



Original Article

An Exploratory study of profile of Multidrug resistant Tuberculosis cases of Kashmir valley

Authors

Taha Ayub*¹, Mehbooba Rasool¹, Umar Nazir², Kousar Sideeq¹

Abstract

Background: Multidrug resistant tuberculosis is a significant public health problem with serious repercussions. Since Tuberculosis is a social problem, an attempt was made to explore the issue in Kashmir region.

Methods: A total of 33 “on treatment” Multi drug resistant tuberculosis cases were interviewed using semi-structured questionnaire.

Results: More than 2/3rd of cases interviewed were females, belonging to reproductive age group. None of them was HIV positive, however 27% had other comorbidities. Around 60% cases perceived Tuberculosis as stigma. Important to note was that 65% cases were happy with the behaviour of Health care worker (HCW) towards them.

Conclusion: The perception of tuberculosis as a stigma or curse is still prevalent in our setting. Much needs to be done to dispel the stigma associated with Tuberculosis as the fear of being ostracized forces persons with TB to hide their disease status. It was concluded that there is a need of strengthening the ways of tackling tuberculosis as a Clinico-social entity as such.

Key Words: Multi drug resistant tuberculosis; profile; Kashmir; Stigma; resistance; Health care workers.

Introduction

Tuberculosis (TB) is as old as mankind. Although an ancient disease with an efficient control programme in place against it, is still able to prevail in our settings with much wider resistant forms like Multidrug resistant tuberculosis (MDR) and Extensive drug resistant tuberculosis (XDR). According to World Health Organization (WHO), Globally, 5% of TB cases were estimated to have had multidrug-resistant TB (MDR-TB) in 2014¹. Drug resistance surveillance data shows that an estimated 480 000 people developed MDR-TB in 2014 and 190 000 people died as a result of MDR-TB.¹ In 2014, 123 000 patients

with MDR-TB or Rifampicin resistant tuberculosis (RR-TB) were notified, of whom about 75% lived in the European Region, India, South Africa or China.¹ In India, the prevalence of Drug resistant-TB is 2.2% in New cases and 15% in previously treated cases.² However, when translated into numbers the M/XDR TB cases are significant and pose a serious challenge to TB epidemiology unless effectively managed.³ These forms of TB do not respond to the standard six-month treatment with first-line anti-TB drugs and can take up to two years or more to treat with drugs that are less potent, more toxic and much more expensive, from 50 to 200 times higher.⁴ The

presence of multidrug resistant tuberculosis signals a failure to adhere to a tuberculosis programme and has become a significant public health problem worldwide. Since tuberculosis is a socio-clinical disease with deep rooted social factors, the study was conducted to explore the issue of MDR in Kashmir region.

Material and Methods

After taking the approval from Institutional Ethical Committee, the study was conducted on MDR cases of Kashmir region. The data related to MDR cases was collected from RNTCP officials. The Kashmir division is divided into 6 districts for coverage under RNTCP i.e. Srinagar, Budgam, Anantnag, Pulwama, Baramulla and Kupwara.

As per the RNTCP, a case of Multi-Drug-Resistant Tuberculosis (MDR-TB) is defined as tuberculosis that is resistant to at least Isoniazid (INH) and Rifampicin (RMP), the two most powerful first-line treatment anti-TB drugs.^{1,4}

Rifampicin-resistant tuberculosis (RR-TB) is caused by TB bacteria that do not respond to rifampicin, one of the most effective anti-TB medicines, requiring longer treatment and more medication than patients with rifampicin-susceptible disease.

All the MDR cases registered under RNTCP of Kashmir division were included in the study. Since

2012, 90 MDR patients have been registered with RNTCP and currently, there are 36 MDR cases who were on treatment with 10 cases in Anantnag district, 8 cases in Baramullah district, 6 in Kupwara district, 5 in Srinagar district, 4 in Pulwama district and 3 in Budgam district. A preliminary meeting was arranged with the concerned District Tuberculosis Officer (DTO) and STS (MDR) and all the necessary information regarding the MDR cases was attained. A feasible date and time of interview was fixed as per the convenience of the subject. Then a visit was made at the concerned place with the help of local RNTCP officials on convenient date and time. After taking the informed consent from patient, an in-depth interview using pre tested Semi-structured questionnaire was conducted in their home settings.

Data Analysis

The data collected was analysed. The categorical variables were expressed as percentages and the continuous variable as mean.

Results

A total of 33 patients were interviewed out of 36 registered on-treatment cases. An overlook of MDR cases of Kashmir region according to their outcome following the treatment is as follows.

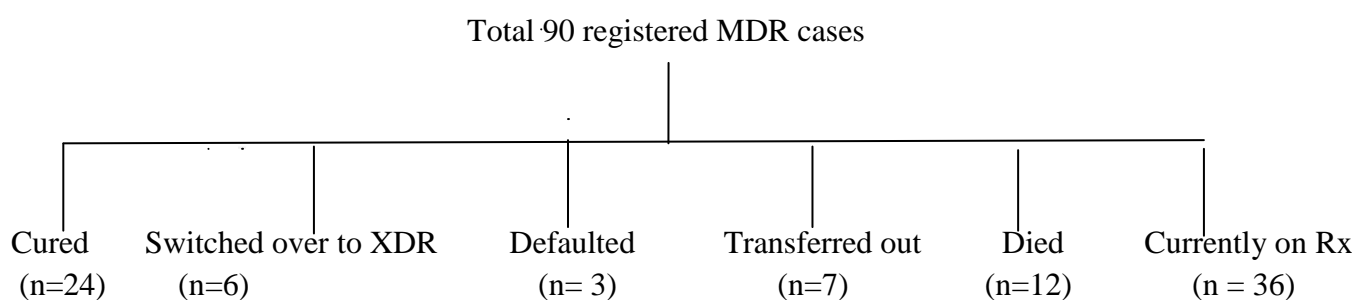


Table 1: Socio- Demographic characteristics of the MDR cases interviewed(n=33):

Age and Sex-wisedistribution	Male n(%)	Female n(%)
< 19	2 (18.2)	7 (31.8)
20 – 39	6 (54.5)	6 (27.2)
40– 59	1 (18.2)	5 (31.5)
>59	1 (9.1)	1 (4.5)
Total	11(33.3)	22(66.7)
Educational status		
Illiterate	2 (18.2)	12 (54.6)
Upto secondary class(10 th)	4 (36.4)	6 (27.3)
Higher Secondary (12 th)	2 (18.2)	3 (13.6)
Graduation or above	3 (27.2)	1(4.5)
H/o Co-Morbidity		
HIV	0 (0)	0 (0)
Diabetes Mellitus	1 (9)	1 (4.5)
Thyroid dysfunction	0 (0)	7 (21.5)
Hepatic/ renal	0 (0)	0 (0)
H/o Self medication	7 (63.6)	13 (59.1)

(Mean age 29 years, Mean age (males) 30 years, Mean age (females) 27 years)

The table1 depicts that 2/3rd of cases were females, out of which 1/3rd were adolescents whereas 50% males were in the age group of 20-30 years with majority of cases being students.

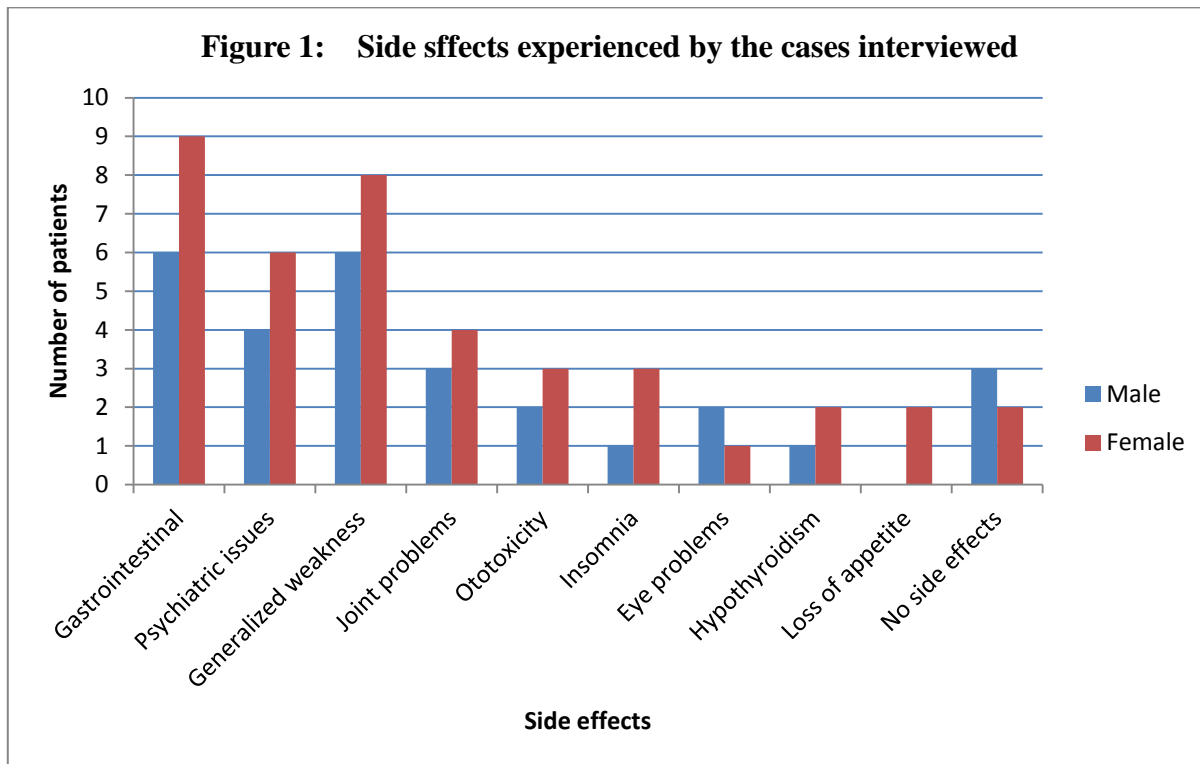
The data revealed that more than 50% of female cases were illiterate whereas majority of the male cases were literate. Importantly, no case was HIV positive but 7 females were hypothyroid. The highlighting feature was that nearly 2/3rd of male and female cases had habit of self medication.

Table 2: A general profile of MDR patients:

Type of tuberculosis	Pulmonary 31 (93.9)	Extra pulmonary 2 (6.1)
Presenting signs and symptoms	Male (n= 11)	Female (n =22)
Cough with expectoration	3	12
Dry cough	9	13
Fever	8	16
Hemoptysis	3	5
Lymph node swelling	0	1
Loss of appetite	3	4
Breathlessness	3	3
Type of resistance		
Primary	4 (12%)	5 (15%)
Secondary	7(21%)	17 (52%)
Time to Culture conversion		
3 months	5(14.5%)	8 (25%)
4 Months	3 (9%)	9 (28%)
5 /6 months	3 (9%)	5 (14.5%)
Never missed or interrupted the treatment	8(24.2%)	18 (54.5%)
Change in regimen	3 (9%)	5(14.5%)
Indiscriminate method of sputum disposal.	4 (12%)	6 (18%)

The table2 depicts that 94% cases were pulmonary type. Majority of patients have more than one complaint with females predominantly having productive cough whereas male cases had dry cough mainly. Almost half of the cases had history of contact with tuberculosis case in the past.Regarding the type of resistance, more than

2/3rd of cases were secondary cases.Regarding the timing of conversion, almost 2/3rd of cases were negative by 3rd or 4th month. The important finding is that 73% cases never missed the dose whereas only 1 female has missed the drugs for fortnight period.Further, the change in regimen occurred in only 8 cases because of serious side effect.



The figure 1 reveals that the cases developed multiple side effects with 45% having GI symptoms followed by Psychiatric issues (42%), Generalized Weakness (33%), Joint problems (30%), ototoxicity (15%), Insomnia (12%), Eye problems (9%), Hypothyroidism (9%) and loss of appetite (6%). However, 15% cases did not report any side effect.

Table 3: Perception of TB as stigma by MDR cases:

Perception of TB as stigma	Male (n=11)	Female (n=22)
Revealed their disease status to people in neighbourhood	4	7
Felt ashamed/ guilty because of disease	5	16
Felt avoidance	4	5
Maintenance of normal relationship with family	11	22
Neighbours maintained distance with you	4	10
Attended social gatherings	1	0
Thought TB is a threat to marriage/ job/ schooling	6	14

The above table reveals that nearly 2/3rd of cases did not reveal their disease to anybody, with almost same proportions of male and female. About 63% of the cases were ashamed because of their disease, with females outnumbering the

males (76% vs 45%). Only 27% cases revealed that the people avoided them once they get to know about their disease. However, family maintained normal relationship with all the cases. Only one male case attended the social gatherings whereas remaining avoided either because of stigma or to prevent others from getting infected. Around 60% cases considered TB as threat to marriage or job.

Table 4: Perception of behaviour of health care workers towards MDR cases:

Behaviour of health care workers	Male (n=11)	Female (n=22)
HCW avoided us or talked at distance	3	9
Satisfied with counselling provided	8	18

The table 4 depicts that more than 60% of cases were happy with the attitude of Health Care workers towards them. More than 4/5th of cases were satisfied with the counselling provided to them.

Discussion

The present study was conducted to explore the issue of MDR cases in Kashmir region. All the MDR cases who were currently “on treatment” were included in the study. Only 3 cases were dropped due to difficulty to access them whereby

one case was excluded because of her severe hearing impairment issue. The present study revealed that there is 1:1 male female ratio of MDR cases but among “interviewed on treatment” cases, majority were females (66%). Similar observations were reported by other studies⁷⁻¹⁵ Most of the patients were belonging to economically productive age group which is in line with the findings of other researchers⁷⁻¹⁴. Surprisingly the literacy rate of cases interviewed was only 54% (81% in males vs 45% in females) unlike the figures reported by census 2011 (overall 72.9%, 80.89% vs 64.64%)⁶ and other authors.^{9, 11} Only 8 patients had comorbidity. Similar figures have been reported by another study done in Ahmedabad, Kolkatta, Mumbai and Phillipines.^{9,11,13,15,16} Striking feature was that nonewas HIV positive. Similar observation was reported by Marie Flament-Saillour in France that MDR is not associated with Human Immunodeficiency Virus (HIV).¹⁷ However HIV positivity was seen in other studies.^{8,9,11,13,15,16,18} Nobody had history of any addiction with only 6% cases being ex-addicts, (stopped smoking because of initial counselling provided to them) unlike the higher rates reported by other studies.^{9,14} Flemming MF et al reported that alcohol abuse/dependence was associated with an eight-fold increase in drug resistance (OR 8.58; 95% CI 2.09-35.32).¹⁹ The important finding of this study is wide prevalence of usage of over the counter drugs.

Tuberculosis Profile of patient

Majority of the cases had pulmonary tuberculosis which is in sink with the findings of other researchers.^{8, 9, 11,13, 20} There were 27% cases who have never had history of intake of ATT. Similar findings were reported by other authors.^{10,11,13,14,15} The presenting symptoms of pulmonary tuberculosis were similar as that of other researchers with predominant symptom being dry cough (66%) in this study.^{9,15} Surprisingly there were 41% cases who were Rifampicin-resistant tuberculosis (RR-TB). Only 14% cases were actually MDR. Yatin et al, Bikram Singh Datta et

al, Surajit et al and Andrea et al reported same rates regarding resistance against Rifampicin and Isoniazid but the resistance pattern for Rifampicin only was quite different.^{11,15, 21,22} However different rates were reported by Bhatt G et al.⁹ More than 2/3rd of cases achieved smear conversion at an average of 3-4 months period as reported by other researchers.^{7,8,9,11,15,16} The striking finding was that 80% cases had never missed the dose as reported by other author as well.⁹ The change in regimen occurred in 8 cases (24%) owing to the adverse reactions following the intake of drugs (Cycloserine and PAS) as reported by other authors as well.^{9,11} The profile of side effects following intake of MDR drug regimen is same as observed in other studies.^{8, 9, 14, 15, 20,23} Only 39% were disposing the sputum indiscriminately.

Perception of Tuberculosis as stigma:

More than 2/3rd of patients considered tuberculosis as stigma as they were of the opinion that by revealing their disease status to friends, colleagues or neighbours; people would sever all ties with them or would avoid them. Indeed they felt guilty and ashamed because of their disease and considered it as curse. Other researchers also revealed that patients with TB often experience rejection and social isolation.²⁴⁻²⁹ Important to note is that more than 60% of cases were happy with the way Health care workers dealt with them²⁴ and around 4/5th of them were satisfied with the counselling sessions.

Acknowledgement

I highly appreciate the support provided to me by Dr Nighat Yasmeen in conducting this study.

References

1. World Health Organization, Multi drug resistant tuberculosis, 2015 update. [cited 2016 November 2] Available from http://www.who.int/tb/challenges/mdr/mdr_tb_factsheet.pdf.
2. Annual report 2013-14. [cited 2016 November 20]. Available

- from <http://mohfw.nic.in/WriteReadData/1892s/Chapter615.pdf>.
3. Annual rep 2012-2013. [cited 2016 November 20]. Available from <http://mohfw.nic.in/WriteReadData/1892s/CHAPTER%206.pdf>.
 4. Results-Framework Document (RFD) for Department of Health and Family Welfare (2013-14) Section 1: DEPARTMENT'S VISION, MISSION, OBJECTIVES AND FUNCTIONS. [cited 2016 November 25]. Available from <http://mohfw.nic.in/WriteReadData/1892s/7896537896321456325.pdf>.
 5. Drug-resistant tuberculosis now at record levels. News release. 18 March 2010 | Geneva | Washington DC. [cited 2016 November 11] Available from http://www.who.int/mediacentre/news/releases/2010/drug_resistant_tb_20100318/en/.
 6. Status of Literacy. [cited 2016 November 20]. Available from http://censusindia.gov.in/2011-prov-results/data_files/mp/07Literacy.pdf.
 7. Mitnick, C; Bayona, J; Palacios, E; Shin, S; Furin, J; Alcantara, F et al (2003). Community-based therapy for multidrug-resistant tuberculosis in Lima, Peru. *The New England journal of medicine*, 348 (2). pp. 119-28.
 8. Aleyamma Thomas, Rajeswari Ramachandran, Fathima Rehaman, K. Jaggarajamma, T. Santha, N. Selvakumar et al. Management of Multi Drug Resistance Tuberculosis In The Field: Tuberculosis Research Centre Experience. *Indian J Tuberc* 2007; 54: 117-124
 9. Bhatt G, Vyas S, Trivedi K. An epidemiological study of multi drug resistant tuberculosis cases registered under Revised National Tuberculosis Control Programme of Ahmedabad City. *Indian J Tuberc*. 2012 Jan;59(1):18-27.
 10. Gupta S, Bandyopadhyay D, Gupta S, Sadhukhan S, Banerjee S. A sociodemographic study of multidrug resistant tuberculosis cases from DOTS clinics of Kolkata. *J Indian Med Assoc*. 2012 Oct;110(10):723-5.
 11. Yatin N. Dholakia and Divya P. Shah. Clinical profile and treatment outcomes of drug-resistant tuberculosis before directly observed treatment strategy plus: Lessons for the program. *Lung India*. 2013 Oct-Dec; 30(4): 316–320.
 12. Udawadia ZF, Moharil G. Multidrug-resistant-tuberculosis treatment in the Indian private sector: Results from a tertiary referral private hospital in Mumbai. *Lung India*. 2014 Oct; 31(4):336-41.
 13. Poulomi Mukherjee, Prasanta Ray Karmakar, Rivu Basu, Saibendu Kumar Lahiri. Sociodemographic and clinical profile of multi drug resistant tuberculosis patients: a study at drug resistant tuberculosis centers of Kolkata. *Journal of Dental and Medical Sciences (IOSR-JDMS)* (Aug. 2015); 14(8): 52-58.
 14. Mohammad A. Tag El Din, Ashraf A. El Maraghy, Abdel Hay R. Abdel Hay. Adverse reactions among patients being treated for multi-drug resistant tuberculosis at Abbassia Chest Hospital. *Egyptian Journal of Chest Diseases and Tuberculosis*; (4/2015) ; 68.
 15. Bikram Singh Datta, Ghulam Hassan, Syed Manzoor Kadri, Waseem Qureshi, Mustadiq Ahmad Kamili, Hardeep Singh et al. Multidrug-Resistant and extensively drug resistant tuberculosis in Kashmir, India. *J Infect Dev Ctries* 2010; 4(1):019-023.
 16. Tupasi TE, Gupta R, Quelapio MI, Orillaza RB, Mira NR, Mangubat NV et al. Feasibility and cost-effectiveness of treating multidrug-resistant tuberculosis: a

- cohort study in the Philippines. *PLoS Med.* 2006 Sep; 3(9):e352.
17. Marie Flament-Saillour, Jerome Robert, Vincent Jarlier, and Jacques Grosset. Outcome of Multi-drug-resistant Tuberculosis in France. *American Journal of Respiratory and Critical Care Medicine*(1999);160(2): 587-593.
 18. Faustini A, Hall AJ, Perucci CA. Risk factors for multidrug resistant tuberculosis in Europe: a systematic review. *Thorax.* 2006 Feb; 61(2):158-63.
 19. Fleming MF, Krupitsky E, Tsoy M, Zvartau E, Brazhenko N, Jakubowiak W et al. Alcohol and drug use disorders, HIV status and drug resistance in a sample of Russian TB patients. *Int J Tuberc Lung Dis.* 2006 May; 10(5):565-70.
 20. E. Manoharam, K.R. John, A. Joseph and K.S. Jacob (2001). Psychiatric Morbidity, Patients Perspectives of Illness and Factors Associated With Poor Medication Compliance among the Tuberculous In Vellore, South India. *Ind. J. Tub.*;48:77.
 21. Andrea Gobetti Vieira Coelho, Liliana Aparecida Zamarioli, Maria Alice Telles, Lucilaine Ferrazoli, and Eliseu Alves Waldman. A study of multidrug-resistant tuberculosis in risk groups in the city of Santos, Sao Paulo, Brazil. *Mem Inst Oswaldo Cruz.* 2012 Sep; 107(6): 760–766.
 22. Surajit Lahiri, Abhijit Mukherjee, Supabitra Hazra, Pulak Jana, Sandip Roy, and Brojo Kishore Saha. First-line anti-tubercular drug resistance of mycobacterial strains from re-treatment cases that were smear-positive at 4th month onwards under the Revised National Tuberculosis Control Program. *Lung India.* 2015; 32(2): 127–131.
 23. Vega, P., Sweetland, A., Acha, J., Castillo, H., Guerra, D., Fawzi, Shin, S. Psychiatric issues in the management of patients with multidrug-resistant tuberculosis (Review). *International Journal of Tuberculosis and Lung Disease* (June 2004); 8(6):749-759.
 24. Baral ,SC, Karki ,DK, Newell ,JN (2007). Causes of stigma and discrimination associated with tuberculosis in Nepal: a qualitative study (Nepal). *BMC public health* 2007, Aug; 16(7): 211.
 25. Fazlul Karim, A. M. R. Chowdhury, Akramul Islam and Mitchell G. Weiss (2007). Stigma, Gender, and their Impact on Patients with Tuberculosis in Rural Bangladesh. *Anthropology & Medicine*;14(2):139–151.
 26. Anita S. Mathew and Amol M. Takalkar (2007). _‘Living with Tuberculosis: The Myths and the Stigma from the Indian Perspective. *Clin Infect Dis.* Nov; 45(9):1247.
 27. Rameshchandra M Thakker, Gunjan P Upadhyay(2014) .Psychosocial reaction of diagnosing tuberculosis – An experience of tertiary care center of rural Gujarat. *International Journal of Medical Science and Public Health*; 3(12).
 28. Anne Lia Cremers, Myrthe Manon de Laat, Nathan Kapata, Rene Gerrets, Kerstin Klipstein-Grobusch, and Martin Peter Grobusch. Assessing the Consequences of Stigma for Tuberculosis Patients in Urban Zambia. *PLoS One.* 2015; 10(3): e0119861.
 29. Chang SH, Cataldo JK . A systematic review of global cultural variations in knowledge, attitudes and health responses to tuberculosis stigma. *Int J Tuberc Lung Dis.* 2014 Feb; 18(2):168-73, i-iv.