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EVALUATION OF MDR-TB CASES IN WARDHA DISTRICT, MAHARASHTRA, INDIA

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ABSTRACT

Introduction: The emergence of resistance to drugs used to treat TB, and particularly Multi Drug-Resistant TB (MDR-TB), has become a significant public health problem and an obstacle to effective TB control particularly important element of prevention, stop further transmission, and prevent new cases of active tuberculosis.

Methodology: We conducted domiciliary visits to interview MDR-TB cases. This study was a community based cross sectional study conducted in between June 2012 to Dec 2012 for all MDR-TB cases in all 08 blocks of Wardha District, Maharashtra, India.

Result: Mean age of MDR-TB index cases was 41.33 ± 14.53 years. Most (47.67%) of MDR-TB cases were found in class IV followed by class III (25.00%), class II (20.24%), class I (07.14%) then class V (05.95%).

Conclusion: An early identification and early initiation of treatment in potential cases will eventually translate into reduced morbidity, mortality and transmission of infection in the community.

KEY WORDS: MDR-TB, DTO, DTC.

Introduction

"Tuberculosis (TB) persists as a global public health problem of serious magnitude requiring urgent attention. The South-East Asia Region of World Health Organization (WHO) accounts for 40% of the global burden of TB in terms of TB incidence(1). The emergence of resistance to drugs used to treat TB, and particularly Multi Drug-Resistant TB (MDR-TB), has become a significant public health problem and an obstacle to effective TB control. Multidrug resistance tuberculosis (MDR-TB) caused by mycobacterium tuberculosis i.e. resistance to both isoniazid and rifampicin is a worldwide phenomenon that posses a serious threat to ongoing National TB Control Programme(2) In Wardha district, there is 84 cases of diagnosed MDR-TB as per report of District Tuberculosis Office (DTO), Wardha in June 2012. Assessment of MDR-TB cases is an essential for effective tuberculosis control, hence this study was undertaken.

Objectives

1) To assess profile of MDR-TB cases in Wardha District.

Methodology

This study was a observational community based cross sectional study for all MDR-TB cases in all 08 blocks of Wardha District, Maharashtra, India. **Study duration:** For half year (June 2012 to Dec 2012.) **Study Participants:** All registered MDR-TB patients at District Tuberculosis Centre (DTC), Wardha. **Sample Size**: This study included all known MDR-TB patients (84) registered at DTC.

Sample selection method

A list of MDR-TB patients registered at District Tuberculosis centre, Wardha was obtained with their detail address & contact number. The investigator contacted through home visit & screened every MDR-TB cases.

Data Analysis

Data thus collected was analysed using software Systat 12.0 version, descriptive analysis was done by using mean, SD and analytical analysis using chi square, unpaired t test. The significance level was considered at $p < 0.05$. **Ethical consideration:** Study was conducted after due written permission from the District Tuberculosis Officer (DTO), Wardha and approval from the Institutional Ethics Committee, DMIMS (Datta Meghe Institute Of Medical Sciences), Wardha.

Results

A total of 84 MDR-TB cases were assessed in details. This observational community based cross sectional study was conducted in all 08 blocks of Wardha District, Maharashtra (Wardha, Hinganghat, Samudrapur, Karanja Gadge, Seloo, Deoli, Ashti & Arvi).

The information was, analysed and presented as follows:

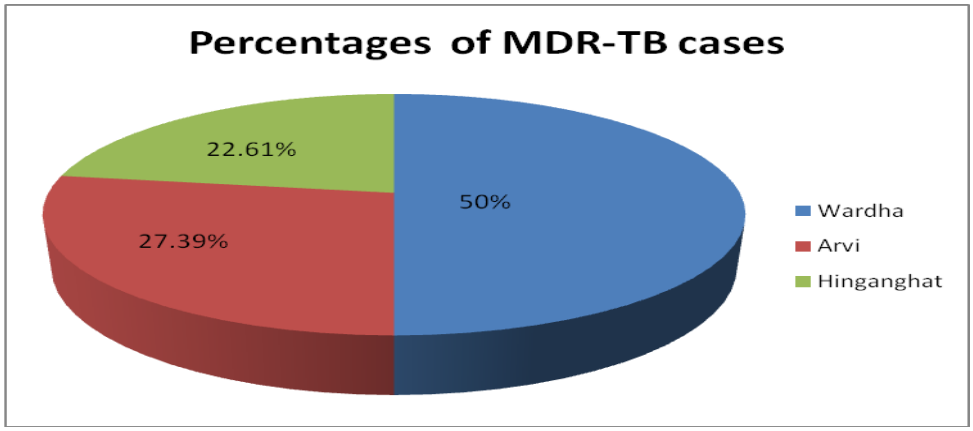

Figure 1: Tuberculosis unit (T.U) wise distribution of MDR-TB cases in Wardha District

There are three Tuberculosis unit (T.U.) in Wardha district namely Wardha, Hinganghat and Arvi. **Figure 1** shows percentages of MDR-TB cases present in each Tuberculosis unit of Wardha District. Half (50.00%) patients were located within Wardha T.U. followed by Arvi (27.39%) and Hinganghat (22.61%).

Table I : Age and Sex wise distribution of MDR-TB cases

Age group	**Male**		**Female**		**Total**	
Years	No	%	No	%	No	%
< 10	00	00.00	00	00.00	00	00.00
11-20	04	06.37	01	04.76	05	05.95
21-30	13	20.63	08	38.09	21	25.00
31-40	15	23.81	05	23.80	20	23.80
41-50	17	26.98	02	09.52	19	22.61
51-60	06	09.52	04	19.07	10	11.92
>60	08	12.69	01	04.76	09	10.72
Total	63	100.00	21	100.00	84	100.00
Mean difference = 04, unpaired 't' test = 1.097, p = 0.276						

Maximum MDR-TB cases (25.00%) belonged to 21 to 30 year age group followed by 31 to 40 year (23.80%). Male patients between 41 to 50 year age group were more (26.98%) and females affected more (38.09%) at 21 to 30 year of age group. Mean age of MDR-TB index cases was 41.33 ± 14.53 years.

Table II : Socio demographic profile of MDR-TB Cases.

Socio Demographic Profile	**Sex**				**Total**		
Education	Male		Female		No	%	
	No	%	No	%			
Illiterate	03	04.76	03	14.28	06	07.14	χ^2~2.61 d f=02 p=0.270
Up to High School	45	71.43	12	57.14	57	67.86	
Above High School	15	23.81	06	28.58	21	25.00	
Occupation							
Skilled workers	10	15.87	00	00.00	10	11.91	χ^2=28.16 p=0.001
Unskilled workers	48	76.19	08	38.09	56	66.66	
Unemployed	05	07.94	13	61.91	18	21.43	
Socio economic status (modified B G Prasad Scale)							
Class I	05	07.94	01	04.77	06	07.14	χ^2=2.78 p=0.59
Class II	14	22.22	03	14.28	17	20.24	
Class III	13	20.63	08	38.09	21	25.00	
Class IV	27	42.85	08	38.09	35	41.67	
Class V	04	06.34	01	04.77	05	05.95	
Caste							
Open	03	04.76	02	09.53	05	05.96	
Other Backward Class(OBC)	49	77.78	12	57.14	61	72.62	χ^2=4.61 p=0.32
Scheduled Cast(S.C)	07	11.11	04	19.04	11	13.09	
Scheduled Tribes(S.T.)	03	04.76	03	14.28	06	07.14	
Nomadic Tribes(N.T)	01	01.58	00	00.00	01	01.19	

Table II shows that only 07.14% patients were illiterate, 67.86% cases were educated up to High school and 25.00% cases educated above High school level i.e. intermediate (20.24%), Graduate (04.76%). Seventy one percentage of male and 12/21 (57.14%) of females educated up to High School while only 23.81% of male and 28.58% of female educated above the High School. Occupation wise distribution shows that unskilled and unemployed worker had more percentage of cases i.e. 66.66% and 21.43% respectively than skilled worker (11.91%). Unemployment was more in females i.e. nearly 62% than males (07.94%).

According to modified B G Prasad classification, most (47.67%) of MDR-TB cases were found in class IV followed by class III (25.00%), class II (20.24%), class I (07.14%) then class V (05.95%). Caste wise distribution, shows that there were 72.62% of cases belong to Other Backward Class (OBC) followed by Scheduled Caste (13.09%), Scheduled Tribes (07.14%) then Nomadic Tribes (01.19%).

Education and socioeconomic status did not had any significant difference in male and female cases ($p > 0.05$). However there was significant difference between occupation of male and female cases as $p < 0.05$.

Table III: Distribution of MDR-TB patients according to interval between diagnosis of MDR-TB and starting treatment

Duration (days) between diagnosis of MDR-TB and starting treatment.	MDR-TB patient	
	No	%
Less than 15 days	20	23.80
16 to 30 days	31	36.90
31 to 45 days	15	17.86
46 to 60 days	08	09.52
61 to 75 days	04	04.77
76 to 90 days	01	01.19
More than 91 days	03	03.58
Treatment not started	02	02.38
Total	84	100.00

Table III revealed that nearly 37% patients started the treatment within 16 to 30 days after diagnosis of MDR-TB followed by 23.80% within 15 days from diagnosis then 31 to 45 days (17.86%) and 46 to 60 days (09.52%). Remaining (11.90%) started after 02 month of diagnosis.

Overall 60.70% cases started treatment less than one month duration and 37% started after one month, 2.38% patient did not started treatment as they were non traceable after diagnosis. It also revealed that nearly 10% of patients did not started treatment even after 60 days of diagnosis.

Discussion

Present study included 84 registered MDR-TB index cases having 75% were males and 25% females. Maximum (25%) patients belonged to 21 to 30 year age group followed by 31 to 40 year. Mean age of MDR-TB cases was 41.33 ± 14.53 years having mean age of male cases was 42 ± 14.38 and female 38 ± 14.73 years. Similar findings were observed by **Texeiria et al**[3] where in mean age of index case was 39.5 years and percentage of male index cases was 77% and females 23%. However **Bayona et al**[4] **and vella et al**[5] reported nearly 55% were males and 45% females. Maximum 43% cases belonged to 25 to 34 years age group.

Present study shows that nearly 68% MDR-TB cases had education up to high school level. **Granjean et al**[6] stated that 66% cases were educated up to high school which was similar to our study. Present study revealed that nearly 67% cases were unskilled worker and 21.43% unemployed. Unemployment was more in females (62%) than males (07.94%). More than 50% cases belongs to socio economic Class IV and V. Almost similar finding were reported by **Vella et al**.[5] However **Grandjean et al**[6] reported a figure of 31% for unemployment. Data from present study revealed that most of cases of MDR-TB had poverty which might have contributed in increase in risk of transmission of TB. **Teale C et al**[7] showed similar finding in their study that poverty associated with an increased risk of 3.3-fold for tuberculosis. The current study revealed that only 23.80% cases initiated treatment within 15 days from diagnosis of MDR-TB. Delay of 16 to 30 days for initiation of treatment found in 36.90% cases. **Cheng S et al** [8] reported that delay of 14 to 29 days in 54.5% cases and 55.5% cases delayed between 30 to 59 days for the initiation of treatment.

Conclusions

There was a huge delay in initiation of treatment of MDR-TB cases especially among low educated, unskilled and low income group. Inadequate treatment was also found in sizeable number of MDR-TB cases. An early identification

and early initiation of treatment in potential cases will eventually translate into reduced morbidity, mortality and transmission of infection in the community.

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