Insight into socioeconomic status of Multidrug resistant Tb patients treated in a tertiary care hospital of Khyber Pakhtunkhwa

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The authors declare that there is no conflict of interest.

Abstract

Background: The emergence of multidrug-resistant tuberculosis (MDR-TB) strains has resulted in an increase in tuberculosis, which seems to be a major threat to community well-being worldwide. Approximately 3.6 % of new tuberculosis patients, with MDR-TB reaching 20% in the past, were treated with TB treatment. Pakistan is ranked fifth among the 22 countries with the highest prevalence of MDR-TB. According to WHO estimates, new MDR-TB cases account for 4.2 percent of all cases, while recurrence/retreatment cases account for 16 percent of all cases. This ratio accounts for about 15,000 MDR-TB cases in Pakistan each year.

Methodology: From January 2018 to December 2020, 377 patients were enrolled in this retrospective study at the Department of Pulmonology at Lady Reading Hospital in Pakistan, which serves as the provincial reference point for the management of MDR-TB. To collect data, consecutive sampling was used.

Results: Of the 377 patients, 80 (21.2 %) are between the ages of 10 and 29, and indeed the sample data also include 212 (56.2%) males and 165 (43.8%) females. The married proportion was 217 (57.5%), 153 (40.6%) of patients had less than Rs. 25000 monthly wages, and 98 (25.9 %) of these MDR-TB patients were illiterate. In addition to the monthly wages, 247 (65.5%) of patients are financially dependent on someone other than their brother, father, or husband.

Conclusion: MDR-TB treatment and management face one of the most serious risks, owing to the persistence and potential consequences of infection and the confined social and economic intervention strategies. These studies have suggested significant improvement in both adherence to treatment and cure rates among MDR-TB patients.

Key words: MDR-TB; Socioeconomic Status; Peshawar; Pakistan

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Introduction

The emergences of multidrug-resistant TB strains (MDR-TB) have led to increase in tuberculosis which is a most important threat to community wellbeing globally. Worldwide different researcher estimated about 3.6% of new tuberculosis patients in which MDR-TB number has reached 20% in the past these patients were treated with treatment of TB. It is estimated that China, India and Russia are around 60% of the global burden of MDR-TB.[1] Treating patients with MDR and Extensively drug resistance tuberculosis (XDR-TB) is more difficult, toxic, costly and less expensive than other types of tuberculosis. MDR TB treatment is complex and challenging and successful treatment of MDR-TB is less sensitive compare to the susceptible tuberculosis treatment. WHO team, accompanied by great care in hospital management, especially tuberculosis control program in the community is recommended.[2]

Pakistan ranks fifth among the 22 countries with the highest MDR-TB burden. Among the new MDR-TB cases are 4.2%, and in recurrence / retreatment cases are 16%, based on this ratio WHO estimates, account for about 15,000 MDR-TB cases in Pakistan annually.[3]

Patients with MDR-TB also require longer periods of more expensive treatment and are more likely to die than those with tuberculosis. Furthermore, MDR-TB treatment can take up to two years, leads to social isolation, job loss, and long-term socioeconomic and psychological consequences.[4-5] Despite a lack of data, data show that patients with MDR-TB inflict 5-20 times the cost of drug-susceptible TB patients during treatment, owing to travel expenses and a longer time to diagnosis and treatment, which includes more visits and procedures and inability to work.[6-7] Patients being unable to begin or continue treatment experience undesired consequences and comorbidity.[8] The consequences will higher and the health system expenditure will be increased, and is probable result in persistent transmission throughout the community.

Even though TB is a curable disease but the success rate in the treatment of MDR-TB worldwide in approximately 50%. This low rate is due to a variety of factors including demographic, bacteriological and clinical records, factors associated with delivery of health care and economic situation.[9]

The continuously growing proportion of MDR-TB and XDR-TB in Pakistan highlight the significance of drug-resistant TB treatment programs. The National Tuberculosis Control Program (NTP) of Pakistan began managing MDR-TB programs in 2009 at select tertiary care hospitals throughout the country. Prior to launching PMDT in Pakistan, some of these centers in Pakistan used to manage MDR TB resources from their own resources. Peshawar's Lady Reading Hospital (LRH) was one of those centers. MDR-TB treatment is challenging and complex, and treatment success is significantly lower than drug-susceptible TB.[10]

Methodology

From January 2018 to December 2020, 377 patients were enrolled in this retrospective study at the Department of Pulmonology at Lady Reading Hospital in Pakistan, which serves as the provincial reference point for the management of MDR-TB. To collect data, consecutive sampling was used.

Treatment regimens and protocol

To treat the disease, patients need to test the sputum for the drug culture and drug sensitivity (DST), respectively. Early detection of tuberculosis either by Rifampicin resistance through Gene Xpert, or by positive sputum smear and / or culture AFB was performed.

For study under review LRH consisted of high risk for MDR-TB patients enrolled from January 2018 to December 2020 after enrollment, their data was recorded on questionnaire in Excel sheet form for recording and follow-up. Each patient was assigned their own treatment supporter. Each patient was advised to come for monthly follow-up. Patients were only provided free medicine and free sputum microscopy, other facilities like social support, conveyance allowance, psychologist services, home visits according to guidelines were provided from NTP.

Additional information of patient data are recorded in the computerized database included age, sex, weight, chest radiograph findings at initiation of treatment, sputum smear results, sputum cultures, all medications and their dosages, and outcome. Outcomes were declared cure, treatment completed, treatment failure, loss to follow-up and death.

Results

Because of the duration of the disease as well as the complexity of the treatment, MDR-TB has a substantial economic impact on the patients. Socioeconomic constraints included the inadequacy of treatment accessibility at the patient's door, distance from the treatment site, cost of transportation, and hospital stay costs. The current study included 377 MDR-TB cases registered with PMDT services at Lady Reading Hospital in Peshawar. The sample consisted of 212 (56.2%) males and 165 (43.8%) females. According to the table, 80 (21.2 %) of the 377 patients were between the ages of 10 and 29. Only 107 (28.4 %) were over the age of 50, while 190 (50.4 %) were between the ages of 30 and 49. The marital status of the patients was 217 (57.5%) married, 158 (41.9%) single, and 2 (0.5%) widows. Of the total patients who had a relationship with a treatment supporter, 49 (12.9 %) had a father as a supporter, 39 (10.3 %) had a brother as a supporter, 42 (11.1%) had a husband as a supporter, and 247 (65.5%) had another family member as a supporter (i-e uncle, father in law, brother in law, nephew etc).

There was a significant difference in mean total patient income, with 71 (18.8%) monthly income of PKR 25000 and more, 69 patients (18.3%) with PKR 21000-25000. The number of children living with patient were that 1-3 number of children living with patients were 118 (31.3%), 4-5 number of children were 34 (9.1%). Among the 377 patients, 69 (18.3 %) also had family background of drug-sensitive TB, whereas 21 (5.5 %) also had strong family history of drug-resistant TB.

Discussion

This study shows that the socio-economic burden of MDR-TB when it comes to seeking concern is frequently high for affected patients and families.

Table 1. Demographic characteristics of study cases

S. No	Total no of patients = 377		Frequency	Percentage
1.	Gender	Male	212	56.2
		Female	165	43.8
2.	Age Distribution	10-29 years	80	21.2
		30-49 years	190	50.4
		50 years and above	107	28.4
3.	Marital Status	Married	217	57.5
		Single	158	41.9
		Widow	02	0.5
4.	Relationship of Patient with Treatment supporter	Brother	39	10.3
		Husband	42	11.1
		Father	49	12.9
		Others	247	65.5
5.	Number of children living with patient	1-3 children	118	31.3
		4-5 children	34	9.1
		6-9 children	17	4.5
6.	Family history of TB	Simple TB in family	69	18.3
		MDR-TB in family	21	5.6

Access to DR-TB care and ongoing treatment apparently comes with an elevated risk of economic devastation and poverty for many other demographic groups. The financial load varies greatly between those who are living in the same environment, and other environments. This could then be expected, even as load is ascertained by a variety of factors including socioeconomic status, clinical needs, the composition of the health system, patterns of TB services, distance basic healthcare coverage insurance, work capacity, the accessibility of any supportive social programme, and the usefulness of appropriate social systems that connect patients and family members. In reality, some people might not even work anymore because they do not feel well, either quit their jobs, or are not permitted to work. This might explain why some of the expenses before TB diagnosis are less than half of what a new systematic analysis estimates. [17]

This is especially crucial since careful treatments addressing these concerns are critical for the successful management of MDR patients, as well as paving the way for their management. Table 1 and Table 2 shows the distribution of cases according to their demographic socio-economic profile. In our study we observed that out of 377 patients, 212 (56.2%) were male and 165 (43.8%) were female. The similarity of male ratio in the previous studies that patients with MDR-TB in Cairo, Egypt, and Indonesia showed that 72.9% and 68.6% were male, respectively.[11-12]

In the present study that of 377 patients 80 (21.2%) were mean age 10-29 years. 190 (50.4%) were in the 30-49 age group and only 107 (28.4%) were over 50 years., Similarly, Hire et al. conducted a prospective research in Nagpur. It was discovered that 40 of the 110 patients were between the ages of 40 and 49, while two were between the ages of 70 and 79.[13] Another study by Nair et al in Chennai showed 70% of people were in the age group of 15-44 years, which is similar to our findings, and 70.1% of those in the age group of 15-44 years.[14]

Marital status of patients was about 217 (57.5%) were married, literacy rate was 279 (74%) of which 49 (12.9%) had primary education, 113 (29.9%) were matriculate, 71 (18.8%) had bachelor education and 46 (12.2%) had master level education.

There are numerous major drawbacks to this study. Interviews to gather data from community members who have not participated in a research phase at a PMDT centre, in particular, are unlikely to obtain data from them. These people may have been too weak to be diagnosed and treated. Those who have begun therapy may have failed or died during treatment for unknown causes, causing the influence on family income to be greater for these families. As a result, the supplement to the less socioeconomically vulnerable groups came before the study population.[15] Globally, 16% of MDR-TB patients died during their treatment

Table 2. Education level and Socio Economic status of study cases

S. No	Total no of patients = 377		Frequency	Percentage
1.	Housing system (total number of house 253)	Living in own house	88	34.78
		Living in rented house	165	65.2
		Had Kacha house	31	12.25
		Had Pakha House	222	87.7
		Had windows in room	143	56.5
		Had no windows in room	110	43.5
2.	Different occupation were	Student	56	14.8
		House wife	173	45.9
		Jobless	24	6.3
		Gate keeper	12	3.1
		Driver	29	7.6
		Labor	12	3.1
		Self-business	14	3.7
		Farmer	29	7.6
		Sales man	28	7.4
3.	Socio Economic Status	5000-10000	43	11.4
		11000-15000	12	3.1
		16000-20000	29	7.6
		21000-25000	69	18.3
		25000 or above	71	18.8
4.	Education level	Primary education	49	12.9
		Matriculate level	113	29.9
		Bachelor education	71	18.8
		Master education	46	12.2
		Illiterate	98	25.9

visit to a PMDT facility, while another 16% died throughout therapy.[16] Their relatives are deprived of the dead relative's earnings. A large yet undetermined number of patients die before receiving a proper diagnosis and treatment.

Discrimination has already been identified as a key problem among MDR-TB patients, affecting access to health care services in the patient's area. Stigma consequences include feeling or rejecting social isolation of family members, friends, neighbor's, and/or health care professionals. Uncertainty in patients' financial situations, resulting in psychological guilt among patients and relatives, According to a research conducted by health care practitioners, the major hurdles for MDR-TB patients were social, resulting in a stigma rather than medical misconduct. Unlike other illnesses, MDR-TB received little societal acceptability or support.[18] It's also been observed that people with MDR-TB leave their families willingly in order to avoid transmitting the illness to others. Divorce, postponement of future weddings, broken relationships, and loneliness within the family have all been labelled as stigmas.

Because of the length and complexity of therapy, MDR-TB has a substantial significant negative impact on the patients. Medical care in the context of social and economic restrictions, such as distance, transportation expenses, and hospital charges. According to one study, 23 percent of MDR-TB patients were lost owing to financial restrictions. (19) This study also found that 5/10 patients have never returned to work after a year of treatment, and caretakers had to discontinue working for many months at a time. Income have also been reduced as a result of the absence of job, and some money should be spent on treatment expenditures.

Conclusion

MDR-TB management and treatment provide the most important problems owing to the persistence and severity of infection, the lengthy treatment protocols and duration, and the various medicines that are primarily utilized in the regimen. It is important to conduct a small review of published studies on this serious problem by spending more than that in research focused on the socioeconomic condition of MDR-TB patients. We highlight that the modest socio - economic modifications used in these trials show that compliance to therapy and cure rates among MDR-TB patients have improved.

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