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TIME LAG IN INITIATING ANTI-TUBERCULAR THERAPY IN PULMONARY TUBERCULOSIS PATIENTS & ANTECEDENT CAUSES

Respiratory Medicine

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ABSTRACT

Background: One of the most common infectious diseases in the world & a key contributor to poor health is tuberculosis (TB). Approximately 2% of cases of tuberculosis are reported globally each year, with a total decline of 11% between 2015 & 2020. **Aims And Objective:** To estimate average time lag in initiating anti tubercular drugs in PTB patients & antecedent causes. **Materials And Methods:** 150 patients with pulmonary tuberculosis, either clinically or microbiologically diagnosed, were enrolled from the Department of Respiratory Medicine at the Teerthanker Mahaveer Hospital & Research Centre in Moradabad, Uttar Pradesh, for an observational cross-sectional study that was hospital based. **Conclusion:** We came to the conclusion that delays play important factor for longer infectivity period & that reducing them will aid in the prevention of tuberculosis.

KEYWORDS

Tuberculosis (TB), ANTI-TUBERCULAR THERAPY, Lung Disease, pulmonary tuberculosis

INTRODUCTION:

Tuberculosis (TB) remains one of the most prevalent infectious diseases worldwide and is a major contributor to global ill health. Each year, approximately 2% of global TB cases are reported, with an overall decline of 11% between 2015 and 2020 [1]. In 2022, there were 7.5 million newly diagnosed cases of TB—the highest number recorded since the World Health Organization (WHO) began global TB monitoring in 1995 [2]. This figure surpassed the pre-COVID baseline of 7.1 million in 2019 and showed a steep rise from 5.8 million in 2020 and 6.4 million in 2021. The sharp increase in 2022 likely reflects a backlog of undiagnosed patients from earlier years whose diagnosis and treatment were delayed due to COVID-19–related disruptions in healthcare access [2]. That same year, TB was responsible for an estimated 1.30 million deaths worldwide (95% UI: 1.18–1.43 million) [3].

The reduced TB notifications observed in 2020 were largely attributed to delays in diagnosis and treatment initiation, which deviated from expected trends. Although TB can affect nearly any organ or tissue, the lungs remain the most commonly involved site. Untreated TB is associated with persistent inflammation and carries a five-year mortality rate of approximately 50% [4]. Despite the high efficacy of conventional anti-TB therapy-characterized by rapid symptom relief and low relapse rates-treatment adherence continues to pose a major challenge [5]. Diagnostic delays are widely recognized [6], with over 5% of TB cases in the United States identified only after death [6]. Such delays not only increase morbidity and mortality but also heighten the risk of transmission, underscoring the critical importance of timely case detection and effective treatment as the cornerstone of TB control [7–8].

Barriers such as poor treatment compliance, reluctance to seek early diagnosis, and underutilization of healthcare services are frequently driven by stigma and lack of awareness. Social consequences, including isolation and discrimination, significantly hinder timely TB detection, particularly among women. As a result, many patients conceal their illness from their communities, further delaying diagnosis and increasing the risk of continued spread [9–12].

This study was carried out to examine the reasons behind the treatment delay in this area of our nation in order to have a better understanding of the factors linked to delays between diagnosis & treatment.

MATERIALS AND METHODS

This cross-sectional observational study was conducted in TMMC, Moradabad, U.P., India for 18 months. For each enrolled subject, a detailed history was obtained, including presenting complaints, personal and family history, socio-economic status, and literacy level. Information was collected about symptoms such as cough, fever, and anorexia, as well as any past history of ATT intake, family history of ATT intake, and history of ATT use among close contacts and neighbors. Additional details regarding socio-economic status, literacy level, place of residence (rural or urban), availability of nearby physicians, and the patient's access to medical facilities were also recorded. A history of previous medicine intake for the same complaints was noted. All this information was carefully evaluated to identify the causes leading to delays in initiating anti-tubercular therapy. The findings were then used to address these causes, serving as a step toward eliminating tuberculosis from the country.

RESULTS:

150 patients with pulmonary tuberculosis, either clinically or microbiologically diagnosed, were enrolled from the Department of Respiratory Medicine at the Teerthanker Mahaveer Hospital & Research Centre in Moradabad, Uttar Pradesh, for an observational cross-sectional study that was hospital based. Table 1 shows that males made up the majority of the study's subjects (n = 96, 64%), with females making up the remaining individuals (n = 56, 36%). Table 2 illustrates that the majority of study participants were between the ages of 18 & 30 (n = 40, 26.67%), with 36 patients (24%) being older than 60. Table 3 shows that the greatest number of patients (n=110, 73.3%) were illiterate, followed by 22 patients (14.7%) who had completed the 12th grade or had acquired higher education, & 18 subjects (12%) who had completed the 10th grade. Table 4 shows that 86 subjects (57.3%) reported having shortness of breath. Of them, 63 patients (42%) had complained for more than a month, followed by 16 patients (10.67%) who had complained for up to a month, & 7 patients (4.67%) for up to a week. 64 (42.7%) people reported not having any breathing problems. Symptoms viz. cough, fever, shortness of breath, chest pain & haemoptysis was reported among 90.67%, 65.4%, 57.3%, 28% & 20.67% of the subjects respectively (table 5). Table 6 shows the mean delay (days) by age, i.e., the patient's delay was 44.240±37.9288 in the <60 years group & the treatment's delay was 41.167±77.4266. Within the age category of 60 years & above, the mean delay was 40.556±31.8730 for the patient & 7.333±10.9697 for the treatment delay. Despite the patients' varying ages, there was no discernible difference between the two. Table 7 illustrates that there was no statistically significant correlation found between a patient's past history of ATT & therapy, doctor, or patient delays.Based on the previous ATT history, the mean delay (days) for patients who had not gotten it was 44.262±37.7991 by the patient, 38.500±78.1485 due to treatment delay, & 3.2625±2.911 by the doctor. The mean delay for patients who received ATT was 2.5625±1.75 by the doctor, 18±19.2873 due to treatment delay, & 38±27.4226 by the patient.

DISCUSSION

Early case detection & treatment has been crucial. This is influenced by patients seeking care on time & the healthcare system correctly

diagnosing cases. "Our study evaluated the factors that contribute to the delay in seeking care, diagnosing, & treating tuberculosis (TB) in the Moradabad district of Uttar Pradesh, India". Delays included those caused by the patient, the treatment, & the doctor. Medical staff members are more susceptible to infection when diagnosis & treatment are delayed [13-14]. According to a previous study, at least 24% of the staff members who spent four months at their office with infectious TB contracted the disease [15].

Following fulfilment of the inclusion & exclusion criteria, 150 patients were added to the study. The study included a majority of male subjects (n = 96, 64%) & a minority of female subjects (n = 56, 36%). Kim et al. (2021) [16] found similar results, with 60.9% of the subjects being male. In the research conducted by "Mistry N et al". (2016) [17], the percentage of men was greater than that of women (61%, n = 46) The maximum number of study participants (n=40, 26.67%) were between the ages of 18 & 30, with 36 (24%) being older than 60. It was similar to Xu X et al. (2013) results [18], according to them the most of the subjects were in the 15–30 age range.

The majority of study participants (n=48, 32%) were stay-at-home moms, followed by 40 subjects (26.7%) who were farmers, 23 (15.3%) who worked as labourers, & 12 each (8%) who were either students or self-employed. These outcomes corroborated those of Asres et al. (2018) [19], who discovered that 40.3% of patients were dependents, only 23.4% had jobs, & 29.4% farmed.

Of the study population, n=144 (96%) belonged primarily to the low socioeconomic group; only 5 (3.3%) & 1 (0.7%) belonged to the middle lower class & higher class, respectively. Results of the research conducted in 2016 by Mistry N et al. were comparable [17].

Out of the 136 participants (90.67%) who reported having a cough, 67 (44.67%) had been complaining for more than a month, followed by 53 (35.33%) who had been complaining for up to a month & 16 (10.67%) who had been complaining for up to a week. Only 14 (9.33%) reported not having a cough. Of the 98 (65.4%) participants who reported having a fever, 47 (31.33%) had been complaining for more than a month, followed by 29 (19.33%) who had been complaining for up to a month & 22 (14.67%) for up to a week. Of the 86 (57.3%) respondents who reported having shortness of breath, 63 (42%) had complained for more than a month, followed by 16 (10.67%) for up to a month & 7 (4.67%) for up to a week. Asres et al. (2019) [article 3] showed nearly identical results, indicating that fever, cough, & night sweats were observed in 563 (76.6%), 345 (46.7%), & 300 (40.8%) patients, respectively.

Out of the 150 subjects (100%) who came to the doctor later than expected, 70 patients (46.67%) delayed by up to one month, 59 patients (39.33%) delayed by more than one month, & 21 patients (14%) delayed by up to one week. Similar findings were reported in the Asres et al. (2019) [19] study. Among the 97 (64.7%) patients who had a doctor's delay, 93 (62%) experienced a delay of up to one week, followed by 3 (2%) who experienced a delay of seven to ten days, & 1 (0.7%) subject denied admittance, resulting in a delay in treatment. 53(35.3%) experienced no wait time for medical attention. According to Sandul Yasobant et al.'s [20] study, the time between the official consultation & the diagnosis was 12.7 (±56.2) days for pulmonary patients & 14.0 (±50.0) days for extra-pulmonary patients.

Compared to patients who first sought healthcare practitioners, individuals who had previously self-treated were more likely to put off obtaining formal care [21-22]. This may be the result of using over-the-counter medicines, home treatments, or analgesics, which may temporarily alleviate the illness's symptoms [23].

In the group of patients under 60 years old, the mean delay (days) was 44.240±37.9288 for the patient & 41.167±77.4266 due to treatment delay. Within the age category of 60 years & above, the mean delay was 40.556±31.8730 for the patient & 7.333±10.9697 for the treatment delay. The two delay factors did not significantly change based on the age group of the patients, & there was no significant correlation found between the patient's education & the delay caused by the patient, treatment, or doctor. The average delay (days) for the illiterate group was 41.382±31.7395 for the patient, 44.364±80.3707 for the treatment delay, & 3.2029±3.06104 for the doctor. Within the group of up to ten passes, the average delay was 46.187±48.0558 for the patient, 3.500±3.5355 for the treatment delay, & 3±2 for the physician. The patient's mean delay in the 12th pass or above group was 49.3484±46.4559, the treatment delay was 10.500±13.4350, & the doctor's delay was 3±1.69031.

Past ATT history did not correlate with patient, treatment, or physician delays. In patients who had not received it, the mean delay (days) was 44.262±37.7991 by the patient, 38.500±78.1485 due to treatment delay, & 3.2625±2.911 by the doctor, based on the previous history of ATT. The mean delay for patients who received ATT was 2.5625±1.75 by the doctor, 18±19.2873 due to treatment delay, & 38±27.4226 by the patient. This demonstrates that patients who had previously received ATT saw fewer delays in therapy, from the subject to the clinician. This was similar to findings of Xu X et al. (2013) [18], who found that with prior TB treatment experienced shorter delays than those with a new TB diagnosis. Similar to our investigation, Güneylioglu D et al. (2004) [24] discovered that the application interval & therapy were unaffected by age, sex, place of residence, or educational attainment.

CONCLUSION:

The present study demonstrates that significant delays occurred between the onset of symptoms and the initiation of treatment among patients with smear-positive pulmonary tuberculosis. These delays were associated with prolonged periods of infectivity, particularly posing risks for healthcare workers. Findings revealed that patient-related delays were more substantial than physician- or treatment-related delays. To strengthen TB control efforts, it is essential to implement strategies aimed at reducing these delays. Increasing awareness among both the public and healthcare professionals regarding tuberculosis can play a key role in minimizing treatment initiation time. Overall, the study concludes that delays contribute to extended periods of infectivity, and addressing them is critical to effective TB prevention and control.

Table 1: Division Of Subjects According To Gender

Gender	N	%
Male	96	64
Female	54	36
Total	150	100

Table 2: Division Of Subjects According To Age

Age Group (in years)	N	%
18-30	40	26.67
31-40	14	9.33
41-50	28	18.67
51-60	32	21.33
>60	36	24.00
Total	150	100

Table 3: Educational Status Among The Study Subjects

Education	N	%
Illiterate	110	73.3
Upto 10TH	18	12
12th pass or above	22	14.7
Total	150	100

Table 4: Shortness Of Breath

Shortness of breath	N	%
No	64	42.7
Yes	86	57.3
Upto 1 week	7	4.67
Upto 1 month	16	10.67
>1 month	63	42.00

Table 5: Overall Symptoms Among The Study Subjects

Symptoms	N	%
Cough	136	90.67
Fever	98	65.4
Shortness of breath	86	57.3
Chest Pain	42	28
Haemoptysis	31	20.67

Table 6: Association Of Age With Patient & Treatment Delay

Age category		Patient's Delay (In Days)	Treatment Delay (In Days)
<60 years	Mean	44.240	41.167
	SD	37.9288	77.4266
≥60 years	Mean	40.556	7.333

	SD	31.8730	10.9697
t test		0.33	0.54
p value		0.57	0.48

Table 7: Association Of PAST H/O ATT With Delay

PAST H/O ATT		Patient's Delay (In Days)	Treatment Delay (In Days)	Doctors Delay (in days)
No	Mean	44.262	38.500	3.2625
	SD	37.7991	78.1485	2.911
Yes	Mean	38	18.000	2.5625
	SD	27.4226	19.2873	1.75
t test		0.66	0.19	0.86
p value		0.42	0.67	0.35

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