

Original Article

CORRELATES OF DELAYED INITIATION OF TREATMENT AFTER CONFIRMED DIAGNOSIS UNDER RNTCP: A CROSS SECTIONAL STUDY IN AHMEDABAD MUNICIPAL CORPORATION, INDIA

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Financial Support: None declared

Conflict of interest: None declared

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How to cite this article:

Patel PG, Bala DV, Vagela SD. Correlates of delayed initiation of treatment after confirmed diagnosis under RNTCP: A cross sectional study in Ahmedabad Municipal Corporation, India. Natl J Community Med 2013; 4(4): 550-4.

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Date of Submission: 23-08-13

Date of Acceptance: 23-10-13

Date of Publication: 31-12-13

ABSTRACT

INTRODUCTION

According to World Health Organization (WHO), one-third of the world's population is estimated to be infected with Mycobacterium tuberculosis¹. India, contributed to a fifth of the global burden of TB. The national Total TB case notification rate was 125 per 100,000 population in 2011.²

Timely diagnosis and initiation of treatment are important for management of TB patients. Delay in initiation of treatment cause more complication and increase transmission.³ Awareness of symptoms of TB, health seeking behavior of patients, accessibility of health facility as well as prompt and accurate diagnosis and early initiation of treatment at health care provider level affect duration of diagnosis and initiation of treatment. Many factors are responsible for delay.

Purpose: Tuberculosis in India accounts for 1/3rd of global burden. Initiation of treatment by the health system is an essential step. The aim of this study was to assess delay in the treatment in AMC area.

Methodology: All smear positive patients who had treatment delay were identified from 10TUs of AMC who had started treatment between 1stOctober 2010 and 30thSeptember 2011. Out of total 204, 14 had migrated and 30 had initiated treatment during hospitalization soon after diagnosis were excluded. Therefore, 160 patients were interviewed in DOTS centre or in their homes using predesigned and pretested questionnaire.

Results: Mean age was 37.3±14.6 years and 69(43.1%) were in the 26 to 45 age group. About 114(71%) were male. Category I, II and IV Tuberculosis patients were 38.7%, 61.2%, and 0.06% respectively. The median duration for treatment delay was 14 days (range 8 to 90). Factors responsible for delayed initiation of treatment included health system delay (36.8%), personal reasons (92.5%) and both (28.7%). Important factors of treatment delay were social (34%) followed by adverse effects of drugs (32%) and referral delay from another TU (29%). After adjusting various factors like gender (female) and lower socio-economic class, personal reasons emerged as significant determinants for treatment delay more than 14 days.

Conclusion: Present As demonstrated in this study, significant factors were lower socio-economic class, personal reasons and female sex, these factors must be taken into account while giving health education. Sound referral system can also minimize treatment delay.

Key words: Tuberculosis, health system delay, new treatment initiation

Some of these factors are traditional healer or private practitioner, initial visit to health care facility, rural residence, and low awareness about TB.⁴

It is estimated that an untreated smear-positive patient may infect >10 contacts annually.⁵ Delay in diagnosis and treatment leads to more advanced disease, more complications, higher mortality and has resulted in community outbreaks.⁶⁻⁸ We undertook the present study to determine the factors responsible for "treatment delay" in sputum smear-positive pulmonary TB.

OBJECTIVES

The objectives were to study the socio-demographic profile and health seeking behavior of Tuberculosis

patients who had treatment delay and also to find out duration of delay and factors responsible for the same.

METHODOLOGY

This cross-sectional study was carried out in all 10 TUs (Tuberculosis Units) of AMC. Study Population includes all subjects confirmed to have TB (Pulmonary) from 1st October 2010 and 30th September 2011. List of patients with treatment delay was prepared from the registers maintained at TUs. Total 204(4.4%) patients had treatment delay. Out of total 204, thirty patients were in accidentally diagnosed to have Pulmonary TB while they were already admitted in the hospital for some other condition. Therefore the treatment (AKT) started during their hospital stay. After discharge subsequently they were registered with the TU according to the place of their residence. Thus, truly these 30 patients cannot be classified delayed treatment cases. Fourteen had migrated. Thus, all 44 (30 + 14) subjects were excluded. The rest 160 patients were interviewed either in DOIS centre or in their homes using pre-designed and pretested questionnaire during October and November, 2011. The questionnaire elicited information on socio-demographic characteristics, health seeking behavior and treatment taken in the previous TB episode. Data was collected after explain-

ing the purpose of the study and verbal consent was obtained from each patient. Consent was not taken from only 14 (6.86%) patients who migrated.

Treatment delay is the time lag from TB diagnosis to first treatment initiation and is taken as treatment initiated after 7 days.

RESULTS

Total 160 patients were included in study. Table-1 shows socio-demographic profile of patients. There were 114 (71%) men and the rest were women. Overall literacy rate was found to be 78.7%. Labourers constituted 40%. Relatively more female patients (86.9 %) were belonging to lower socioeconomic classes as compared to 71.9% males ($p=0.01$). Most 29(62.5%) of female patients were either unmarried, divorcee or widow. Majority of male patients 102(89.5%) had one or more forms of addiction as compared to female and it was statistically significant ($p<0.001$). However, there was no statistically significant gender difference as far as the previous source of treatment in Category II patients was concerned. Nearly half of all women (48%) disposed sputum in a proper manner as compared to men (20%). This gender difference in the proper disposal of sputum was highly significant ($p<0.0001$).

Table 1: Gender wise distribution of Socio demographic profile of TB patients

Variables	Male (n=114) (%)	Female (n=46) (%)	χ^2 value (df)	p value
Age (years)				
≤25	18(15.8)	16(34.7)	9.3 (2)	0.009
26 to 44	65(57.0)	18(39.1)		
≥45	31(27.2)	12(26.0)		
Median \pm SD	36 \pm 13.1	28 \pm 16		
Minimum-Maximum	13.0 - 76.0	15.0 - 70.0		
Education				
Illiterate	21(18.4)	13(31.3)	0.31 (1)*	0.57
Primary	52(45.6)	18(39.6)		
Secondary	26(22.8)	8(16.7)		
Higher secondary	5(4.3)	5(8.3)		
Graduate	10(8.7)	2(4.2)		
S.E Class#				
Higher S.E class (I, II)	32(28.0)	6 (13.1)	4.08 (1)	0.04
Lower S.E class (III, IV, V)	82(71.9)	40 (86.9)		
Marital status				
Married	78(68.5)	17(37.5)	13.45 (1)	0.002
Unmarried	18(15.7)	12(27)		
Divorcee	3(2.6)	6(12.5)		
Widow	15(13.1)	11(22.9)		

Note: Figure in parentheses indicate percentage; *Chisquare was calculated after pooling of illiterate with primary and secondary with above; #according to Modified Prasad's classification

Median treatment delay was 14 days. Treatment delay more than 14 days was found significantly more in female patients ($p=0.02$). However, there was no significant gender difference in reasons for either person-

al or system related treatment delay ($p=0.5$). Social event was the most common reason cited by both male and female subjects. Other reasons are shown in Table -3.

Table 2: Gender wise distribution of health seeking behaviour of TB patients

	Male (n=114) (%)	Female (n=46) (%)	χ^2 (df)	p value
Ever addiction of some or other forms of Tobacco	102(89.5)	18(39.6)	45.45 (1)	<0.001
Category of TB patients				
Cat. I.	27(23.7)	35(77.1)	37.92 (1)*	< 0.0001
Cat.II. Defaulter	58(50.9)	6(12.5)		
Cat. II Failure	18(15.7)	2(4.2)		
Cat. II. Relapse	10(8.8)	3(6.3)		
Cat. IV	1(0.9)	0(0.0)		
Source of previous treatment				
RNTCP	64(73.5)	8(72.7)	0.003 (1)†	0.95
Private Doctors				
Modern Medicine	22(25.2)	2(18.1)		
AYUSH	1(1.1)	1(9.1)		
Disposal of sputum				
Proper	23(20.0)	22(48.0)	12.39 (1)	< 0.001
Improper	91(80.0)	24(52.0)		

(Note: Figure in parentheses indicate percentage); *Chi square was calculated after pooling of values of category II with category IV; † Sexwise distribution of AKT was studied in RNTCP system and in private system. No difference in availing the AKT services from RNTCP or private practice in either sex was observed. Chi square was calculated after pooling of values of Modern medicine and AYUSH.

Table 3: Gender wise distribution of duration of treatment delay and reasons for treatment delay

	Male (n=114) (%)	Female (n=46) (%)	χ^2 (df)	p value
Duration of treatment delay				
8 to 14 days	46 (40.3)	10 (21.7)	4.9 (1)*	0.02
15 to 30days	58 (50.8)	28 (60.9)		
>30 days	10 (8.8)	8 (17.3)		
Reasons for treatment delay				
Personal reasons	104 (91.2)	44 (95.6)	0.3 (1)	0.5
Health System reasons	44 (38.5)	15 (32.6)		
Both	34 (29.8)	12 (26.1)		
Reasons				
Personal Reasons treatment delay				
Social events	43 (37.7)	15 (32.6)		
Social stigma	24 (21.1)	15 (32.6)		
Lack of family support	14 (12.3)	11 (23.9)		
Relief of symptoms	18 (15.8)	10 (21.7)		
Adverse effect of drugs	33 (28.9)	10 (21.7)		
Too ill to come to DOTS centre	10 (8.8)	7 (15.2)		
Private treatment	3 (2.6)	3 (6.5)		
Work related (job timing not convenient / too busy at work)	13 (11.4)	1 (2.2)		
Associated HIV infection	10 (8.8)	0 (0.0)		
Alcohol addiction	29 (25.4)	0 (0.0)		
Referral delay	32 (28.1)	13 (28.3)		
Substandard drug	2 (1.8)	4 (8.7)		
Health facility too far	13 (11.4)	1 (2.2)		

Note: Figure in parentheses indicate percentage); *Chi square was calculated after pooling of group of 15 to 30 days and group of more than 30 days

Median treatment delay was 14 days. Therefore, data was grouped in two categories (Delay \leq 14, Delay $>$ 14 days). In Table-4 reasons for treatment delay more than median treatment delay are mentioned. Major reasons which significantly determined delayed treatment personal reasons ($p=0.001$), lower socio-economic class ($p=0.004$), Category I ($p=0.008$) and female patients ($p=0.02$). After adjusting various fac-

tors like gender (female) and lower socio-economic class, personal reasons emerged as significant determinants for treatment delay more than 14 days.

As shown in figure 1, Median treatment delay for Re-treatment patients from RNTCP was longer than Re-treatment patients from private sector (18 days vs 11 days).

Table 4: Determinants of treatment delay more 14 days (median period of delay)

Variables	Delay =< 14 days	Delay> 14 days	χ ² (df)	p value
Age				
<25 years	11(32.4)	23(67.6)	0.1 (2)	0.9
25 to 44 years	29(34.9)	54(65.1)		
≥45 years	16(37.2)	27(62.8)		
Gender				
Male	46(40.4)	68(59.6)	4.99 (1)	0.02
Female	10(21.7)	36(78.2)		
Education				
Lower Education (Illiterate & Primary)	41(39.4)	63(60.6)	2.55 (1)	0.1
Higher Education (Secondary & above)	15(26.8)	41(73.2)		
SE Class				
Lower S.E class	50(41.0)	72(59.0)	8.08 (1)	0.004
Higher S.E class	6(15.8)	32(84.2)		
TB Treatment category				
Newly diagnosed (Cat.I)	14(22.6)	48(77.4)	6.86 (1)	0.008
Re-treatment (Cat. II & IV)	42(42.8)	56(57.1)		
Reason for treatment delay				
Only Personal reasons	27(26.2)	76(73.8)	9.81 (1)	0.001
Only System related reasons	29(50.9)	28(49.1)		

(Note: Figure in parentheses indicate percentage)

Table 5: Effect of various factors for treatment delay more than 14 days by logistic regression analysis

	p value	Odd ratio (OR)	95% C.I.		Nagelkerke R ² value
			Lower limit	Upper Limit	
Personal reasons	.003	2.953	1.450	6.015	0.180
Lower Socio-Econ. Class	.005	4.102	1.523	11.044	
Female	.048	2.298	1.008	5.238	

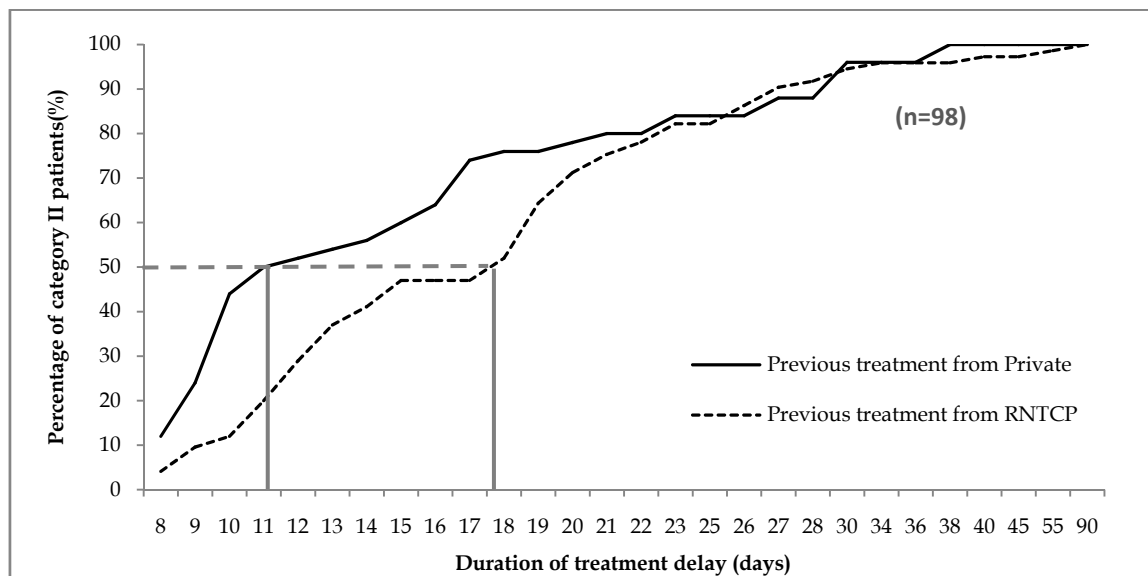


Figure 1: Current Treatment Delay in the Retreatment patients (i.e., those who were previously treated by Private practitioner or under RNTCP, Category II & IV)

DISCUSSION

Delay in treatment can lead to progression of disease, increased transmission and subsequent individual morbidity and mortality⁹. A total of 4593 patients, who were registered in 10 TUs of AMC area during the study period of one year, 204(4.44%) initiated treatment after 7 days. Amongst these, 50% of patients initiated treatment after more than 14 days. It was

observed that treatment delay was 54(65.1%) in the 26 to 45 age group and was also more common [36(78.2%)] in female patients. Social stigma and lack of family support were major reasons.

Delay more than 14 days was also found in newly diagnosed patients as compared to re-treatment patients (77.4% vs 57.1%). Newly diagnosed patients sought second opinions from private doctors as they

had limited confidence in their diagnosis of TB under the RNTCP. In few studies conducted Ethiopia the core problem in delay of diagnosis and treatment seemed to be a vicious cycle of repeated visits at the same healthcare level, resulting in nonspecific antibiotic treatment and failure to access specialized TB services⁴. Patients who were diagnosed outside their own locality of residence had an increased likelihood of delay than those residing in the same ward. The programme has a mechanism of referral and feedback when a patient is diagnosed outside his/her area. This mechanism, based on paper exchange, is time-consuming. Similar reasons were observed in the study by Durba paul, Arundhati Busireddy¹⁰. Why patients sometimes seek care outside their local area, despite service availability, was not addressed in this study.

Re-treatment patients from RNTCP had experienced more delay than re-treatment patients from private sector. Contributing factors to this observation included side effects experienced with previous drug intake in health system, fear of injectable Streptomycin and / or lack of confidence in the health system.

CONCLUSION & RECOMMENDATIONS:

As demonstrated in this study, significant factors were lower socio-economic class, personal reasons and female sex. Other factors were social stigma, lack of family support, adverse effect of drugs given by RNTCP. Therefore, these factors must be taken into account while giving health education and motivating the patient at the time of diagnosis.

To reduce treatment delay, the existing system of referral and feedback for patients diagnosed outside their areas need to be strengthened. More intensified

pre-treatment counseling on the necessity of early initiation and completion of treatment is required.

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