Original Article

To Study Socio- Demographic Variables and Prevalence of MDR- TB In District Jalandhar

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Abstract

Background- Tuberculosis (TB) remains one of the world's most deadly but reassuringly curable infectious diseases if properly treated. The problem is further exacerbated by the growing number of cases of multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB), drug-resistant forms of the diseases which continue to surge around the world **Aims And Objectives-** Study was conducted with an objective to determine Socio-demographic factors responsible for emergence of MDR- tuberculosis and prevalence of MDR - tuberculosis in Jalandhar. **Materials and Methods** - It was a cross - sectional study conducted for six months among MDR suspects who attended DTC (District Tuberculosis Centre) .Self designed semi structured questionnaire were utilized to collect relevant information on socio demographic variables like age, gender , marital status , socio economic status , type of family was obtained. **Results** - Majority of the study participants **(45%)** were between age group of **30-40.** MDR TB was significantly **(p=0.004)** associated with socio- economic status as majority **(27.03%)** who were diagnosed as MDR belonged to Class III. Also there was significant association**(p=0.003)** with addictions like smoking, alcoholism and tobacco chewing as **20%** of the study subjects who were smokers suffered from MDR. **Conclusion-** MDR - TB is on rise and requires sensitive diagnostic techniques and effective treatment for it's management.

Key Words:Tuberculosis;Socio-demographic;Smokers

INTRODUCTION
Tuberculosis (TB) remains one of the world's most deadly but reassuringly curable infectious diseases if properly treated.[01]The World Health Organization (WHO) recently published data revealing that one third of the globe's population has been infected with TB and that an estimated 9.4 million TB cases are reported annually [02]. The problem is further exacerbated by the growing number of cases of multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB), drug-resistant forms of the diseases which continue to surge around the world. There were 0.44 million cases of MDR-TB reported globally in 2008, and 0.15 million deaths occurred from MDR-TB [01]The potentially serious impact of *MDR*-TB (TB strain resistant to at least isoniazid and rifampicin) has long been recognized, however, the problem is of special concern because second-line drugs required for its treatment are often unavailable, are far more expensive than the first-line drugs, with only 65 – 75% efficacy, and have side effects that may require hospitalization. MDR-TB results from infection with already drug-

resistant bacilli or may develop during a patient's treatment, mostly due to administration of improper regimens in chemotherapy of drug-susceptible TB patients and failure to ensure patient compliance. Laboratory facilities for drug susceptibility testing are inadequate, thus diagnosis is often missed, and the actual number of global drug resistant tuberculosis cases remains unestimated.[3] Multidrug resistant TB requires treatment that needs two years or more using more toxic and expensive drugs, financially crippling the health care resources in tuberculosis endemic areas and complicating patient management. The disease is not only a medical problem or a public health problem but also a problem of great social magnitude . Baseline adequate information on epidemiological, social, economic and cultural factors and their interaction is required for it's control and effective treatment.[4]Aims of the present study To evalute the prevelence and socio-demographic factors responsible for emergence of MDR- tuberculosis.

Material and Method

It was a cross - sectional study conducted among MDR suspects who attended DTU (District Tuberculosis Centre). The duration of the study was six months. All MDR suspects attending DTU during the study tenure constituted the study population . Study period was from July 2016-December 2016. Patients fulfilling MDR suspect criteria were included in the study .

Study tools- Self designed semi structured questionnaire were utilized to collect relevant information on socio demographic variables like age, gender , marital status , socio economic status , type of family was obtained . History of clinical symptoms and any addiction like smoking, alcoholism and chewing of tobacco was also recorded . Adequate precautions were taken by investigators to prevent acquiring the disease. Patients referred from ART centre , Designated Microscopy Centres in Jalandhar district and private practioners to DTU were subjected to sputum examination and diagnostic technology used was Cartridge Based Nucleic Acid Amplification Technique .

Ethics Consideration- The study was approved by Institutional Ethics Committee. Prior to the study , the purpose of the study was explained to the study participants and informed and written consent was obtained, ensuring strict confidentiality. The study did not impose and financial burden on the study participants.

Statistical   Analysis- The data obtained was compiled in excel sheet and analyzed via SPSS version 21 and appropriate tests of significance were applied.

Definitions

MDR-TB case: A TB patient whose sputum is culture positive for Mycobacterium tuberculosis and is resistant in-vitro to isoniazid and rifampicin with or without resistance to other anti-tubercular drugs based on DST results from an RNTCP-certified Culture & DSTLaboratory.

2.2.2 XDR-TB case: A MDR TB case whose recovered M. tuberculosis isolate is resistant to at least isoniazid, rifampicin, a fluoroquinolone (ofloxacin, levofloxacin, or moxifloxacin) and a second-line injectable anti-TB drug (kanamycin, amikacin, or capreomycin) at a RNTCP-certified Culture & DST Laboratory. [5] As rifampicin resistance is quite rare without isoniazid resistance RNTCP has taken the programmatic decision that patients who have any rifampicin resistance, should also taken to be resistant to isoniazid and managed as if they are an MDR TB case. In the present study we followed the same protocol.

MDR suspect category: A MDR suspect in the present study was defined as a patient suspected of drug-resistant tuberculosis, based on RNTCP criteria for submission of specimens for drug-susceptibility testing During the study period, in West Bengal, suspects were being identified based on criteria C. [5]

Guidelines for MDR TB suspect case

Criteria A All failures of new TB cases

 Sputum smear positive previously treated cases who remain smear positive at 4 th month onwards

 All Pulmonary TB cases, who are contacts of known MDR-TB cases

Criteria B– *in addition to Criteria A* All smear positive previously treated pulmonary TB cases at diagnosis

Any smear positive follow-up result in new or previously treated cases

 Criteria C– *in addition to Criteria B*

All smear negative previously treated pulmonary TB cases at diagnosis HIV-TB co-infected cases at diagnosis

HIV - TB co -infected at diagnosis

RESULTS

Table no.1 represents socio-demographic profile of the study participants. Majority of the study participants **(45%)** were between age group of 30-40.Only 13% of the study participants were graduate and above and majority **(31%)** attended higher secondary school. Majority i.e **92.5%** were married . In terms of Socio-economic status ,**37%**

of the study participants belonged to Class III of B.G Prasad scale. **Table 2.** represents relationship of MDR TB with socio-economic status and addictions. It is clearly evident that MDR TB is significantly (p=0.004) associated with socio-economic status as majority (27.03%) who were diagnosed as MDR belonged to Class III. MDR was significantly(p=0.003) associated with addictions like smoking, alcoholism and tobacco

chewing as 20% of the study subjects who were smokers suffered from MDR.Table no. 3 represents MDR suspect category . 31 % were relapse of previously treated case followed by 30 % who were treatment failure and 25 % who were in category of treatment after default .Majority of the study participants suffered from fever (50%) , followed by dry cough(25%) and expectoration.

Table 1: Socio-demographic profile of the study participants

Age in years	Frequency	Percentage
<18	19	9.5%
19-29	25	12.5%
30-40	90	45%
>40	66	33%
Education		
Illiterate	28	14%
Primary	34	17%
Secondary	50	25%
Higher Secondary	62	31%
Graduation And Above	26	13%
Marital Status		
Married	185	92.5%
Unmarried	15	7.5%
Gender		
Male	170	85%
Female	30	15%
Socioeconomic Status (BGPrasad)		
Class 1 Rs. 5156 and above	12	6%
Class II- Rs.2578-5155	33	16.5%
Class III -Rs. 1547-2577	37	18.5%
Class IV-Rs. 773-1546	74	37%
Class V- Rs.<773	44	22%
Total	200	100%

Table 2:Relationship of MDR-TB with Socio-economic status and addictions

Socioeconomic Status (BGPrasad)	MDR Diagnosed	Not Diagnosed	Total	P value
Class 1-Rs. 5156 and above	2(16.6%)	10 (97.3%)	12(6%)	
Class II- Rs.2578-5155	3(9.09%)	30(90.90%)	33(16.5%)	P=0.004
Class III -Rs. 1547-2577	10(27.02%)	27(72.97%)	37(18.5%)	
Class IV-Rs. 773-1546	2(2.70%)	72(97.29%)	74(37%)	
Class V- Rs.<773	8(18.18%)	36 (81.81%)	44(22%)	
Addiction	Yes	No		P=0.003
Smoking	21(20%)	84(8%)	105(210%)	
Alcohol	3(5.45%)	52(94.54%)	55(27.5%)	
Tobacco chewing	1(2.5%)	39(97.5%)	40(20%)	
Total	25	175	200	

Table 3: MDR Suspect Category

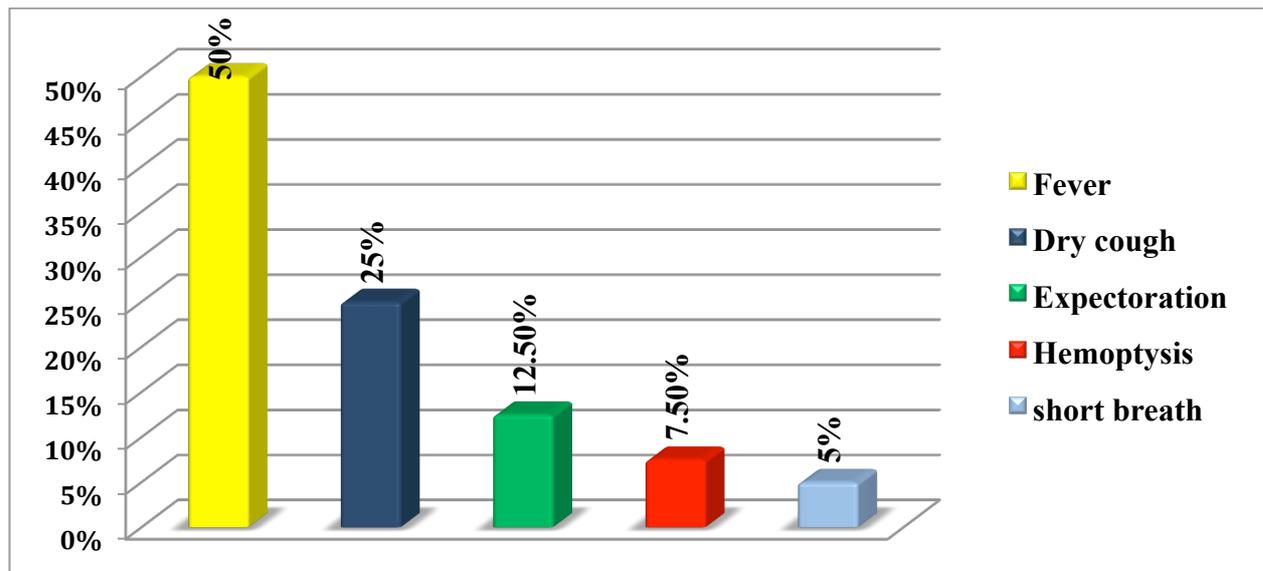| MDR Suspect Category	N=200	%
Relapse of previously treated case	76	38
Treatment failure	60	30
Treatment after default	50	25
Any smear positive follow up	20	5
MDR contact	5	2.5

Figure: 1 Clinical profile of the study participants

DISCUSSION

Present study was conducted with a view to analyze various socio- demographic variables and prevalence of MDR in district Jalandhar. There is an extremely high burden of Multi drug resistant TB among developing countries which may be attributed to demographic and socio economic profile like poverty , low socio- economic status and presence of addiction like smoking and tobacco chewing .[6] In the current study Majority of the study participants **(45%)** were between age group of 30-40.Only 13% of the study participants were graduate and above and majority **(31%)** attended higher secondary school. Majority i.e **92.5%** were married . In terms of Socio-economic status ,37% of the study participants belonged to Class III of B.G Prasad scale. In the current study 200 MDR suspect patients were included and were subjected to CBNAAT (Catridge -based nucleic acid amplification test) . Out of 200 , 25 were found positive , i.e the prevalence of MDR was 12.5%. These findings corroborate with study conducted by Sharma K et al (2011) on prevalence of MDR in Delhi in which it was found that prevalence of MDR was 20.4 %. [7] This is also comparable with study conducted by Hanif M et al (2009)in Delhi.[8]Majority of the study participants suffered from fever (50%) , followed by dry cough (25%) and expectoration. These observations are similar to study conducted by Manna N et al (2014) on Drug resistance pattern and socio demographic factors among MDR TB patients in Kolkatta in which 73.1 % patients suffered from fever followed by cough and expectoration[9] Income levels are also interrelated with disease and health. Previous studies found that a low socioeconomic status or poverty were associated with MDR-TB .[10] In a study conducted in China in 2016 , it was found that low income was also a risk factor associated with MDR-TB. Consequently, it is easy for TB patients in low income communities to acquire MDR-TB because there is a lack of good medical services. With the increase of acquired MDR-TB patients in low-income communities, the general population has higher chances of contracting MDR-TB[11] These findings are in consonance with the current study as it is clearly evident from the present study that MDR TB is significantly (p=0.004) associated with socio- economic status as majority (27.03%) who were diagnosed as MDR belonged to Class III. Zhang C et al (2016) in a study conducted in China on Determinants of multidrug-resistant tuberculosis documented significant association between smoking and MDR .[11] These findings corroborate with the findings of our study in which MDR was significantly(p=0.003) associated with addictions like smoking, alcoholism and tobacco chewing as 20% of the study subjects who were smokers suffered from MDR.

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