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Original research article

Sociodemographic and treatment outcome of multidrug resistance tuberculosis (MDR-TB) in central district of India

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Abstract

Introduction: Multidrug resistance tuberculosis (MDR-TB), is a severe form of drug resistance TB, continues to present a threat to global burden of TB control efforts. India carries the highest global burden of TB and MDR TB.
Material & Methods: It is a cross-sectional observational study. It is record based retrospective study.
Results: there were total 30 patients in our study. Most of them belong to 21-30 years of age (33.33%), 73.3% are males, 12 (40%) were farmers, 56.66% were treated completely and 63.33% were resistant to 2 drugs.
Conclusion: The success rate was 70% (13.33% cured and 66.66% complete treatment).
Keywords: MDR-TB, DST, cured, treatment completed.

Introduction

Tuberculosis is a specific infectious disease caused by mycobacterium tuberculosis. Multidrug-resistant tuberculosis (MDR-TB)-defined as strains of TB with *in vitro* resistance to at least isoniazid and rifampicin-is a major public health problem. The prevalence of drug resistant to TB can be taken as indicator of the effectiveness of the TB control activities [1].

MDR-TB poses a significant challenge to the physician, both in terms of diagnosis and treatment. Diagnosis of Multidrug-resistant tuberculosis (MDR-TB) is important as it is a major public health problem. Diagnosis of MDR-TB is done with help of mycobacterial culture and Drug susceptibility Testing. Treatment of MDR-TB requires use of expensive and toxic second line anti TB drugs given for a longer duration which often results in decreased compliance and success rate [2, 3].

India has the highest burden of multi-drug resistant tuberculosis (MDR-TB) with an estimated 84,000 MDR-TB patients emerging in 2016 amongst the notified pulmonary TB patients [4]. Private sector should also take responsibility of diagnosis, treatment and notification of MDR-TB cases to Government authority. Without help of private sector it is impossible to decrease prevalence of MDR-TB.

In the view of considering MDR-TB as a public health problem it is decided to study on outcome of MDR-TB in Rajnandgaon, Chhattisgarh.

There is no such study on outcome of MDR- TB cases in Rajnandgaon district is done till now so with above background the present study was conducted to assess the outcome of MDR-TB cases in Rajnandgaon district Chhattisgarh.

Material and Methods

It is a cross-sectional observational study. It is conducted during August 2018 to July 2019. The study conducted at District Tuberculosis Center of Rajnandgaon, Chhattisgarh. Permission for the study granted from District Tuberculosis Officer, Rajnandgaon. This was a retrospective review of medical records MDR-TB cases registered under district tuberculosis centre of Rajnandgaon Chhattisgarh. The pretested and predesigned proforma was used. Demographic and clinical information where systematically recorded in clinical files and entered into the proforma.

Inclusion criteria: All patient completed their treatment were enrolled for the study.

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Exclusion criteria: Patients who have not completed their treatment were excluded from the study.
The study was approved by the institutional ethics committee, Governement Medical College, Rajnandgon.
The data entered in Microsoft excel and the data represented by using percentage.

Results

Table 1: Sociodemographic profile of MDR-TB patients

Age	Frequency	Percentage
Below 20 years	2	6.67
21-30yr	10	33.33
31-40yr	8	26.67
41-50yr	6	20.00
51-60yr	4	13.33
Sex		
Female	8	26.27
Male	22	73.33
Marital status		
Married	28	93.33
Unmarried	2	6.67
Occupation		
Farmer	12	40
Housewife	5	16.7
Labour	9	30
Painter	1	3.3
Student	2	6.7
Unemployed	1	3.3

The above table shows out of 30 study patients 73.33% were males and 26.27% were females. out of 30 study patients below 20 years age (6.67%), 33.3% are 21-30years of age, followed by patients of 31-40 years of age (26.7%) and rest belong to 41-50years (20%) and51-60 (13.3%) age group. out of 30 study patients 93.3% are married and 6.7% are unmarried. out of 30 study patients 40% are farmers, 30% are labours, 16.7% are housewives, 6.7% students and 3.3% are painters and 3.3% are unemployed.

Table 2: Treatment outcome of MDR-TB

Treatment outcome		
Cured	4	13.33
Died	5	16.66
lost to follow up	4	13.33
Treatment completed	17	56.66

Table 2 shows out of 30 study patients 4 (13.33%) were cured, 5 (16.66%) were died, 4 (13.33%) were lost to follow up and major 17 (56.66%) have completed the treatment.

Table 3: Drug susceptibility testing

Drug susceptibility testing		
Resistant to 1 drug	11	36.67
Resistant to 2 drugs	19	63.33
Total	30	100

Table 3 shows among 30 patients 19 (63.33%) were showing resistant to 2 drugs rifampicin & isoniazid and 11 (36.67%) patients resistant to 1 drug rifampicin.

Discussion
In the current study, out of 30 study patients below 20 years age (6.67%), 33.3% are 21-30years of age, followed by patients of 31-40 years of age (26.7%) and rest belong to 41-50 years (20%) and51-60 (13.3%) age group. A majority of the MDR-TB patients belonged to the economically productive age groups (14-50 yr) a finding consistent with other studies [6, 7].
In the present study, out of 30 study patients 73.3% are males and 26.7% are females. In our study, the majority of patients were male. El Hamdouni *et al.* [8], Bastos *et al.* [9], Patel *et al.* [10] found male predominance among MDR-TB patients.
Out of 30 study patients 4 (13.33%) were cured and 17 (56.66%) have completed the treatment. Therefore 70 % had a successful treatment outcome. The 2010 data regarding treatment outcome at 24

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months, treatment among MDR-TB patients at the DOTS Plus Site Baroda showed that at the end of treatment, 33.1% were cured and 5.5% had completed treatment. Therefore, 38.62% had a successful treatment out-come, 6.2% exhibited treatment failure, 0.7% were put on Category V treatment, and 2.8% were still on treatment [11].

Different findings were observed by Calver *et al*., Lockman *et al*. and Jeon *et al*., who found success rates of 31.3% and 37.1%, respectively [12, 13, 14]. Leimane *et al*. in Latvia also similarly reported a cure rate of 67.6%, a treatment completion rate of 1.6%, a death rate of 5.7%, default 14.5%, and a failure rate of 10.3%; 0.1% were still on treatment [15]. Many studies have reported higher success rates as compared to our study.

In our study 4(13.33%) were lost to follow up in our study. El Hamdouni *et al* [8] and Agarwalla *et al*.[16] had higher lost to follow-up in 34.6% and 28% of patients respectively.

In our study 5 (16.66%) were died, which is comparable to Dash & Behara [17] where mortality rate is 12.5% higher than El Hamdouni *et al*. [9], Girum *et al*. [19], and Leimane *et al*. [15] studies who found mortality rates of 4.9%, 8.4%, and 5.7% respectively. Patel *et al* [11] and Datta *et al*. [20] found much higher mortality rates of 29.7% and 21.1% respectively.

Among 30 patients 19 (63.33%) were showing resistant to 2 drugs rifampicin & isoniazid and 11 (36.67%) patients resistant to 1 drug rifampicin. According to TB drug resistance types, our study is comparable to Girum *et al* [18] study who found resistance to rifampicin in 89% (vs 82.5%), resistance to rifampicin & isoniazid in 9.7% (vs 15%), and resistance to more than two drugs in only 1.3% (vs 2.5%) of patients, respectively.

Limitations

There was no information regarding tobacco smoking status and the harmful use of alcohol which can adversely influence MDR-TB treatment outcomes.

Conclusion

The success rate was 70% (13.33% cured and 66.66% complete treatment) among MDR-TB patients.

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Conflict of interest: None declared.

Ethical approval: The study was approved by the Institutional Ethics Committee GMC Rajnandgaon.

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