



DEMOGRAPHIC STATUS OF MULTI DRUG RESISTANT TUBERCULOSIS PATIENTS IN FEW DISTRICTS OF SOUTHERN TAMILNADU

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ABSTRACT

The objective of the study was to assess and enlist the demography of multi drug resistant -tuberculosis (MDR-TB) patients, which will give a clue on the risk factors in getting it. After getting the list of MDR TB diagnosed patients from Madurai District Tuberculosis Officer, Proforma, prepared for collecting details from selected MDR TB patients, was used to collect the details. One hundred multi drug resistant tuberculosis confirmed patients who were registered and taking anti-TB treatment from the district Revised National Tuberculosis Control Programme (RNTCP) were the study participants. Incidence of MDR TB was more in Males (69 %). 57% were in working age group (31 -50 years). 33 % were uneducated. Irregular treatment for Diabetes could be one of the risk factor. 56% were defaulters in CAT(Category)-1 & 32% were defaulters in CAT-2 antituberculous therapy . Defaulting, the main contributor to the Drug resistance is proved in our study. To reduce the number of MDR TB defaults, decentralization of the MDR TB treatment should be considered, either by creating community-based treatment programs or satellite inpatient centers. Doing Drug Sensitivity Testing (DST) for CAT-1 failures, before starting with CAT-2 treatment may lead to earlier diagnosis of MDR-TB.

KEY WORDS: Multi Drug Resistant TB, Category -1, Category -2, District tuberculosis control cell, Drug Sensitivity Testing



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INTRODUCTION

Globally, tuberculosis (TB) is one of the leading causes of death due to infectious diseases, next to HIV/AIDS¹. In 2006, 9.2 million people globally developed active TB, and it is estimated that 1.7 million people died as a result of TB; including 2,00,000 HIV infected individuals². Although estimates suggest that the rates of new cases and deaths due to TB show signs of slowing throughout the world, recent increase in rates of drug-resistant TB have the potential to reverse these gains³. MDR TB is defined as the tuberculosis disease caused by the bacilli that is resistant to Rifampicin (R) and Isoniazid (H) with or without resistance to other anti-tubercular drugs, as per RNTCP recent guidelines. In 2006, an estimated 5,00,000 individuals throughout the world developed Multi Drug Resistant (MDR) TB refractory to treatment with the 2 first line antibiotics for treating TB⁴. At the 2007 World Health Assembly, WHO recognized the importance of the situation and trends of multidrug resistant (MDR) and extensively drug resistant (XDR) strains of *Mycobacterium tuberculosis* as barriers to the achievement of the WHO's Global Plan's objectives by 2015. Among the 8.8 million incident cases of Tuberculosis (TB), 31,68,000 (3.6%) are estimated to have MDR-TB per year globally, and among the world's 12.0 million prevalent cases of TB, 6,50,000 (18%) are estimated to be MDR-TB cases. India had 1,00,000 cases of MDR-TB. According to WHO, nearly 50% of the world's burden of MDR-TB cases is in India and China. 4,80,000 people are estimated to be MDR-TB cases in 2013. Extensively drug-resistant (XDR) TB, a form of MDR TB that is much more difficult to treat, has recently been described. XDR TB is MDR TB with concomitant resistance to any fluoroquinolone and to at least 1 of 3 injectable second-line anti-TB drugs like Amikacin, Kanamycin, or Capreomycin⁵. XDR TB had been detected in at least 46 countries in February 2008. 58 countries have reported at least one case of XDR-TB as of March 2010, and it is estimated that about 5.4% of MDR-TB cases have XDR-TB. 100 countries have reported at least one case of XDR-TB as of March 2013. Our study is aimed at collecting the basic information of the previously diagnosed MDR TB patients in few southern districts of Tamilnadu, which would give a clue to in detecting the risk factors for acquiring the drug resistance.

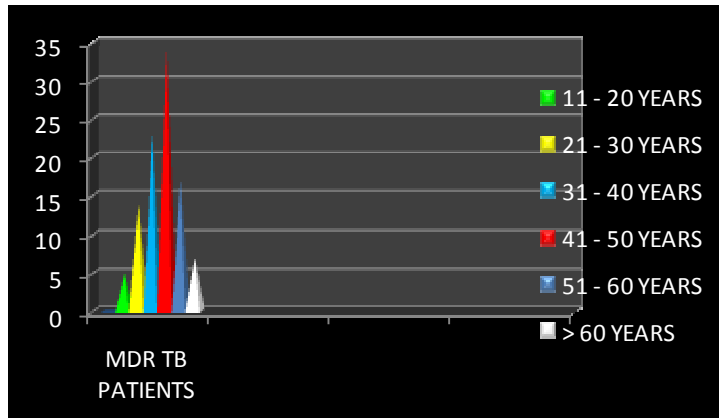
METHODS

• This was an observational study carried out over 3 months conducted in the Government Sivagangai Medical College and hospital. Study was carried out after getting institutional ethical clearance from MAY-2014 to JULY-2014. Patients from five districts of Southern Tamil Nadu (Madurai, Sivagangai, Virudhunagar, Ramanathapuram, Tirunelveli) were enrolled. One hundred patients, diagnosed as multi drug resistant-tuberculosis (MDR-TB) including HIV positive patients in five districts of Tamil Nadu were enrolled in the study. Patient's address and contact information were received from the District Tuberculosis Control Centre. Patients were interviewed in their residence with DOTS Plus supervisor and Senior Treatment Supervisor of that area and required data was collected directly from the patients with the pre-requisite questionnaire. To the registered MDR TB patients, the type and nature of the study was explained in their native language and consent of the patient was obtained before including them to the study. Institutional ethical committee permission was got. Patients already started, newly diagnosed for MDRTB treatment were included. DTC registered MDR TB patients were included. Both male and female patients were included. HIV positive patients were included. The patients who had completed MDR-TB treatment were excluded. The patients with negative sputum smear results in last smear microscopic examination were excluded. The patients with negative sputum culture result were excluded. The data collected were analysed using SPSS version 17.

RESULTS

Among the 100 Multi Drug Resistant Tuberculosis confirmed patients, 20 cases were from RNTCP District Tuberculosis Control Centre, Sivagangai, 50 cases from RNTCP District Tuberculosis Control Centre, Madurai, 14 cases from RNTCP District Tuberculosis Control Centre, Virudhunagar, 11 cases from RNTCP District Tuberculosis Control Centre, Ramnad, 5 cases from RNTCP District Tuberculosis Control Centre, Tirunelveli. Among the hundred MDR-TB patients, 69% were males and 4% were HIV infected. Age wise distribution of the cohort was presented in Figure 1, the highest numbers were in 41 to 50 years (34%). 57% included in the study were in working age group (31-50 years).

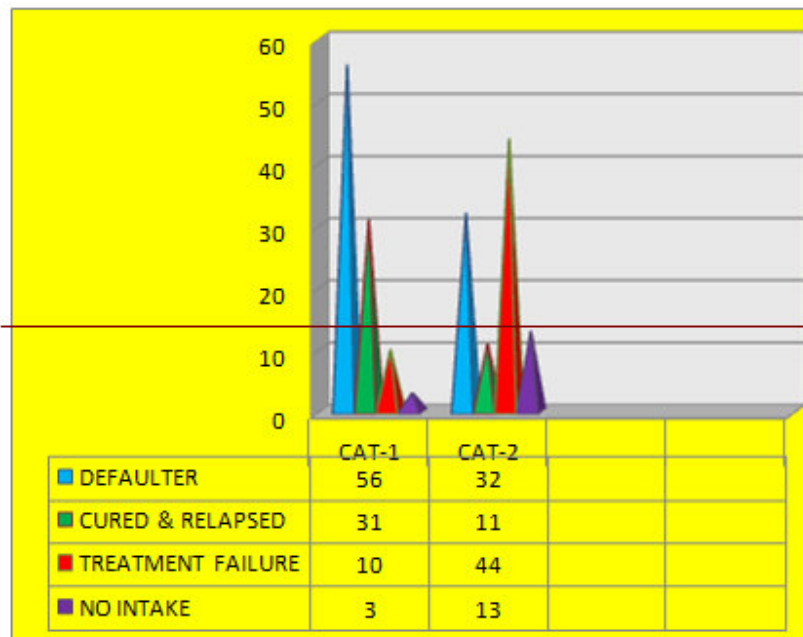
Figure 1
Age Distribution



Also among the one hundred MDR-TB patients, 33 % were uneducated, 20 % had their elementary schooling, 30 % had their high schooling, 6 % had higher secondary education and 11 % of MDR TB patients had their college education. Only 14 % of MDR TB patients had a regular fixed source of income and the remaining 86 % did not have a stable source of income. About 56% were smokers, 50% were alcoholic and 9% were tobacco chewers, 8% were tobacco sniffers, 9 % had the habit of chewing betel leaf, 4% were addicted to Ganja 88% of MDR TB patients lived in nuclear family and only 12% of people were living as joint family. 60 % of MDR TB patients lived in rural area, 20 % of MDR TB patients lived in town area (semi-urban) and 20 % of MDR TB patients lived in urban area. 88 % of MDR TB patients

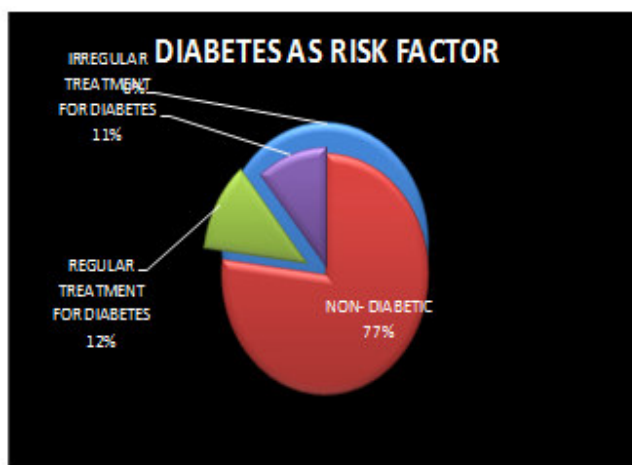
cohort lived in overcrowded places and only the remaining 12% of cases lived in spacious area . (Overcrowding defined by WHO is more than 1 person living in the room of 10 square feet area) . And 94% of the MDR TB patient's cohort lived in poorly ventilated house. Among the 100 MDR-TB patients, those who were given CAT I the classification at the start of MDR-TB regimen was as follows: 56% were "treatment after default", 31% were "relapse", 10% were "failures" & 3% were "primary MDR". Among the 100 MDR-TB patients, those who were given CAT II treatment before the MDR-TB treatment, 32% of MDR TB patients were defaulters in CAT-2. The detailed breakup of the classification of the total 100 patients given previously CAT I or CAT II was presented in the Figure 2

Figure 2
Previous TB treatment history



Among the 100 MDR-TB patients, 23% were Diabetic. Among the diabetics, (n=23), 48% were on irregular treatment for diabetes (figure 3).

Figure 3
Diabetes status in the MDR-TB cohort



DISCUSSION

In our study 69 % of patients were males, similar to study at Kekkaku by OKUMURA .M⁶ where 70.2 % were males. Mean age of our cohort was 52 years in male and 43 years in female and the mean age of the study mentioned above was 47 years. Among the 100 MDR TB patients, 56 % were smokers. It was to be reminded that, smoking affected the clinical manifestations of TB and also drug resistance had significant association with tobacco use as evident by the review paper by Chiang, et al titled 'Associations between Tobacco and Tuberculosis'⁷. Tobacco Cessation strategies had to be widely promoted to TB patients and the TB Program in India (RNTCP) must develop additional measures on this. According to the data collected about 50 % of MDR TB patients involved in this study were alcoholic, as chronic alcoholism caused immune suppression, Moreover there was a feeling of well-being on alcohol consumption which was one of the main causes for defaulting. So, MDR TB patients must be advised to stop consuming alcohol. About 9 % take tobacco & 4% take Ganja, the drugs that cause addiction and give a feel of euphoria may be the reason for defaulting. About 8% of MDR TB patients had a history of sniffing tobacco powder. Sniffing, likely to cause more droplet spread which could extend more spread of the MDR-TB strain to others and hence educating to avoid such habits in MDR-TB patients was very much necessary from TB control point of view. According to the study conducted by "Rouzier VA, et al" titled as "Patient And Family Costs Associated With Tuberculosis, Including Multi Drug Resistant Tuberculosis In Ecuador"⁸ the direct & indirect costs borne by patients were highest for patients with MDR TB. These costs were important barriers to treatment completion". This was similar to the condition prevailing in our country, henceforth, free diagnosis and treatment alone is not

enough. In our study 86 % of MDR TB patients did not have stable source of income. According to WHO about 95% of TB deaths occurred in low and middle income country people and it was one of the top three causes of death for women aged 15 to 44 years. Efforts should be taken to improve the economic condition of MDR TB patients and their requirements should be met by the government. TB being highly infectious through droplets, overcrowding was a barrier for controlling the disease. 88 % of the MDR TB patients cohort lived in overcrowded places.. In accordance to the literature ' Addressing MDR TB In Penitentiary Hospitals And In The General Population Of The Former Soviet Union'⁹, there was a history of high level of Multi Drug Resistant Tuberculosis in jails of Baku and Mariinsk, from which it was evident that overcrowding had direct impact on TB & MDR TB. Our study showed that 60% of the MDR-TB patients were in rural area. A research paper titled 'Incidence of MDR TB in Rural & Urban India and Implications for Prevention' by Deepak Almeida et al.¹⁰ had said that 70 % drug resistance were in rural area people. Unawareness among rural people may also be the reason for increased incidence of MDR TB patients more in rural area than urban and town. Our study showed that 23% of MDR TB patients were Diabetic and among them 48% were in irregular treatment for Diabetes mellitus. 'Basher, Phil Alcibes, had shown that 36% of the patients with diabetes and tuberculosis had multi drug resistant tuberculosis, proved that there was a significant association between diabetes and MDR TB'¹¹. As controlling diabetes was necessary for any infection, MDR-TB patients must be screened for diabetes and if confirmed, regular treatment to control blood glucose level must be ensured. Defaulting was one of the main modifiable patient related factors. About 56% of the MDR TB patients were defaulters of initial CAT-1 treatment and 32% of were defaulters in initial CAT-2. Reduction in percentage from CAT-1 defaulters to CAT-2 defaulters

could be because of the fear of the disease and the awareness gained by them due to relapse of the disease. Hence, we concluded less awareness about the complications like drug resistance among the newly diagnosed cases may be the reason for the defaulting in CAT-1 and social stigma could also be another reason. Doing Drug Sensitivity Testing (DST) for CAT-1 failures, before starting with CAT-2 treatment may lead to earlier diagnosis of MDR-TB. To reduce the number of MDR TB defaults, decentralization of the MDR TB treatment should be considered, either by creating community-based treatment programs or satellite inpatient centers.¹²

CONCLUSION

Tobacco and Alcoholism common in MDR-TB patients and hence life style modification is necessary for getting the better prognosis. Overcrowding, poor ventilation are common in the MDR-TB patients, could affect the

prognosis of the disease. MDR-TB more common among the rural people, unawareness could be a reason for the increased incidence. Most of the MDR TB patients have an unstable source of income, any possibilities for the support from the government to be explored. Doing Drug Sensitivity Testing (DST) for CAT-1 failures, before starting with CAT-2 treatment may lead to earlier diagnosis of MDR-TB. To reduce the number of MDR TB defaults, decentralization of the MDR TB treatment should be considered, either by creating community-based treatment programs or satellite inpatient centers.

CONFLICT OF INTEREST

Conflict of interest declared none.

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