

## ORIGINAL ARTICLE

**Care seeking behaviour and various delays in Tuberculosis patients registered under RNTCP in Pune city**Jayashree Sachin Gothankar<sup>1</sup>, Usha Pravin Patil<sup>2</sup>, Sunil R Gaikwad<sup>3</sup>, Sulakshana B. Kamble<sup>4</sup><sup>1</sup>Professor & Head, <sup>2</sup>Ex-Lecturer, <sup>3</sup>Sanitary Inspector, Department of Community Medicine, Bharati Vidyapeeth University Medical College, Pune, India; <sup>4</sup>Medical Social Worker, Bharati Hospital and Research Centre, Pune.

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E Mail ID: [jayashreesg@rediffmail.com](mailto:jayashreesg@rediffmail.com)**Citation**

Gothankar JS, Patil UP, Gaikwad SR, Kamble SB. Care seeking behaviour and various delays in tuberculosis patients registered under RNTCP in Pune city. Indian J Comm Health. 2016; 28, 1: 48 - 53.

**Source of Funding:** Maharashtra State TB Society, **Conflict of Interest:** None declared**Article Cycle****Submission:** 11/09/2015; **Revision:** 12/12/2015; **Acceptance:** 05/02/2016; **Publication:** 31/03/2016**Abstract****Introduction:** Case finding in tuberculosis is known to be influenced by factors such as patient motivation, care seeking, the degree of diagnostic suspicion by health care provider which could result in a delayed diagnosis.**Objective:** To determine care seeking behaviour and delay in diagnosis and treatment of new sputum positive tuberculosis patients registered under RNTCP. **Material and Methods:** Descriptive cross sectional study. 283 new sputum positive tuberculosis patients ( $\geq 15$  years of age) registered during a period of six months at two randomly selected tuberculosis unit of Pune city. Questionnaire by WHO was modified and used. Interviews were conducted in DOT centres. Statistical analysis: Frequency, mean and standard deviation, chi square test. **Results:** Mean age of patients was 35 ( $\pm 15$ ) years 18% of patients were unemployed and 77% resided in urban slums. The commonest co morbidity in 7.4% and 3.5 % patients was HIV/ AIDS followed by diabetics respectively. Majority of the patients, for the first and second time visited a general practitioner. Median patient, health care system and total delay were 18, 22 and 47 days with mean of  $24 \pm 21$ ,  $32 \pm 30$  and  $56 \pm 33$  days respectively. Health care system delay was less ( $p < 0.05$ ) in patients who first visited the public health care facility than patients who first visited a private health care provider. **Conclusions:** General practitioners are preferred first choice of health care provider for tuberculosis patients. Mean health care system delay is more than patient delay.**Key Words**

New Smear Positive; Patient Delay; Health Care System Delay; Tuberculosis Co-Morbidity

**Introduction**

Tuberculosis ranks as the second leading cause of death from an infectious disease worldwide (1). It accounts for 17.6% of all deaths from communicable diseases in India (2). Early diagnosis and prompt treatment form key elements of the tuberculosis control and sputum microscopy is the primary tool for diagnosis under RNTCP. Passive case finding is influenced by patient motivation, care seeking and the degree of diagnostic suspicion by health care provider which could result in a delayed diagnosis. The patients may delay in seeking help or the health

care system/provider may delay in suspecting and investigating for TB (3). Delay in diagnosis of an open case of tuberculosis results in increased infectivity in the community (4). It is important to identify such delays and have better understanding of patients' care-seeking behaviour to remove barriers to timely tuberculosis diagnosis and treatment.

**Aims & Objectives**

1. To determine care seeking behaviour and delay in diagnosis and treatment of new sputum positive tuberculosis patients registered under RNTCP.

2. To determine co morbidities amongst new sputum positive tuberculosis patients registered under RNTCP.

## Material and Methods

**Study design:** Cross sectional **Study period:** December 2012 to August 2013 (Total 9 months).

**Study area:** Two randomly selected tuberculosis units namely Sahakarnagar and Gadikhana out of six TB units under Pune Municipal Corporation. **Study sample:** All newly diagnosed smear positive pulmonary tuberculosis cases 15 years of age and older registered for a period of six months i.e. from January 2013 to June 2013 in two selected TB units.

**Sample size:** 313. **Data collection techniques and tools:** Questionnaire used by WHO for multi centric study in seven countries in Eastern Mediterranean region in year 20064 was used. The questionnaire was pretested and modified and was filled by interview technique. The patients were asked to recall the duration in days from onset of symptoms to the first health seeking, reasons for such delays in health seeking, the number and type of health care providers consulted. Cases were interviewed in the DOT centre within three weeks of onset of symptoms so as to reduce recall bias. And they were requested to bring previous medical records i.e. prescription, reports etc. **Ethical considerations:** The proposal was approved by the Bharati Vidyapeeth University Medical College institutional ethical committee. Operational definitions 2, 4: New case was defined as a TB patient who has never had treatment for tuberculosis or has taken anti-tuberculosis drugs for less than one month.

**Smear-Positive pulmonary TB:** TB in a patient with at least 2 initial sputum smear examinations (direct smear microscopy) positive for acid fast bacilli (AFB).

**Patient delay:** Time interval between the onset of symptoms and presentation to a health care provider. **Health care system delay:** time interval between the date of health-seeking behavior at a health care provider and the initiation of anti-tuberculosis treatment. **The total delay:** is the sum of patient and health care system delay because it can be attributed to these types of delay which are defined as follows: **Diagnostic delay:** Time interval between onset of symptom and labeling of the patient as a tuberculosis patient (tuberculosis diagnosis). **Treatment delay:** Time interval between tuberculosis diagnosis and initiation of anti-tuberculosis drugs. The total delay is also the sum of

diagnostic delay and treatment delay. **Socioeconomic status (5):** Modified B G Prasad Socioeconomic classification was used and modified as per all India consumer price index (AICPI) number for the month of April-June 2011.

**Data management and statistical analysis-scoring system:** Data was entered into excel sheets and was analysed using the statistical packages SPSS for windows. Median value (in days) for patient delay, health care system delay, diagnostic delay, treatment delay and total delay were calculated. Comparison of variables was done with more delay and less delay i.e. values equal to or higher than median was considered as more delay and values shorter than median were considered as less delay. Comparisons between the groups were made using the chi square test. Level of significance was determined at 95 % (p value < 0.05) and the test were 2 –sided.

## Results

A total of 313 patient's new sputum positive were registered in six months out of which 9.6% patients were uncooperative. Thus data was collected from 283 patients.

Mean age of patients was 35(±15) years. Male to female proportion being 2:1. Thirty-one percent of the patients were educated up to secondary level and 22% studied up to middle level i.e. 5<sup>th</sup> standard. Out of total 283 patients, 18% of the patients were unemployed, while only 5% were with technical or professional occupation. There were equal numbers of patients in socio economic class 2 and class 3. Majority of the patients i.e. 62.5% were married and majority i.e. 77% resided in slums.

Majority i.e. 80% of the patients never smoked and 20% were either current smokers or ex-smokers. Family contact was source for tuberculosis infection as reported by 20.5% of patients, while for 5% of patients' relative was source of infection.

The commonest co morbidity in 7.4% of patients was HIV/ AIDS, while 3.5 % patients were known cases of diabetics. And 4.6% of the patients had other co morbidities like asthma, hypertension, psychiatric disorders etc.

Majority of the patients i.e. 88% went to some health care provider (public or private) after onset of illness and 10% of the patients took medication of their own as first action to relieve the symptoms. And 6 patients visited a traditional healer.

After onset of symptoms, out of 249 patients the first action taken by 77% of patients was going to a private practitioner and very less i.e. 23% of patients visited a public health facility as first choice. After first visit, the second visit for majority i.e. for 57% of the patients was again consulting to a private practitioner either same or different practitioner but of same level as first. Forty-six percent of patients visited to public OPD/ hospital during their second visit. For third action, majority of the patients i.e. 59% visited public OPD/hospital because their symptoms were not relieved by treatment given by the private practitioner or the treating private practitioner advised them to do so or the cost of treatment for tuberculosis was not affordable to patients. Thus for first two visits patients preferred to visit private practitioner over public practitioner. Out of these private practitioners, 86% were general practitioners. Commonest reason for first visit to private practitioner was accessibility.

The median patient delay was 18 days, mean being  $24 \pm 21$  days and median health care system delay was 22 days, mean being  $32 \pm 30$  days. Thus patient visit health care provider on an average 24 days after onset of symptoms however it takes 32 days for health care system start the treatment of tuberculosis. Median diagnostic delay in the current study is 41 days with mean of  $49 \pm 32$  days i.e. interval between onset of symptoms and tuberculosis diagnosis.

The median treatment delay is interval between diagnosis and initiation of treatment of tuberculosis it is 4 days with mean of  $7 \pm 10.5$  days as seen in [table 6](#). In spite of first two visits of majority of patients to private practitioners they fail to suspect tuberculosis in patients, so almost 40% of the total patients are diagnosed in public health care setting/TB centre. These patients are put on treatment as per standard protocol immediately after diagnosis of tuberculosis there by reducing treatment delay in contrast to private practitioners who prescribe non standardized treatment for variable duration which requires patient to purchase the anti-tuberculosis medicines from the drug store.

The median total delay i.e. time interval from onset of symptoms to start of treatment is attributed to sum of patient delay and health care system delay. Total delay is also attributed to sum of diagnostic delay and treatment delay. In the current study total delay is 47 days with mean of  $56 \pm 33$  days.

Patient delay was significantly less since many patients consulted the private practitioner as soon as possible ( $p < 0.05$ ), because private practitioner was easier and more accessible to contact. So patients immediately after onset of symptom tend to go to nearest private practitioner thereby reducing the patient delay.

While health care system delay was significantly less ( $p < 0.05$ ) in patients who first contacted the public (corporation) health care facility than patients who first contacted the private health care provider.

## Discussion

Higher prevalence of tuberculosis in younger age group of 20 to 30 years indicates the active spread of tuberculosis in the community. The male to female ratio of 2:1 is similar to the national figures of 2.2:1. However, TB takes a disproportionately larger toll among young females as reported by Nair DM *et al* (6). Findings of current study indicate that prevalence of tuberculosis decreases with increasing in educational and occupational status.

Tobacco use has been suggested to be a potent contributor factor to tuberculosis related mortality (6). In the current study 20% were current or ex-smoker. Seven percent of patients were HIV positive. Tuberculosis is the most common opportunistic infection and cause of mortality among people living with HIV, TB in these patients is difficult to treat owing to challenges related to co-morbidity, co-toxicity and drug interactions.

In the current study 3.5% of patients reported to have diabetes. Diabetes mellitus could lead to the development of drug resistance and higher risk of death during TB treatment and of TB relapse after treatment (3).

Almost one out of ten patients (12%) in current study took self-medication or visited traditional healer for relieving symptoms as first action. However, majority i.e. 88% visited some health care provider either private or public. Availability of health care provider in city of Pune is easy. In a study by Hussien A *et al* (7) found that prior to patients' first consultation at a public health facility, patients received treatment from private practitioners (13%); rural drug vendors (7%); and traditional healers (3%). The median patient, health care system and total delay found in the current study were 18, 22 and 41 days with mean of  $24 \pm 21$ ,  $32 \pm 30$  and  $56 \pm 33$  days respectively. And the median diagnostic and

treatment delay were 41 and 4 days with mean  $49 \pm 32$  and  $7 \pm 10.5$  respectively.

In the current study, private practitioner was easily accessible to the patients, however they could not suspect tuberculosis leading to higher health care system delay, other reasons being changing of health care provider by the patients due to non-relief of symptoms. Some private practitioner instead of referring the patient to nearest TB centre for treatment referred them to public hospital situated far away from patients' residence. In these referral interval patient wasted some days as they were not convinced with the urgency of being put on treatment thus this might have contributed to health care system delay. Also during treatment with private practitioners some patients visited DOT centers when they were aware that free treatment was available through DOTS.

Diagnostic delay depends on the amount of suspicion of TB by the treating doctors. If a patient present to health facility very early in the disease TB suspicion is not possible. History of illness and history of visit of patient to previous health care facilities needs to be carefully elicited. Unless actively asked about previous consultations or medications taken to relieve symptoms, many patients do not reveal this history. Diagnostic delay was highest because of tendency of patients to visit same level of practitioner i.e. general practitioner many times who fail to suspect TB disease in the patient.

In a study done by P.O. Ayuo *et al* (8) in Kenya amongst 230 patients found the median patient, health systems and total delays were 42, 2, and 44 days respectively, this is in contrast to current study where patient delay is less than health system delay. In a study by Gosoni *et al* (9) shows that the median interval from symptom onset to diagnosis was longest in India i.e. 75 days. Paul D *et al* (10) in their study amongst 3411 patients reported the mean duration between TB diagnosis and treatment initiation was 8 days. This finding is similar to current study. Thakur R *et al* (11) in their study done at Mani amongst 234 new sputum positive patients found median patient, health system and total delay were 15, 13 and 36 days respectively. Nair DM *et al* (6) in an depth study of sixteen patients who attended NGO Tuberculosis unit for treatment was done shows that during the first two months of symptoms most patients either did nothing or took home remedies but when symptoms continued, private practitioners

were the first source of allopathic treatment; they were generally unable to correctly diagnose the disease. Respondents shifted to municipal and NGO health services when private treatment became unaffordable. These findings are similar to the findings of current study.

As compared to all the studies the patient delay was less in the current study because Pune being an emerging metropolitan city availability of general practitioners was easy thus reducing the patient delay.

Lawn SD *et al* (12) found median doctor delay was double the median patient delay (8 weeks versus 4 weeks) and low rates of diagnosis and was seen particularly among private practitioners.

## Conclusion

General practitioners are preferred choice of health care provider for tuberculosis patients. Mean health care system delay is more than patient delay. Delays can be used as indicators to evaluate tuberculosis control programs.

## Recommendation

Involvement of more number of general practitioners under public private partnership so as to reduce health care system delay.

## Relevance of the study

General practitioner needs to have high degree tuberculosis suspicion for timely diagnosis and management of the disease.

## Authors Contribution

GJS: contributed in concept, designing of the study, analysis and interpretation of results, PUP: contributed in designing and interpretation of study results, GSR & KSB: were involved in data collection and interpretation of results.

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**Tables**

**TABLE 1 SOCIO DEMOGRAPHIC PROFILE OF TUBERCULOSIS PATIENTS (N=283)**

Age (Years)	No (%)
< 20	31(11)
20 -30	97(34)
30 -40	52(18)
40 -50	53(19)
50 -60	25(9)
>60	25(9)
<b>Sex</b>	
Male	187(66)
Female	96(34)
<b>Education</b>	
Illiterate	42(14.9)
Primary (1-4)	39(13.8)
Middle (5-7)	63(22.3)
Secondary (8-10)	87(30.7)
Higher Secondary	33(11.7)
Graduate +	19(6.7)
<b>Occupation</b>	
Unemployed/Housewife	103(36.4)
Clerical/Workers	137(48.4)
Student	28(9.9)
Technical/Professional	15(5.3)
<b>Socioeconomic class (Per capita per month income in Rs)</b>	
Class 1(≥4276)	32(11.3)
Class 2(4275-2138)	86(30.4)
Class 3(1282-2137)	86(30.4)
Class 4(1281-641)	73(25.8)
Class 5(≤641)	6(2.1)
<b>Marital Status</b>	

Married	177(62.5)
Single	77(27.2)
Widowed	15(5.3)
Divorced/Separated	14(4.9)
<b>Residence</b>	
Urban slum & homeless displaced	218(77.0)
Urban	65(23.0)

**TABLE 2 RISK FACTORS AND CO MORBIDITY AMONG TUBERCULOSIS PATIENTS**

Risk factors	No (%)
<b>Smoking status</b>	
<b>Current Smoker</b>	35(12.50)
<b>Never</b>	225(79.50)
<b>Ex-smoker</b>	23(8)
<b>Previous exposure to TB</b>	
<b>None</b>	26(69.5)
<b>Family</b>	58(20.5)
<b>Neighbor</b>	3(1.1)
<b>Other(friend)</b>	7(2.5)
<b>Relative</b>	15(5.3)
<b>Workplace</b>	3(1.1)
<b>Co-morbidity</b>	
<b>Diabetes</b>	10(3.5)
<b>Disability</b>	2(0.7)
<b>HIV/AIDS</b>	21(7.4)
<b>Others (hypertension, hyperthyroidism, asthma, arthritis, psychiatric disorders, cancer)</b>	13(4.6)
<b>None</b>	237(83.7)



**TABLE 3 FIRST CARE SEEKING BEHAVIOUR WITH THE ONSET OF ILLNESS**

First action	No. of cases (%)
Visit to health care provider	249(87.98)
Self-medication/drug store	28(9.90)
Traditional medicine	6(2.12)
<b>Total</b>	<b>283(100.0)</b>

**TABLE 4 HEALTH SEEKING BEHAVIOUR WITH ORDER OF HEALTH FACILITY**

Place of Health seeking	Order of health facility visited by the patients								
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
<b>Tb centre / chest hospital (Public)</b>	64(22.60)	129(45.62)	88(59.43)	104(36.74)	71(24.94)	31(10.94)	20(7.02)	10(3.52)	6(1.48)
<b>Private practitioner</b>	219(77.40)	150(57)	93(40)	50(17.66)	21(7.4)	15(5.3)	4(1.41)	2(0.7)	1(0.35)

**TABLE 5 DIFFERENT TYPES OF DELAY FOR TUBERCULOSIS PATIENTS**

Patient delay	Days
Mean( $\pm$ SD)	24( $\pm$ 21)
Median	18
Range	1-115
<b>Health care system delay</b>	
Mean( $\pm$ SD)	32( $\pm$ 30)
Median	22
Range	1-139
<b>Diagnostic delay</b>	
Mean( $\pm$ SD)	49( $\pm$ 32)
Median	41
Range	2-149
<b>Treatment delay</b>	
Mean( $\pm$ SD)	7( $\pm$ 10.5)
Median	4
Range	0-71
<b>Total delay</b>	
Mean( $\pm$ SD)	56( $\pm$ 33)
Median	47
Range	4-154

**TABLE 6 HEALTH FACILITY FIRST CONSULTED AND DELAYS**

Health facility first consulted	Patient delay		Health care system delay		Total delay	
	$\geq$ 18days	<18days	$\geq$ 22days	22days	$\geq$ 47 days	<47days
<b>Private</b>	101(71.12)	118(83.68)*	119(83.21)	100(71.42)*	104(74.82)	115(79.86)
<b>Public</b>	41(28.88)	23(16.31)	24(16.79)	40(28.58)	35(25.18)	29(20.14)
<b>Total</b>	142	141	143	140	139	144

\* $p < 0.05$  (All figures in brackets indicate percentages)