

## Research Article

# Study of various causes of defaulter among tuberculosis patients under revised national tuberculosis control programme: a prospective analysis of 5235 tuberculosis patients

B. B. Bhadke<sup>1\*</sup>, R. Rathod<sup>1</sup>, D. G. Deshmukh<sup>2</sup>, A. Luniya<sup>1</sup>

<sup>1</sup>Department of Pulmonary Medicine, Shri Vasantnao Naik Government Medical College, Yavatmal, Maharashtra, India

<sup>2</sup>Department of Microbiology, Shri Vasantnao Naik Government Medical College, Yavatmal, Maharashtra, India

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### \*Correspondence:

Dr. B. B. Bhadke,

E-mail: [aniket.bhadke@gmail.com](mailto:aniket.bhadke@gmail.com)

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## ABSTRACT

**Background:** The world health organization (WHO) declared tuberculosis (TB) a global public health emergency in 1993 and since then intensified its efforts to control the disease worldwide. Poor compliance with tuberculosis (TB) treatment has reportedly been cited as one of the major obstacles which have led to spread of TB and development of multi-drug resistant and extensively drug resistant tuberculosis. The objective is to investigate factors contributing to treatment non-adherence among patients on TB treatment, the results of which might help us to design intervention that would promote compliance.

**Methods:** All TB patients admitted to the Institute were interviewed regarding the past history of anti-tuberculosis treatment (AKT). As per the revised national tuberculosis control programme (RNTCP) guidelines, we defined defaulter as patient who had interrupted AKT for more than 2 months. All the interviewed patients had taken AKT at RNTCP DOT sites. Patient who has taken AKT from private institute were excluded. All the defaulted patients were then interviewed in details. In addition to the personal and socio-demographic data, treatment history was recorded in details along with reasons for stopping treatment.

**Results:** Among 5235 TB patients, 405 (7.7%) were found to have a past history of AKT interruption. The highest number of treatment interrupters were in the age group 21 to 50 years (n=309), constituting nearly 76.29% of all the patients studied. The most common reason stated was AKT-induced side effects (42.2%) a feeling of early improvement (33.3%) and followed by migration for work (9.6%).

**Conclusions:** Present study concludes that the most common cause of defaulters amongst tuberculosis patients are adverse effects, feeling of early improvement and migration.

**Keywords:** Poor compliance, Tuberculosis, Default AKT

## INTRODUCTION

India is the highest TB burden country accounting for one fifth (21%) of the global incidence (Global annual incidence estimate is 9.4 million cases out of which it is estimated that 2 million cases are from India). India is 17<sup>th</sup> among 22 high burden countries in terms of TB

incidence rate.<sup>1</sup> It remains a major public health problem in the world with approximately 9.27million new cases reported in 2007 and around.

7 million deaths occurring each year.<sup>2</sup> The World Health Organization (WHO) declared tuberculosis (TB) a global public health emergency in 1993 and since then

intensified its efforts to control the disease worldwide.<sup>3</sup> The therapeutic regimens given under direct observation as recommended by WHO have been shown to be highly effective for both preventing and treating TB but poor adherence to anti-tuberculosis medication is a major barrier to global control.<sup>2</sup> TB is a communicable disease requiring prolonged treatment, and poor adherence to a prescribed treatment increases the risk of morbidity, mortality and spread of disease in the community.

Factors associated with patients for poor compliance reported in the pre-DOTS (directly observed treatment short-course) era were relief from symptoms, adverse reactions to drugs, domestic and work-related problems.<sup>4</sup> Adherence to the long course of TB treatment is a complex, dynamic phenomenon with a wide range of factors impacting on treatment taking behavior.

Many studies have been conducted across the world to study the reasons for default from AKT and some are also reported from India (mostly done under RNTCP setting).<sup>5-10</sup>

So the present study was conducted to identify the reasons for discontinuation of anti koch's treatment (AKT) among patients admitted in an Institute catering to a heterogeneous population.

## METHODS

All the tuberculosis patients (outdoor and indoor) from department of pulmonary medicine at Shri Vasant Naik Government Medical College and Hospital, Yavatmal, Maharashtra, India during January 2012 to April 2016 were interviewed regarding past history of AKT and whether they had ever interrupted their treatment for 2 months or more anytime. For the purpose of this study, any patient suffering from TB (PTB/EPTB) at the time of interview, and also with a past history of treatment default was said to have interrupted treatment, which was defined as AKT intake of more than a month, with a gap of more than two months between two courses of AKT. Patients who gave a history of treatment interruption as defined above were enrolled for the study. All these patients were then interviewed in detail. In addition to the personal and socio demographic data, treatment history was recorded in details along with reasons for stopping treatment.

## RESULTS

Among these 5235 TB patients, 405 (7.7%) were found to have a past history of AKT interruption and were included in the study. Among total 405 interviewed patients, 366 (90.9%) were males and 39 (9.1%) were females.

**Table 1: Characteristics of defaulters (n=405).**

Characteristics of defaulters	Number	Percentage (%)	
<b>Age group (years)</b>	<20	18	4.5
	21-30	105	25.9
	31-40	105	25.9
	41-50	99	24.4
	51-60	51	12.6
	61-70	27	6.7
<b>Gender</b>	Male	366	90.9
	Female	39	9.1
<b>Residence</b>	Urban	318	78.5
	Rural	87	21.5
<b>Diagnosis</b>	PTB	339	83.7
	PTB + ICH	39	9.7
	Miliary TB + ICH	6	1.5
	TB Pleural Effusion	18	4.4
	PTB + HPNTH	3	0.7
	<b>Sputum Examination</b>	Positive	249
	Negative	156	61.3
<b>HIV Status</b>	Positive	45	11.2
	Negative	342	84.4
	Not available	18	4.4
<b>Category</b>	I	369	89.8
	II	36	8.8

The highest number of treatment interrupters were in the age group 21 to 50 years (n=309), constituting nearly 76.29% of all the patients studied, while only 4.44% were below the age of 21 years. Of the 945 patients interviewed, 321 patients were residents of 78.51 % urban area, while remaining were from rural area. 39 cases suffered from HIV, 18 cases were of extra-pulmonary Tuberculosis (EPTB) pleural effusion; while three had military tuberculosis as well as HIV. Sputum microscopy for acid fast bacilli was positive in 249 (61.5%) cases while 156 (38.5%) cases had negative results (Table 1).

Amongst various reasons for treatment interruption, AKT induced side effects (42.2%) was the most important reason reported. Next factor was feeling of early improvement (33.3%) and followed by migration for work (9.6%) (Table 2). Among the various AKT induced side effects (n=141), the most commonly reported side effect was gastritis (39.2%), AKT-induced skin rash and seizures (5.9%).

DOTS related reasons for treatment interruption were also reported by few numbers of patients (Table 2). On an average, most of the patients defaulted 3-4 months of starting AKT.

**Table 2: Reasons for interruption of treatment (n=405).**

Reasons for treatment interruption	Number of cases	Percentage (%)
ATT induced side-effects	171	42.2
Feel better	135	33.3
Migration for work	39	9.6
Other medical conditions	12	3.4
Unaware about long duration of treatment	3	0.7
Alcoholism	9	2.2
No improvement	3	0.7
<b>DOT related reasons</b>		
Long distance travel to centre	3	0.7
DOT provider not available	3	0.7
DOT provider not co-operative	9	2.2
Transfer of DOTS provider	3	0.7
Due to neglect of DOT provider	3	0.77
High cost of treatment	9	2.2
Other	3	0.7
<b>Total</b>	<b>405</b>	<b>100</b>

## DISCUSSION

When trying to assess the reasons for treatment interruption, the most common reason was AKT induced

side effects stated by 171 (42.2%) patients. A study from Tiruvallur district, South India, Jaggaraamma K et al have treatment interruption in 42% patients.<sup>10</sup> Similarly, Wares DF et al found the most common reason for stopping treatment being the adverse effects of AKT.<sup>11</sup>

A feeling of early improvement leading to treatment interruption ranked as the second commonest reason, as stated by 135 (33.3%) patients. Kaona FA et al also found that 29.8% of TB patients failed to comply with AKT once they started feeling better.<sup>12</sup> Social problem and feeling of improvement were the top two reasons for patients to default in study by Demissie M et al.<sup>13</sup> In another survey by Tissera<sup>15</sup> at Colombo Chest Clinic, relief from symptoms (13%) emerged as the most common reason for treatment interruption. However, in a study by Jaggaraamma et al relief of symptoms in (20%) cases was found as reason for discontinuation of treatment.<sup>10</sup>

The next common reason was the migration for work cited by 39 (9.6%) of the patients. Among DOTS related reasons, 3 patients interrupted treatment due to long distance of travel to their DOTS centre and 9 patients (2.2%) had interrupted the treatment due to high cost of therapy. In a study by Chatterjee C et al, the most common reason for treatment interruption was distance from the treatment centre.<sup>15</sup> Many studies have demonstrated the indirect costs of treatment to be responsible for treatment interruption.

Similarly, Mishra P et al reported that the risk of non-adherence to treatment was significantly associated with cost of travel to the TB treatment facility.<sup>16</sup> In a study by O'Boyle et al, cost of transport was the reason most frequently given for nonattendance at DOTS centre.<sup>17</sup> Hill PC et al have reported a higher default rate among those who incurred significant time or money costs travelling to receive treatment.<sup>18</sup>

9 (2.2%) patients blamed alcoholism as the reason for their treatment interruption. In a study from the Russian Federation, Jakubowiak WM et al have found alcohol use to be the second commonest reason (30%) for treatment default.<sup>19</sup> 3 (0.7%) patients gave the reason for interrupted treatment as unawareness about the long duration of treatment. In a study by Barn et al from Kathmandu, 61% non-adherent patients claimed insufficient knowledge about the need to continue treatment, especially after they felt better.<sup>20</sup> 3 (0.7%) patients stopped taking their drugs as there was no significant improvement. 3 (0.7%) patients cited other reason as riots to be responsible for their treatment interruption.

## CONCLUSION

Present study concludes that the most common cause of defaulters amongst tuberculosis patients are adverse effects, feeling of early improvement and migration.

Proper counseling of the patients prior starting AKT, proper knowledge regarding duration of treatment, regular follow up of the patients clinically and biochemically as an when required, will not only limit these problems of defaulters but also increases the success of RNTCP programme.

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