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Original Research Article

Patient and health system delays among tuberculosis patients attending DOTS centres of Kamrup (metro) district, Assam

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ABSTRACT

Background: Among the North eastern states, Assam has the highest burden of tuberculosis. Early diagnosis and prompt treatment is essential for effective control of tuberculosis.
Methods: A cross sectional study was conducted among new smear positive tuberculosis cases above 15 years in Kamrup (Metrolpolitan) district of Assam from August 2015 to July 2016.
Results: The mean patient delay was 34.2 days and the mean health system delay was 30.34 days. Female gender and patients who made first contact with non-formal health care providers were significantly associated with patient delay while illiteracy and age more than 35 years had significant association with health system delay.
Conclusions: Median patient delay was found to be more than median health system delay. As patient delay was significantly associated with non-formal health care providers, the study proposes integration of non-formal health care providers with RNTCP which can reduce the patient delay.

Keywords: Patient delay, Health system delay, DOTS

INTRODUCTION

Tuberculosis is a major public health problem despite the fact that the causative organism was discovered more than 100 years ago and highly effective drugs and vaccine are available making tuberculosis a preventable and curable disease.[1] According to the WHO Global Tuberculosis (TB) report 2015, an estimated 9.6 million people developed TB and 1.5 million died from the disease in 2014. India has achieved the MDG (Millenium Development Goal) target of halting and reversing the incidence, halving the prevalence and mortality due to TB but India still remains the highest TB burden country in the world.[2]

Among the North Eastern states, Assam bears the highest burden of tuberculosis.[3] If we are to achieve a TB free society, it therefore becomes important for effective control of tuberculosis. Early diagnosis and prompt initiation of treatment is essential for tuberculosis control as delay in diagnosis and treatment may worsen the disease, increase the risk of death and enhance tuberculosis transmission in the community

Till date there has been no study found on patient and health system delays of TB patients in this region. Therefore, the study was conducted with the following objectives; a) To determine the extent of patient delay and the factors contributing to it and b) To determine the extent of health system delay and the factors contributing to it.

METHODS

Kamrup (Metro) is one of the districts in Assam with its administrative headquarter as Guwahati city. The present study was conducted in all the six Tuberculosis units of Kamrup (Metro) district. It was a cross sectional study

done from August 2015 to July 2016 among new smear positive patients above 15 years of age registered under RNTCP. The study participants were selected from the third and fourth quarters of 2015.

Based on the RNTCP quarterly reports of 2014 of Kamrup (Metro) district, the sample size in the present study was determined. A total of 1806 TB patients were registered under RNTCP in Kamrup (Metro) district in 2014. Each quarter therefore had 452 (1806/4 = 452) patients. As the patients studied were selected from two quarters, i.e., third and fourth quarters of 2015, so we got a total of 904 (452 x 2) patients. Out of 904 patients, 30% were taken into account in the present study which is equal to 272 (rounded off to 280). The quarterly reports of 2014 showed that 70% of the patients registered were from Category I and we replicated the same proportion in the present study which gave us 196 patients belonging to Category I. As the study subjects were selected from six Tuberculosis Units, we had to select 33 patients from each TU (33×6 = 198). Therefore, a total of 198 Category I patients were selected from six TU. New smear negative patients, new extra pulmonary patients and patients younger than 15 years old were excluded from the above 198 patients which gave us the final sample size of 96 new smear positive patients above 15 years old.

Data collection technique

Data were collected from all the six tuberculosis Units (TU) of Kamrup (M) district. The Senior Treatment Supervisor (STS) at the respective TU was contacted and TB register obtained. The patients were randomly selected from the register and were interviewed at the DOTS Centre under the respective TU and data were recorded using a predesigned schedule and the treatment cards of the patients after obtaining informed consent.

Data analysis

Data were compiled in Microsoft Excel sheet and analysed by SPSS version 16.0 Proportions were calculated for different study variables. Chi square test was used to find the association between different categorical variables. Significant association was considered if the p value was less than 0.05 ($p < 0.05$).

Mean, median and range were calculated to determine the patient and health system intervals.

Definition of variables

Tobacco user

A person was considered to be tobacco user if they were currently consuming any form of tobacco products (cigarette, beedi, smokeless tobacco) or if they have ever consumed such products in the past at least for a year or more.

Alcohol user

A person was considered to be alcohol user if they were currently consuming alcohol or if they have ever consumed such products in the past at least for a year or more than a year.

Health care provider

Health care provider is defined as any individual consulted by the patient about his / her illness that prescribed any form of medication. Formal (medical) health care providers are health centres, hospitals & clinics owned by the government or the private sectors. Non-formal health care providers are traditional health care providers and drug retail outlets like pharmacy.

The terminology for interval / delays have been adapted from a study by Yimer et al conducted in Ethiopia.[4]

Patient interval

It is the time interval between the onset of symptoms and first presentation to a formal health care provider. Patient reporting to the formal health care provider after a period of 20 days from the onset of symptoms was considered to be patient delay.

Diagnosis interval

It is the time interval between the first presentation to a formal health care provider and the diagnosis of TB. If a patient was diagnosed after 7 days, it was considered to be diagnosis delay.

Treatment interval

It is the time interval between the diagnosis of TB and the initiation of anti-TB treatment. When the treatment started after 7 days from the point of diagnosis, it was considered to be delay in initiation of treatment.

Health system interval

It is the time interval between the date of presentation to a formal health care provider and initiation of anti-TB treatment. It is the sum of diagnosis delay and treatment delay which is 14 days.

Total interval

It is the sum of patient delay and health care system delay, i.e. 34 days.

RESULTS

Patient characteristics

Out of 96 study subjects, 72 were males and 24 females. The mean age was 35.79 years. 57.29% of the patients were married and 64.58% were literate. With regard to socioeconomic status, 12.5% belonged to SES II, 53.13% belonged to SES III and 34.37% were from SES IV (Modified BG Prasad Socioeconomic Classification April 2016).

Table 1 shows the health seeking behaviour of the study subjects. Their first point of contact with health care providers was distributed as government hospital in 42.71% cases, pharmacy in 38.54% cases and private clinic in 18.75% cases.

Table 2 shows the duration of various patterns of intervals during TB diagnosis and treatment. The mean patient interval was found to be 34.2 days with a median of 14 days (range 7-180 days) and the mean health system interval was 30.34 days with a median of 12.5 days (range 3-151 days). Thus it can be seen that in terms of duration, patient interval contributed more towards total interval.

Table 1: Distribution of respondents according to first action taken.

First action taken	New sputum smear positive cases N = 96	
	No	%
Pharmacy	37	38.54
Private clinic	18	18.75
Government hospital	41	42.71

Table 2: Table showing duration of various intervals.

Interval	Mean (days)	Median (days)	Range (days)
Patient	34.2	14	7 – 180
Health System	30.34	12.5	3 – 151
Diagnosis	26	7	2 – 150
Treatment	4.34	3	1 – 20
Total	64.38	48	13 – 184

Table 3: Table showing association between patient delay and various factors.

Factors	Delay No. (%)	Non delay No. (%)	P value
Age			
15-34	20 (47.62)	22 (52.38)	>0.05
>35	19 (35.19)	35 (64.81)	
Gender			
Male	24 (33.33)	48 (66.67)	<0.05*
Female	15 (62.5)	9 (37.5)	
Literacy			
Literate	24 (38.71)	38 (61.29)	>0.05
Illiterate	15 (44.12)	19 (55.88)	
Tobacco			
Yes	25 (47.17)	28 (52.83)	>0.05
No	14 (32.56)	29 (67.44)	
Alcohol			
Yes	14 (35)	26 (65)	>0.05
No	25 (44.64)	31 (55.36)	
HCP			
Formal	15 (25.86)	43 (74.14)	<0.05
Non Formal	24 (63.16)	14(36.84)	

*Fisher's exact test.

Patient delay

Factors significantly associated with patient delay in our study were female gender and patients choosing non formal health care providers as the first point of contact. Even though patient delay was reported more among 15-34 years age group (47%) compared to the older age group, i.e. ≥35 years (35%) but no significant association was found. Similarly, tobacco users were found to have increased patient delay which was not significantly associated. Other factors such as literacy status and alcohol use did not seem to influence patient delay in our study (Table 3).

Health system delay

Patients who were aged more than or equal to 35 years were found to have more health system delay which was

significantly associated. Illiteracy also had significant association with health system delay. A higher proportion of females and tobacco users had health system delay but there was no significant association found (Table 4).

Table 4: Table showing association between health system delay and various factors.

Factors	Delay No. (%)	Non delay No. (%)	P value
Age			
15-34	13 (30.95)	29 (69.05)	< 0.05
>35	35 (64.81)	19 (35.19)	
Gender			
Male	34 (47.22)	38 (52.78)	>0.05
Female	14 (58.33)	10 (41.67)	
Literacy			
Literate	24 (55.88)	38 (44.12)	<0.05
Illiterate	24 (70.59)	10 (29.21)	
Tobacco use			
Yes	30 (56.60)	23 (43.40)	>0.05
No	18 (41.86)	25 (58.14)	
Alocohol use			
Yes	17 (34)	33 (66)	>0.05
No	31 (55.36)	25 (44.64)	

DISCUSSION

The present study revealed the median patient interval to be 14 days. This study finding is comparable to that of Jagadish et al, Gothankar et al and Nimbarte et al where the median patient delays was found to be 24 days, 18 days and 18 days respectively.[5-7] However, Purty et al in Puducherry found a median patient delay of 37 days which was more compared to the present study.[8] Another study by Saifodine et al in Mozambique found a higher median patient delay of 61 days.[9] Again, the median delay by health system in the present study was 12.5 days which was comparable with that of Jagadish et al (18 days) but less than that of Goel et al (56.5 days) and Purty et al (28 days).[5,8,10]

The present study also saw the impact of various factors on patient delay. Our study revealed that female gender had significant association with patient delay. In a study by Tamhane et al in Mumbai women experienced more patient delay though the association was not significant.[11] However, gender difference did not influence the patient delay of other studies by Jagadish et al and Purty et al.[5,8] The present study revealed that patients who first chose non formal health care providers had significant patient delay which is in agreement with that of a study by Yimer et al.[4] As there were a significant number of patients who made their first visits to pharmacy, the study demands integration of the Revised National Tuberculosis Control Programme (RNTCP) with pharmacy. This step will certainly reduce the patient delay and ensure timely diagnosis and early initiation of treatment.

A higher proportion of tobacco users reported patient delay in the present study but there was no significant association found unlike that of Jagadish et al where patient delay was significantly associated with smoking.[5] We also did not find any relation between alcohol use and patient delay unlike that of Jagadish et al.[5]

The present study found patients of older age group, i.e. ≥35 years to have significant association with health system delay. Contrary to the present study finding, Purty et al and Saifodine et al did not find any association between age and health system delay.[8,9] Illiteracy also influenced health system delay in the present study unlike that of Purty et al.[8]

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