socio economic status. The difference in socio economic status among both the groups was not statistically significant (p=0.122). Whereas socio demographic characteristics such as, employment and educational status, socio economical status were not found to be statistically significant (p>0.05) (Table 1).

In our study, it was found that majority 23 (92%) of the cases and 40 (80%) of controls took the treatment from the health worker, 2 (4%) of controls from household members, 2 (8%) of cases, and 7 (14%) of controls took treatment from ANM, and only 1 (2%) of control took medicines from a friend.

In the present study 2 (8%) of the cases and 2 (4%) of the controls were co-infected with HIV. 11 (44%) of the cases and 6 (12%) of the controls experienced stigmatization. Majority, 20 (80%) of the cases and 28 (56%) of the controls experienced drug side effects.9 (36%) of cases and 3 (6%) of controls used herbal medication during therapy, 9 (36%) of cases and 32 (64%) of controls had well ventilated house. Majority 18 (72%) of the cases and 25 (50%) of the controls were living in overcrowded houses.

Table 3: Assessment of factors pertaining to TB knowledge.

Characteristic		Cases no. (%)	Controls no. (%)	P value
History of tuberculosis in the household	Yes	4(16%)	15(30%)	0.189
	No	21(84%)	35(70%)	
TB suspected at onset	Yes	3(12%)	8(16%)	0.908
	No	22(88%)	42(84%)	
Had prior TB health education	Yes	6(24%)	15(30%)	0.585
	No	19(76%)	35(70%)	
Is TB curable	Yes	6(24%)	21(42%)	0.195
	No	17(68%)	23(46%)	
	Don't know	2(8%)	6(12%)	
Knowledge on duration of TB control	6-8 months	7(28%)	20(40%)	0.302
	Don't know	18(72%)	30(60%)	
TB perceived like any other disease	Yes	6(24%)	11(22%)	0.845
	No	19(76%)	39(78%)	

Factors such as experiencing stigmatization, drug side effects, usage of herbal medication during therapy and ventilation of the house were found to be statistically significant (p<0.05).

Multivariate logistic regression analysis (with Adjusted odds ratio) showed that risk factors such as lack of motivation (OR 29.333(95% CI 7.298-117.904) p<0.001), ignorance of normal duration of treatment (OR 96(95% CI 11.538-797.396) p<0.001), transportation cost (OR 6(95% CI 1.767-20.369) p=0.004) were independently associated with default (Table 2).

Assessment of factors pertaining to knowledge about tuberculosis showed that among cases; 21 (84 %) had no history of TB in their households compared with 35 (70%) controls, 22 (88%) cases and 42 (84%) controls did not suspect TB at onset, while 19 (76%) cases compared to 35 (70%) controls had never read any material or attended any TB health education session before their illness. Among cases, 2 (8%) were unaware that TB is curable compared to 6 (12%) controls, while 18 (72%) cases compared to 30 (60%) controls did not know the duration for TB treatment. 6 (24%) of cases and 11 (22%) of controls perceived TB like any other disease. This difference in factors pertaining to TB knowledge among cases and controls was not statistically significant (p>0.05) (Table 3).

DISCUSSION

Defaulting from treatment due to lack of knowledge is recognized as one of the main problems in tuberculosis control, which provides favourable conditions for the maintenance of disease transmission, high mortality and development of resistant strains.[10,11]

The present study was an effort to identify the factors pertaining to tuberculosis knowledge among defaulters in the urban and rural field practice area of Department of Community Medicine in a medical college.

Socio demographic characteristics of the study participants (Table 1)

In our study, majority that is 76% of cases and controls were males and 24% of cases and controls were females. Similarly in various studies conducted in various parts of India, Kenya and South Africa have shown that the defaulter rate was more in males when compared to females.[6,12-16]

In the present study majority, 64% of the cases were unemployed indicating resources for transport and other opportunity cost could have been a challenge for treatment completion. Similarly more defaulters were unemployed in studies conducted in Bangalore and Kenya.[6,18] Whereas studies conducted in South India and South Africa have shown that there were more defaulters who were employed when compared to unemployed.[13,17]

In the current study, 9 (36%) of the cases and 15 (30%) of the controls were illiterate, which is similar to study conducted in different parts of India.[15,18,19] Whereas in studies conducted in Tiruvallur and South Africa, 19% and 13% of the cases were illiterate respectively.[13,17] Lower the educational status of a person as seen in our study, could be the reason for lack of awareness about the mode of spread and prevention of tuberculosis among the defaulters. In our study 92% of the cases had one or the other personal habits, whereas only 50% of the controls had personal habits. Whereas studies conducted in various parts of India, Brazilian Amazon ,South Africa, Kenya on defaulters have shown that 30% of the defaulters had personal habits.[4,6,12,13,18]

In our study, it was found that majority 23 (92%) of the cases and 40 (80%) of controls took the treatment from health workers and 2 (8%) of cases and 2 (4%) of

controls from household members. Similarly another study has shown that majority took the treatment from public health facility.[14] Whereas study conducted in Ahmedabad showed that only 14% took treatment from TB health visitor and in Kenya 72% took treatment from household members.[7,15]

In the present study, 2 (8%) of the cases and 2 (4%) of the controls were co-infected with HIV. Majority, 20 (80%) of the cases and 28 (56%) of the controls experienced drug side effects and 11 (44%) of the cases and 6 (12%) of the controls experienced stigmatization which was similar to other studies.[4,6] Whereas some studies conducted in different regions of India have not reported any side effects of the drugs.[14,15]

Multivariate logistic regression analysis of factors associated with default among tuberculosis patients (Table 2)

Multivariate regression analysis also showed that factors such as lack of motivation, ignorance of normal duration of treatment, transportation cost were independently associated with default. Similar associations of risk factors with treatment default were also seen in various studies conducted in Bangalore, Kenya, South Africa and Brazilian Amazon.[4,6,12,13]

Assessment of factors pertaining to TB knowledge (Table 3)

Among cases; 21 (84 %) had no history of TB in their households compared with 35 (70%) controls. 22 (88%) cases and 42 (84%) controls did not suspect TB at onset, 18 (72%) cases compared to 35 (70%) controls had never read any material or attended any TB health education session before their illness. Among cases, 2 (8%) were unaware that TB is curable compared to 6(12%) controls, 18(72%) cases compared to 30(60%) controls did not know the duration for TB treatment. Similar factors pertaining to knowledge of tuberculosis were also seen in a study conducted in Bangalore and Kenya, whereas more than 50% of the study participants in Kenya and South Africa had prior knowledge on TB when compared to our study.[6,12,13]

CONCLUSION

In the present study it was found that factors such as lack of motivation, ignorance of normal duration of treatment, transportation cost were independently associated with default. There is no difference among cases and controls in factors pertaining to knowledge of tuberculosis and adherence to treatment. These factors should be considered in addressing care and policy actions to control tuberculosis. Information about the disease and treatment are part of routine health services, but must be appropriate to the level of education of population, in order to prevent default and promote adherence to treatment so as to encounter the spread of multidrug

resistance to anti TB drugs. Very few community studies on factors pertaining to tuberculosis knowledge have been conducted in India. Hence, there is a need for further research in this area.

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