

ASSESSMENT OF KNOWLEDGE ABOUT TUBERCULOSIS AMONG DEFAULT PATIENTS: A CASE CONTROL STUDY

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ABSTRACT

BACKGROUND

Tuberculosis is a disease of global public health concern. Knowledge about cause, mode of transmission, duration of treatment among TB/default patients is of utmost importance.

Objectives- To assess the knowledge about Tuberculosis in Tuberculosis and default patients, and to understand sociodemographic characteristics of patients who defaulted from RNTCP treatment regimens.

MATERIALS AND METHODS

For this case control study, eligible patients for the study were identified from the TCU registers and contacted to answer a questionnaire. Whole Kashmir valley was selected for sampling. For each case of default, two controls (Cured/ Treatment completed) were interviewed on already formulated, pretested questionnaire in their respective homes. A total of 61 cases (Default) and 122 Controls (Cured/Treatment Completed) were taken up for study.

RESULTS

27.9% of the study population belonged to district Baramulla, 27.9% from district Budgam, 26.2% from district Srinagar, 11.5% from district Anantnag followed by 6.6% from district Pulwama. Only 18% of default patients attributed TB to microbe, 42.6% of the default patients did not know the cause of TB. The association of default with knowledge about cause of TB was found to be statistically significant (p value 0.02). 44.3% of default patients did not know how TB spreads, only 26.4% of the default patients stated mode of spread of TB by air. The association of TB with mode of spread was found to be significant statistically (p value 0.02). 49.2% of default patients stated 6 months as duration of treatment; however, 91.8% of controls mentioned 6 months as duration of treatment of TB. The association of knowledge about duration of treatment with default was found to be highly significant statistically (p value 0.001). Cough was the most common symptom present in 78.7% of default patients followed by fever in 52.5%, haemoptysis in 32.8% and weight loss was seen in 24.6% of default patients.

CONCLUSION

There is a wide gap in factors pertaining to knowledge about Tuberculosis and duration of treatment among Cases and Controls.

KEYWORDS

Case-Control Study, Knowledge, Default, Tuberculosis.

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BACKGROUND

Tuberculosis has existed in India since the earliest days. In 1500 BC, the Rigveda described the illness as Rajayakshma, "King of Diseases".⁽¹⁾ Phthisis is a Greek term for tuberculosis. Around 460 BC, Hippocrates identified phthisis as the most widespread disease of the times involving coughing up blood and fever, which was almost always fatal.⁽²⁾ TB is also called Koch's disease, named after the scientist Koch. The bacillus causing TB, *Mycobacterium tuberculosis*, was identified and

described on 24 March 1882 by Robert Koch.⁽³⁾ TB affects more Men than women and mostly adults in their productive years.⁽⁴⁾ Nearly one third of the global population is infected with *Mycobacterium tuberculosis* and at risk of developing the disease⁽⁵⁾. More than 90% of global TB cases and deaths occur in the developing world, where 75% of cases are in the most economically productive age group.⁽⁶⁾ India ranks first among the world's high burden tuberculosis (TB) countries,⁽⁷⁾ with WHO statistics for 2013 giving an estimated incidence figure of 2.1 million cases of TB for India out of global incidence of 9 million cases. The estimated TB prevalence for 2013 was given as 2.6 million. There was 42% reduction in TB mortality rate by 2012 as compared to 1990 level. Similarly, there was 51% reduction in TB Prevalence rate by 2012 as compared to 1990 level.⁽⁸⁾

In India two deaths occur every three minutes from TB.⁽⁹⁾ Most of the TB statistics for India comes from the Govt. (RNTCP) which was started in 1997, and which was then expanded across the country. Under India's previous National

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Tuberculosis Programme (NTP), treatment completion rate of only 30 percent could be achieved.⁽¹⁰⁾ Since the programme was not DOT based, adherence to treatment remained a serious problem.⁽¹⁰⁾ The Revised National Tuberculosis Control Programme (RNTCP), based on the DOTS strategy, began as a pilot in 1993 and was launched as a National Programme in 1997. Rapid RNTCP expansion began in late 1998.

Knowledge about any disease is necessary and important in order to optimise the patients' treatment and to improve their quality of life.⁽¹¹⁾ Numerous studies have proved that lack of knowledge is likely to prevent appropriate positive healthcare seeking behaviours. Like other chronic illnesses, appropriate knowledge towards Tuberculosis (TB) was significantly associated with positive healthcare seeking action.⁽¹²⁾ Literature indicates that TB control can significantly be enhanced if more concern is given to improve knowledge and attitudes towards disease.⁽¹³⁾ With this background, our study was conducted with objectives to assess the knowledge about Tuberculosis in Tuberculosis and default patients, to understand socio-demographic characteristics of patients who defaulted from RNTCP treatment regimens.

MATERIALS AND METHODS

Design and Sampling

Design- Case control study.

Study Period- One year.

Sampling

Whole Kashmir valley was selected for the purpose of study. Cases and controls were selected from RNTCP designated districts.

Under RNTCP, Kashmir Valley is divided into six Districts as follows-

1. District Baramulla + District Bandipora as single District i.e.; District Baramulla.
2. District Srinagar + District Ganderbal as single District i.e.; District Srinagar.
3. District Anantnag + District Kulgam as single District i.e.; District Anantnag.
4. District Pulwama + District Shopian as single District i.e.; District Pulwama.
5. District Budgam.
6. District Kupwara.

Sampling Procedure

For this study, treatment records were obtained from RNTCP programme manager (STO Kashmir) for 2013 defaulters (2nd, 3rd and 4th quarter) and defaulters for 1st quarter of 2014 for each district, then from each district identified patients were traced to TU and then to the DOTS centre.

Study population

Eligible patients for the study included TB patients (new cases or default) who were enrolled for TB treatment from 1 April 2013 to 31 March 2014. Patients were identified from the TCU registers and contacted to answer a questionnaire. Participants were male or female, aged 15 years or older, diagnosed with active TB (Defined according to RNTCP) and had started TB treatment according to RNTCP guidelines. All TB treatment default patients in selected quarters of 2013

and 2014 identified in the TCUs were selected for the study. Cases and controls were matched by sex, age group and treatment centre, and for each case of default two controls were selected. Patients who refused to take part in the study were excluded. A default (case) was defined as a TB patient who interrupted treatment for two months or longer consecutively after initiation of treatment. A control was defined as TB patient diagnosed in the same time period, from the same TCUs, following the same treatment protocol, but who completed the whole treatment regimen. In our case, disease under study in cases is Tuberculosis default, thus controls are taken as Non-defaulters (Treatment completed/Cured patients of Tuberculosis).

Thus, a total of 61 cases were studied and for each case of default two controls were taken. Thus, a total of 61 cases and 122 controls were studied from Kashmir valley. Figure 3 shows the representation of cases and controls studied from Kashmir valley (61 cases and 122 controls).

Justification of Sample Size

All default patients enrolled for TB treatment in Kashmir Valley from 1 April 2013 to 31 March 2014 were taken up for study. A total of 61 default patients were registered in Kashmir valley between 1 April 2013 to 31 March 2014 in the TCU registers. For this study, treatment records were obtained from RNTCP programme manager (STO Kashmir). For each case of Default, two controls were selected. Cases and controls were matched by sex, age group and treatment centre.

Data were collected through patient interviews using questionnaires, a review of TB registers and treatment cards. Enrolled patients were interviewed. Interviews were conducted in local language. Initial pilot testing of the questionnaire was already done.

Questionnaire comprised of Patient profile which covered the socio demographic data, knowledge assessment about TB.

Inclusion Criteria

Patients aged >15 years who gave consent to be the part of study.

Exclusion Criteria

Patients aged <15 years and who did not consent to be the part of study.

Ethical Issues

Ethical clearance was sought and received from hospital ethics committee. Besides this

1. Written consent was taken from patients participating in the study
2. Confidentiality was maintained.

Statistical Analysis

Analysis of the data was performed by using test statistics. The qualitative data were explained by using chi-square, it was further extended by Odds ratio and 95% confidence intervals (95% CI). Both these tests were two sided and were referred for p values for their significance. Any p value less than 0.05 ($p < 0.05$) was taken as statistically significant. The analysis of the data was done by using statistical package for social sciences version 20.

RESULTS

Table 1 depicts the district wise distribution of study population, 27.9% of the study population belonged to district Baramulla, 27.9% from district Budgam, 26.2% from district Srinagar, 11.5% from district Anantnag, followed by 6.6% from district Pulwama.

District	Cases	Cases%	Controls	%	Total	%
Srinagar	16	26.2	32	26.2	48	26.2
Baramulla	17	27.9	34	27.9	51	27.9
Budgam	17	27.9	34	27.9	51	27.9
Anantnag	7	11.5	14	11.5	21	11.5
Pulwama	4	6.6	8	6.6	12	6.6
Total	61	100.0	122	100.0	183	100.0

Table 1. District wise Distribution of Study Population (Cases and Control Group) in Kashmir Valley

(Cases included Default patients and controls included cured/treatment completed patients)

Age Group	Cases %		Controls %		Total %	
Age group						
15-45 years	34	55.7%	68	55.7%	102	55.7%
>45 years	27	44.3%	54	44.3%	81	44.3%
total	61	100.0%	122	100.0%	183	100.00%
Sex						
Male	36	59.0%	72	59.0%	108	59.0%
Females	25	41.0%	50	40.9%	75	40.9%
Total	61	100.0%	122	100.0%	183	100.00%
Marital Status						
Unmarried	23	37.7%	38	31.1%	61	33.3%
Married	38	62.3%	84	68.9%	122	66.7%
Total	61	100.0%	122	100.0%	183	100.0%
Literacy Status						
Illiterate	33	54.1%	35	28.7%	68	37.2%
Middle Secondary/college	19	31.1%	60	49.2%	79	43.2%
Total	9	14.8%	27	22.1%	36	19.7%
	61	100.0%	122	100.0%	183	100.0%
Type of family						
Nuclear	31	42.5%	42	57.5%	73	100.0%
Joint	30	27.3%	80	72.7%	110	100.0%
Total	61	33.3%	122	66.7%	183	100.0%
Residence						
Rural	50	82.0%	105	86.1%	155	84.7%
Urban	11	18.0%	17	13.9%	28	15.3%
Total	61	100.0%	122	100.0%	183	100.0%
Occupation						
Employed	28	45.9%	40	32.8%	68	37.2%
Homemaker	15	24.6%	40	32.8%	55	30.1%
Student	11	18.0%	29	23.8%	40	21.9%
Unemployed	7	11.5%	13	10.7%	20	10.9%
Total	61	100.0%	122	100.0%	183	100.0%

Table 2. Sociodemographic Profile of the Study Population

Table 3 depicts the Knowledge assessment about the cause of TB, mode of spread and duration of treatment was made. Only 18% of default patients attributed TB to microbe, 42.6% of the default patients did not know the cause of TB. The association of default with knowledge about cause of TB was found to be statistically significant (p value 0.02). 44.3% of default patients did not know how TB spreads, only 26.4% of the default patients stated mode of spread of TB by air. The association of TB with mode of spread was found to be significant statistically (p value 0.02). 49.2% of default patients stated 6 months as duration of treatment, however 91.8% of controls mentioned 6 months as duration of treatment of TB. The association of knowledge about duration of treatment with default was found to be highly significant statistically (p value 0.001).

Knowledge About TB	Cases %	Controls %	Total %	OR (95% CI)	P Value
Cause of TB				-	
Hereditary	5 8.2	25 20.5	30 16.4		
Germes	11 18.0	42 34.4	53 29.0	0.76 (0.23-2.4)	0.65
Unhealthy food	5 8.2	17 13.9	22 12.0	0.68(0.17-2.7)	0.72
Air	10 16.4	12 9.8	22 12.0	0.24(0.06-0.85)	0.02
Smoking	4 6.6	9 7.4	13 7.1	0.45(0.09-2.0)	0.41
Don't know	26 42.6	17 13.9	43 23.5	0.13(0.04-0.4)	0.001
Total	61 100.0	122 100.0	183 100.0		
How TB spreads				-	
Air	15 26.4	44 36.1	59 32.2		
contaminated (water/foods)	12 19.7	34 27.9	46 25.1	0.96(0.4-2.3)	0.9
Sharing clothes	5 8.2	4 3.3	9 4.9	0.27(0.06-1.15)	0.11
Smoke	2 3.3	17 13.9	19 10.4	2.8(0.59-14.0)	0.21
Don't know	27 44.3	23 18.9	50 27.3	0.29(0.12-0.65)	0.02
Total	61 100.	122 100.0	183 100		
Duration of treatment				-	
4 months	17 27.9	7 5.7	24 13.1		
6 months	30 49.2	112 91.8	142 77.6	9 (3.4-23.8)	0.001
8 months	5 8.2	1 0.8	6 3.3	0.46 (0.04-4.9)	1
12 months	5 8.2	2 1.6	7 3.8	0.97 (0.15-6.2)	1
Don't know	4 6.6	0 0.0	4 2.2	0.29 (0.12-0.65)	0.29
total	61 100.	122 100	183 100		
What happens if patients take drugs irregularly					
TB drugs can't work	21 34.4	0 0.0	21 11.5		
TB will not be cured	40 65.6	122 100	162 88.5	4 (3.0-5.3)	0.001
Total	61 100	122 100	183 100.0		

Table 3. Distribution of Study Population by Knowledge about Tuberculosis and its Association with Default by Univariate Analysis

As far as the distribution of study population according to symptoms present is concerned (table 4). Cough was the most common symptom present in 78.7% of default patients followed by fever in 52.5%, haemoptysis in 32.8% and Weight loss was seen in 24.6% of default patients.

Symptoms	Cases %	Controls %	Total %	P Value
Cough				
Yes	48 78.7%	109 89.3%	157 5.8%	
No	13 21.3%	13 10.7%	26 14.2%	
Total	61 100.0%	122 100.0%	183 100.0%	0.052
Haemoptysis				
Yes	20 32.8%	39 32.0%	59 32.2%	
No	41 67.2%	83 68.0%	124 67.8%	
Total	61 100.0%	122 100.0%	184 100.0%	0.911
Fever				
Yes	32 52.5%	44 36.1%	76 41.5%	
No	29 47.5%	78 63.9%	107 58.5%	
Total	61 100.0%	122 100.0%	183 100.0%	0.034
Weight Loss				
Yes	15 24.6%	56 45.9%	71 38.8%	
No	46 75.4%	66 54.1%	112 61.2%	
Total	61 100.0%	122 100.0%	183 100.0%	0.005
Haematuria				
Yes	1 1.6%	0 0.0%	1 0.5%	
No	60 98.4%	122 100.0%	182 99.5%	
Total	61 100.0%	122 100.0%	183 100.0%	0.333
Breathlessness				
Yes	3 4.9%	2 1.6%	5 2.7%	
No	58 95.1%	120 98.4%	178 97.3%	
Total	61 100.0%	122 100.0%	183 100.0%	0.335
Lymphadenopathy				
Yes	3 4.9%	10 8.2%	13 7.1%	
No	58 95.1%	112 91.8%	170 92.9%	
Total	61 100.0%	122 100.0%	183 100.0%	0.549

Table 4. Distribution of Study Population According to Symptoms Present

DISCUSSION

The present study also studied the association of knowledge about tuberculosis and default rate. Assessment of knowledge about cause of tuberculosis, mode of spread and the duration of treatment was studied. It was seen that default patients had poor knowledge about Tuberculosis disease and treatment as compared to control group. Tekle B et al⁽¹⁴⁾ studied defaulting from DOTS and its determinants in Ethiopia and showed similar results. Our study is similar to the study done by Demissie M et al⁽¹⁵⁾ who studied defaulting from tuberculosis treatment at the Addis Ababa Tuberculosis Centre and factors associated with it and concluded that lack of knowledge about tuberculosis disease and treatment is associated with default. On the contrary, PC Hill et al⁽¹⁶⁾ in his study concluded that those with an essential knowledge deficit were not more likely to default from treatment than those with no deficit.

In our study, the most common symptom in the study population was cough in 85.8%, followed by fever in 41.5% and weight loss in 38.8%. Ahmed Esmael et al⁽¹⁷⁾ studied Assessment of Patients' Knowledge, Attitude, and Practice regarding pulmonary tuberculosis in Eastern Ethiopia and found most frequently reported symptom as chronic cough 86.5% and unexplained weight loss 50%.

CONCLUSION

There is a wide gap in factors pertaining to knowledge about Tuberculosis and duration of treatment among Cases and Controls.

Recommendations

Majority of patients in our study had inadequate knowledge regarding causes, modes of transmission and duration of treatment about Tuberculosis. The present study reflects wide gaps in knowledge about Tuberculosis among default patients and control group. Our study strongly recommends great emphasis on adequate knowledge about Tuberculosis. DOTS staff should emphasise on adequate knowledge about causes, modes of spread, importance of treatment completion, regularity of drugs, duration of treatment and side effects of anti-TB drugs to reduce the number of default patients.

Limitations of the Study

Memory or Recall Bias- Since the study was done in patients who had already defaulted, there is a possibility of memory or recall bias among the study subjects.

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