# TO STUDY THE PREVELANCE OF MDR TB IN MDR SUSPECT CASES IN IN MGM AURANGABAD

**Pulmonary Medicine**

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## ABSTRACT

**Objective:** To study the prevelance of Multi drug resistant tuberculosis in MDR suspect cases getting registered under RNTCP centre of MGM Medical college and Hospital, Aurangabad.

**Methods:** 983 patients who were getting registered under RNTCP centre in MGM medical college and hospital, Aurangabad for pulmonary and extra pulmonary tuberculosis in the period January 2016 to December 2018 and were suspected to have MDR TB  (i.e. patients with either contacts of MDR cases, previously treated cases, defaulter cases) were asked for sputum sample which was then sent for CBNAAT and first line LPA.

**Results:** Out of all pulmonary and extra pulmonary tuberculosis among 983 patients, 65 patients were found to be MDR cases. . Amongst the sixty five MDR cases,  the maximum prevelance of MDR was found out to be in the productive age group of 21 to 40 years which was 61.5% [40 cases].

**Conclusion:** The present study emphasizes the need for strengthening laboratory diagnosis of MDR-TB , infection control methods to avoid transmission to health care workers and in community. Research to be promoted for development of new diagnostic methods, drugs and vaccines for early detection and management of MDR-TB.

## KEYWORDS

**INTRODUCTION:**

Tuberculosis is an infectious bacterial disease caused by *Mycobacterium tuberculosis* which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with active pulmonary disease [1].

TB is a serious global public health threat. TB is the ninth leading cause of death worldwide and the leading cause from a single infectious agent, ranking above HIV/AIDS [2].

Tuberculosis continues to be a major health problem in India accounting for an estimated 30% of global tuberculosis burden. At present about one million new smear positive cases are added annually to this figure. Although drug resistant tuberculosis has frequently been encountered in India, the available information is localized. Much of drug resistance encountered in India is diagnosed presumptively based on patient's lack of clinical improvement or relapse of symptoms [3].

Two out of every five Indians are estimated to be infected with TB bacillus, of these 10% will develop TB at some point during their life time. Over 70% of cases occur in the economically productive age group of 15-45 years. Every year 1.8 million new cases occur in our country, of which almost half are infectious. A patient with infectious pulmonary TB can infect 10-15 persons per year [4]

 Drug resistance has emerged as a major problem in management of pulmonary and extra pulmonary tuberculosis. If a person is multi drug resistant it means that the illness will not respond to at least two of the first line anti tubercular drugs.[5]

The two main causes for the development of drug resistance are non adherence to prescribed therapy and use of inadequate treatment regimens. Important risk factors for drug resistance include previous treatment with antitubercular drugs and contact with a person who has infectious drug resistant TB[6]

India and China carry the greatest estimated burden of MDR-TB, together accounting for almost 50% of the total cases. In 2008, MDR-TB caused an estimated 1, 50,000 deaths. An estimated 1.7 million people died from TB worldwide in 2009[7]

With this background our aim was to study the prevalence of MDR TB cases in MDR suspects getting registered under RNTCP centre of MGM Medical college and Hospital, Aurangabad.

**Objectives:** In this study,the sputum sample of  suspected MDR patients getting registered under RNTCP for the treatment of pulmonary and extra pulmonary tuberculosis from   January 2016 to December 2018 were subjected to CBNAAT and first line LPA. Study of the prevalence of MDR cases in such cases over these three years was then studied. This study was further analysed on the basis of gender and various age group to look for any specific vulnerability of a specific class for MDR TB.

**METHODOLOGY:**

The present study is a retrospective study, conducted at MGM Aurangabad. The study used data of 983 patients who got registered under RNTCP from January 2016 to December 2018  for the treatment of pulmonary and extra pulmonary tuberculosis. The sputum samples were subjected to smear examination for acid fast bacilli by microscopy (Zeihl Neelsen staining). After identifying the mycobacterium, these samples were sent for drug susceptibility testing (DST) using  Cartridge Based Nucleic Acid Amplification Test(CBNAAT) and First Line -Line Probe Assay (LPA).

Inclusion Criteria: Patients of all age groups who were MDR suspects, i.e. who either had relapse of Tuberculosis, were sputum positive at the end of intensive phase, had a recent MDR contact or who were defaulters and were getting registered under RNTCP and were willing to be a part of the study were included.

Exclusion Criteria: Smear negative pulmonary tuberculosis, patients who were already on treatment for MDR-TB or who were defaulters of MDR-TB treatment.

**Materials:**

Acid Fast bacilli smear by Zeihl Neelsen staining.
Cartridge Based Nucleic Acid Amplification Test(CBNAAT)
Line Probe Assay

**RESULTS:**

Total  983 patients were included in the study. All the patients were diagnosed cases of pulmonary and extra pulmonary tuberculosis (tubercular pleural effusion, abdominal tuberculosis, tubercular lymphadenitis) by various means of diagnostic modalities (such as chest radiograph findings, bacteriologically confirmed on basis of

sputum examination,AFB smear, Histopathology reports ) and were registered under RNTCP centre of MGM Medical college and Hospital, Aurangabad. All these patients were either relapse cases of tuberculosis or were having contact with a person with MDR tuberculosis. The samples of these patients were then subjected to CBNAAT and first line LPA to look for presence of resistance to Rifampicin and Isoniazid.

Out of the 983 patients thus selected for a period of three years, 65 patients(0.661%) were detected to have MDR strains.
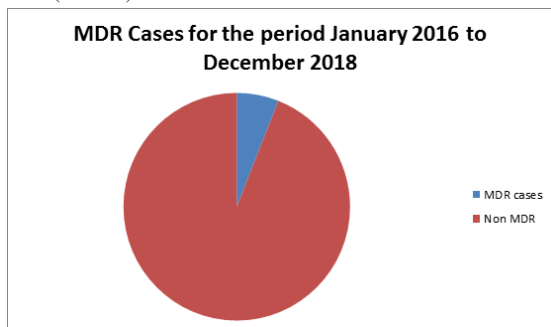


**Distribution of total number of patients enrolled during the study period from January 2016 to December 2018 according to MDR positive status**

It was further noted that out of the 263 MDR Suspect cases who were registered in 2016, 11 patients (0.041%) were MDR positive; While in 2017 out of total 222 MDR suapects, 47(0.211%) were MDR positive and in 2018 out of 498 MDR Suspects, 7(0.014%) turned out to be positive for MDR.
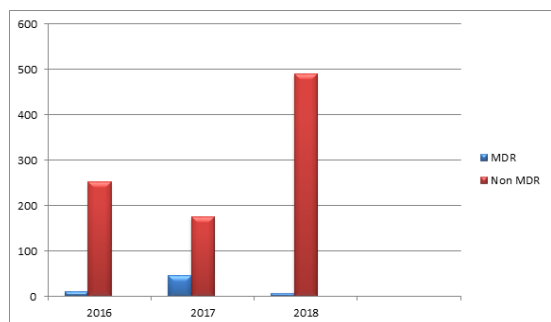


**Distribution of patients according to MDR and Non MDR status in the years 2016, 2017 and 2018**

The prevelance of MDR cases was further analysed according to the gender and it was seen that out of the 11 MDR cases in 2016, there were 6 male MDR cases(0.545%) and 5 female MDR cases(0.454%). In 2017, out of 47 MDR cases 26 (0.553%) were male while 21(0.446) were female patients and in 2018 out of 7 MDR cases, 4(0.571%) were male and 3 (0.428%) were female.
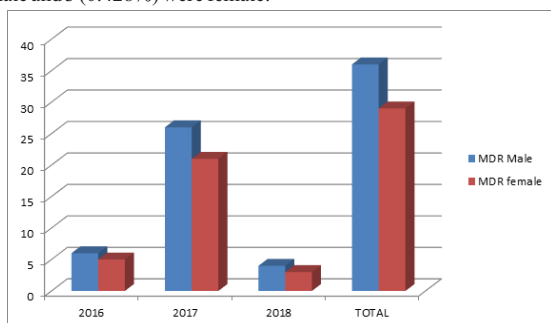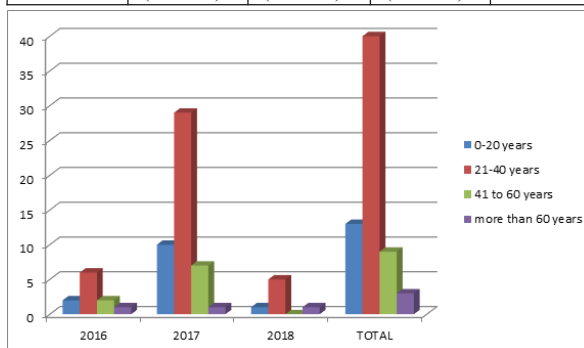


**Distribution of MDR cases in patients according to the gender**

On further distributing the MDR cases based on various age groups, the following results were observed:

| Age group | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|
| 0 – 20 | 2(0.181%) | 10(0.021%) | 1(0.142%) | 13 |
| 21 - 40 | 6(0.545%) | 29(0.617%) | 5(0.714%) | 40 |
| 41 – 60 | 2(0.181%) | 7(0.148%) | 0 | 9 |
| Above 60 | 1(0.090%) | 1(0.042%) | 1(0.142%) | 3 |



**Distribution of total number of MDR Patients according to age group**

### DISCUSSION:
TB is a serious global public health threat. TB is the ninth leading cause of death worldwide and the leading cause from a single infectious agent, ranking above HIV/AIDS.

Pulmonary tuberculosis with multi-drug resistant Mycobacterium tuberculosis is a major cause of concern in many of the developing countries. Isoniazid and rifampicin are the two most potent drugs and the mainstay of anti-TB treatment. The treatment of MDR-TB patients is much more difficult and ∼100 times more expensive than that of fully sensitive patients In 2017, India re-estimated its national TB burden to reflect 2.8 million cases out of total 10 million global cases; of these 1,47,00 are MDR. According to the new data, last year alone, 1.8 million TB cases were reported in India, out of which 38,605 cases were MDR-TB and a further 2,666 were XDR-TB. The country reported 423,000 TB deaths in 2017.

The new data also confirm what experts have long suspected: India's crowded mega-cities provide a perfect breeding ground for the airborne infection to spread. With 879 XDR-TB patients, Maharashtra has the highest number of such patients. Uttar Pradesh has the highest number of cases of drug-resistant TB (9,138); 619 of these are XDR-TB. In addition, the new data show that nearly 3% of new patients and nearly 12% of previously treated patients have MDR-TB.

The present study was carried out to study the prevalence of multi-drug resistant tuberculosis (MDR-TB) in clinical isolates at MGM Medical College and Hospital, Aurangabad which is a tertiary care hospital. Nine hundred and eighty three sputum samples were collected from clinically suspected cases of MDR tuberculosis over a period of three years (Jan 2016 to Jan 2019). These samples were then subjected to drug susceptibility test against Isoniazid (INH) and Rifampicin(RIF). A total of sixty five(0.661%) isolates were found to be multi drug resistant. Amongst the sixty five MDR cases, the maximum prevelance of MDR was found out to be in the productive age group of 21 to 40 years which was 61.5% [40 cases].

### CONCLUSION:
1. Out of the 983 patients, 65 patients(0.661%) were detected to have MDR strains.
2. It was further noted that out of the 263 MDR Suspect cases who were registered in 2016, 11 patients (0.041%) were MDR positive; While in 2017 out of total 222 MDR suapects, 47(0.211%) were MDR positive and in 2018 out of 498 MDR Suspects, 7(0.014%) turned out to be positive for MDR.
3. Out of the 11 MDR cases in 2016, there were 6 male MDR cases(0.545%) and 5 female MDR cases(0.454%). In 2017, out of 47 MDR cases 26 (0.553%) were male while 21(0.446) were female patients and in 2018 out of 7 MDR cases, 4(0.571%) were male and 3 (0.428%) were female.
4. Amongst all the age groups , maximum MDR cases were of patients aged 21 to 40 years i.e. 45 cases followed by 0 to 20 years which accounted for 13 cases.

This emphazises the need for strengthening laboratory services for timely diagnosis of MDR TB

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