



ORIGINAL RESEARCH PAPER

Community Medicine

A STUDY OF CLINICAL AND TREATMENT PROFILE OF TUBERCULOSIS PATIENTS ATTENDING DOTS CENTRE AT PRIMARY HEALTH CENTRE

KEY WORDS: Tuberculosis; Multi Drug Resistance; DOTS; Burden.

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ABSTRACT

Introduction: Tuberculosis (TB) is an age-old disease killing significant number of humans over history and one of the major cause of morbidity and mortality, especially in developing and underdeveloped countries. It killed 1.4 million people annually worldwide in the year 2019. India had 2.69 million cases in 2019, according to TB report 2020. Despite the presence of the programme for its control, TB continues to threaten the population due to emergence of more and more resistance cases challenging its elimination. This study reflects the annual burden of tuberculosis in an area served by a Primary Health Centre in Urban Delhi and the treatment outcomes. **Methods:** The records of the patients attending the DOTS centre was obtained from the treatment register at Primary Health Centre, Palam, Delhi. The records of patients visiting between April 2020 to March 2021 were included. Data analysis was done on Statistical Package for the Social Sciences (SPSS) version 22 and appropriate statistical tests were applied. **Results & Conclusion:** The total number of tuberculosis patients registered from April 2020 to March 2021 were 260. Out of these 260 patients, 155 (59.6%) were pulmonary and 105 (40.4%) were extra-pulmonary. A total of 175 (67.3%) were microscopically confirmed and 85 (32.7%) were clinically/radiologically diagnosed.

INTRODUCTION

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*, an acid-fast bacilli that affects all the organs and tissues except hair and nails. Tuberculosis diseases has occurred from a distant past with morbidity and mortality at the highest in the past when the effective antimicrobial treatment was not available. Eventually, the discovery of the treatment has improved the conditions with high cure rate among those treated adequately with improved quality of life. Currently, tuberculosis still affects large proportion of population especially in Low- and Middle-Income Countries (LMICs). The burden is particularly marked in terms of poor outcomes in countries where the healthcare infrastructure is poor as opposed to those with good ones.¹

India contributes to a disproportionately large burden of Tuberculosis (TB) in the world making it the TB capital. India's high burden of the disease can be likely related to high population density, problem of overcrowding and unhygienic conditions in which people live in. In addition to high burden, TB still kills many those infected despite having effective treatment with forever raising burden of drug resistant tuberculosis. In the year 2020, tuberculosis affected 1.8 million Indians. In the year 2019, it killed 89,823 Indians among 2.32 million cases.² National Tuberculosis Elimination Programme has been in effect since January 2020 with improved laboratory network, increase in NAAT machines nationwide, passive, active and intensified case finding, and support to COVID-19 response.³ This study reflects the annual burden of tuberculosis in an area served by a Primary Health Centre in Urban Delhi and the treatment outcomes.

The treatment for the tuberculosis patients is provided by designated centres (DOTS centre) with maintenance of the records regarding patient details and the treatment taken therewith by them. The centres provision for the diagnosis of the tuberculosis patients as well as their treatment with respect to the area that they live in. Hence, DOTS centre play a pivotal role in bringing down the ill effects of the disease on individual patients as well as the community. In addition, the DOTS centre maintains a meticulous records of the patients visiting the centre with regards to the socio-demographic details and treatment details. The current study focused on

assessing the clinical and treatment profile of tuberculosis patients attending DOTS centre at a Primary Health Centre using the available data.

MATERIALS AND METHODS

The study conducted was a Retrospective record-based study in DOTS centre based in a Primary Health Centre in New Delhi. The study included all the tuberculosis patients that had attended the DOTS clinic and registered with the entry in the register between the month of April 2020 and March 2021. All the tuberculosis patients registered in the DOTS centre were included in the study as per the register. Data was collected with respect to the socio-demographic details, type of tuberculosis, method of diagnosis, initiation of treatment and treatment outcome from the records maintained in the register. In addition, phone calls were made to contact the individuals in case any of the details were found to be missing in the register or further details were required regarding the same. A total sample size of 260 tuberculosis patients were included in the study that were registered in the above-mentioned time frame. Data entry was on Statistical Package for the Social Sciences (SPSS) version 22. Subsequent data cleaning was done with random verification of the entries and corrections wherever necessary. The statistical analysis was done in SPSS v 22.0

RESULTS

In the current study, main assessment was done in terms of distribution of the patients in terms of age group, category of the disease, site of infection, Drug Sensitivity testing and Treatment outcome.

Majority of the patients (72.7%) were in the age group of 15-44 years, that is the productive age group. The affecting of the productive group of the population has been known to result in disruption of economic and financial stability of the self. The resultant high proportion of infected in terms of age group seen in the age group can be attributed to increased exposure of the population which can be in workplace and households. (Table 1).

Table No. 1: Distribution of TB patients based on age and

gender (N=260)

| AGE GROUPS (in years) | MALE | FEMALE | TOTAL |
|-----------------------|--------------------|--------------------|------------|
| 0-4 | 0 (0) | 1 (0.9%) | 1 |
| 5-14 | 12 (8.3%) | 10 (8.7%) | 22 |
| 15-24 | 48 (33.1%) | 46 (40.0%) | 94 |
| 25-34 | 32 (22.1%) | 27 (23.5%) | 59 |
| 35-44 | 21 (14.5%) | 15 (13.0%) | 36 |
| 45-54 | 15 (10.3%) | 9 (7.8%) | 24 |
| 55-64 | 10 (6.9%) | 2 (1.7%) | 12 |
| 65 and above | 7 (4.8%) | 5 (4.3%) | 12 |
| TOTAL | 145 (55.8%) | 115 (44.2%) | 260 |

Majority of the patients (79.2%) were newly diagnosed case of tuberculosis followed by recurrent infection of tuberculosis (9.2%). (Table 2)

Table No. 2: Distribution of the study subjects according to categories

| TYPE OF PATIENT | FREQUENCY | PERCENTAGE |
|-----------------------------------|-----------|------------|
| New | 206 | 79.2 |
| Recurrent | 24 | 9.2 |
| Other previously treated | 18 | 6.9 |
| Treatment after loss to follow up | 7 | 2.7 |
| Transferred in | 3 | 1.2 |
| Treatment after failure | 2 | 0.8 |
| Total | 260 | 100.0 |

The pulmonary TB cases constituted the majority of the patients (59.6%) and the extra pulmonary cases were 40.4%. (Figure 1)

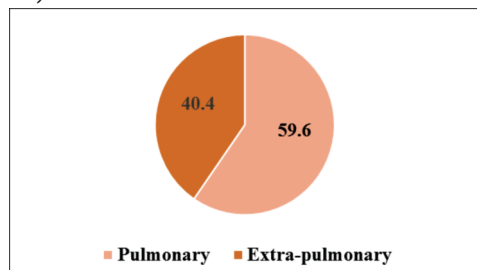


Figure 1: Pie chart showing location of Tuberculosis

Drug Sensitivity testing was done in patients. Out of this, 46.9% of the patients were sensitive while 4.6% were resistant. Of those resistant, 16.7% were rifampicin resistant and 25% were multidrug resistant (MDR). (Figure 2). In terms of outcome of treatment of tuberculosis, 35% were cured and 34.2% had completed the treatment. Death among the patients was found to be 5.4% and 1.2% had defaulted in terms of treatment. (Table 3)

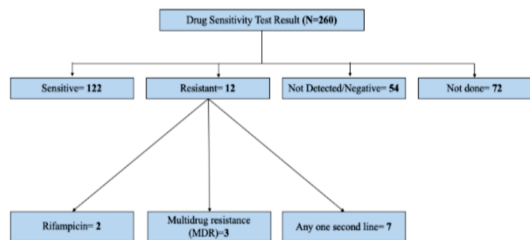


Figure 2: Flowchart depicting Drug Sensitivity Test among Tuberculosis patients

Table No. 3: Distribution of treatment outcome in TB patients

| TREATMENT OUTCOME | FREQUENCY | PERCENTAGE |
|---------------------|-----------|------------|
| Cured | 91 | 35.0 |
| Treatment completed | 89 | 34.2 |
| Died | 14 | 5.4 |

| | | |
|-----------------------------------|-----|------|
| Lost to follow up | 3 | 1.2 |
| Failure | 7 | 2.7 |
| Not evaluated or treatment change | 6 | 2.3 |
| Transfer out | 13 | 5.0 |
| Defaulter | 3 | 1.2 |
| Total | 226 | 86.9 |

DISCUSSION

The current study mainly focused on the clinical and treatment profile of the patients attending the DOTS clinic at a Primary Health Centre in Delhi. A total data of 260 patients registered in the clinic during the period of April 2020 to March 2021 were taken. The period was also wrought with the impact that was imparted by the COVID- 19 pandemic with significant first wave and impending second wave.⁵

The registration of the patients might have affected the seeking of the consultation and treatment for the illness. Of the total patients registered in the clinic, 72.7 % belonged to the productive age group. The disease in this age group, especially in resistant variant can affect the socio-economic and mental health outcome among the patients affected. Moreover, the disease is known to significantly impact the Quality of Life among the affected patients and impact the mental health among them.^{6, 7} With India sharing largest burden of tuberculosis² among all the countries in the world, the productive group being affected can also have economic burden on the country as well. In terms of sex distribution, the males were more affected over females (55.8% vs 44.2%). The higher burden among males in the productive group and most being earning members can also lead to above mentioned effects.

When it comes to categorization of the patients into type of cases, new cases constituted to 79.2% of the total patients registered. The result also reported a low proportion of the cases that were treatment after failure at 0.8%. Some independent studies have shown nonadherence of almost 11%.

Of the total tuberculosis cases, pulmonary tuberculosis constituted for 59.6% of the cases while rest were extrapulmonary infections (40.4%). Recent trends in independent studies have shown a decreasing trend in the tuberculosis of pulmonary type with resultant proportionate increase in extrapulmonary tuberculosis. The increased proportion of tuberculosis of extrapulmonary type may also point out to increase lowered immunity due to various reasons.

Almost a quarter of the patients had not undergone testing for drug sensitivity. This might mask the drug resistant cases that might be among the cohort and the proportion of not being tested for drug sensitivity is high. Also, a cure rate of 35% observed in the current study can be improved in case the drug sensitivity testing is ramped up.

Overall, the findings point out to equal proportion of pulmonary and extra pulmonary tuberculosis. Also, the necessity for ramping up the drug sensitivity testing can also be pointed out as a necessity for better treatment outcome.

CONCLUSION

Drug Sensitivity Testing (DST) was not done in 27.7%, filling this gap may increase better treatment outcomes. Prevalence of extra-pulmonary cases is almost as same as the pulmonary cases, factors responsible for this needs exploration. Cure rate shows 35% with treatment completion in 34.2%. Adequate sputum microscopy post intensive phase is equal importance. The period of the study was also during the pandemic of COVID-19, which resulted in more importance and analysis for the COVID situation and less focus on other diseases at the time. Hence, the results found might not be

closely reflective to the non-pandemic situations.

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