

## ORIGINAL ARTICLE

TREATMENT OUTCOME OF TUBERCULOSIS PATIENTS  
IN DISTRICT MANSEHRA IN 2014

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**Background:** Tuberculosis is a modern epidemic with more than 80% of tuberculosis cases located in 22 high burden countries including Pakistan. Currently tuberculosis cases are being managed under the DOTS strategy implemented and supervised by the National Tuberculosis Control Program, Pakistan. **Methods:** This study was a retrospective case-based study of all patients registered at the office of the district tuberculosis officer, district Mansehra and treated from January 1, 2014 to December 31 2014. **Results:** Of the 693 patients registered at the District Tuberculosis office Mansehra. Majority 401 (57%) were females. An overwhelming majority of patients 670 (96.7%) were diagnosed for the first time with tuberculosis. At the completion of treatment, 261 (37.7%) were declared cured, 401 (57.9%) were labelled as treatment completed while treatment failure was reported in only 1 (0.1%) patient. 10 (1.4%) were lost to follow up while 4 patients died while on treatment for tuberculosis. **Conclusion:** Continuous assessment of situation and monitoring for achievement of objectives set by the regional TB control program is necessary to control tuberculosis in Pakistan.

**Keywords:** Tuberculosis, Xpert MTB/RIF, ZN staining, Cure, DOTS

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## INTRODUCTION

Despite the recent advances in anti-tuberculosis chemotherapy, tuberculosis is still the leading cause of death and suffering across the globe.<sup>1</sup> Four out of five patients diagnosed with tuberculosis live in the developing countries.<sup>2</sup> These developing countries also contribute to mortality from tuberculosis and their share in the mortality due to tuberculosis can be as high as 95%.<sup>3</sup> One of the reasons for this increased mortality is inadequate detection of cases.<sup>4</sup> An estimated 3 million new cases of tuberculosis are never notified to the authorities each year and these are the cases that contribute significantly to the tuberculosis pool by either transmitting disease to others because of lack of diagnosis or because of improper treatment in the private sector leading ultimately to development of drug resistance as well as increased mortality from tuberculosis.<sup>5,6</sup>

Pakistan is one of the 22 countries which harbour the majority of the tuberculosis cases. The overall case detection rate for tuberculosis in Pakistan is 65% with the estimates of prevalence and incidence of 376 and 231 per 100,000 population respectively.<sup>7</sup> Pakistan is one of the top three countries in terms of 'missing' tuberculosis cases. Missing cases are those tuberculosis cases who have not been notified to the authorities.<sup>8</sup>

The surveillance of tuberculosis has improved significantly since the introduction of DOTS or Directly Observed Therapy Short course in Pakistan since 1990.<sup>9</sup> The national TB control program aims to reach the targets set by the World Health Organization for

detection and treatment of tuberculosis.<sup>9</sup> While efforts are underway to curb the menace of tuberculosis in Pakistan, much needs to be done before these targets are achieved.

This study is a retrospective case-based study of all patients registered at the Office of the District Tuberculosis Officer, Mansehra, Pakistan, and treated from in 2014.

## MATERIAL AND METHODS

The data for this retrospective study were extracted from the records of all patients registered at the District Tuberculosis Officer from 1<sup>st</sup> January 2014 to 31<sup>st</sup> December 2014. The data comprised of all patients from district Mansehra who had been diagnosed with tuberculosis in the year 2014. The data were entered into and analysed using SPSS-22 for descriptive statistics, and different groups were compared using cross tabulation.

## RESULTS

A total of 693 patients were registered at the office of District TB Officer, Mansehra. Majority (401, 57.9%) of these patients were females, and 292 (42.1%) were males. Five hundred and twenty-seven (76.05%) patients belonged to the rural areas and 166 (23.95%) belonged to urban areas. Age distribution of the patients is given in Table-1.

An overwhelming majority (670, 96.7%) of patients were diagnosed as category 1 tuberculosis. Most of the patients (483, 69.7%) had been diagnosed with pulmonary tuberculosis. Extra-pulmonary

tuberculosis patients were 210 (30.3%). Twenty-six (3.8%) were re-treated cases. Thirty-one (4.5%) patients were categorised as 'others' while 636 (91.8%) patients had been diagnosed with tuberculosis for the first time. Sputum smear was found to be positive in 297 (42.9%) patients.

The cure rate was 37.7% (n=261) for the year 2014. At the end of the year, 401 patients (57.9%) had been reported to have completed their treatment. Treatment failure was reported in only one patient (0.1%) while 16 (2.3%) patients had been transferred out of the district. Four (0.6%) patients died while 10 (1.4%) patients were lost to follow-up (Table-2).

**Table-1: Age-related statistics of patients**

Age (Years)	Male		Female		Total	
	No	%	No	%	No	%
≤14	84	28.8	81	20.2	165	23.8
15-44	147	50.3	233	58.1	380	54.8
>44	61	20.9	87	21.7	148	21.4
Total	292	100	401	100	693	100

**Table-2: Treatment outcome for the study cohort**

Outcome	Male		Female		Total	
	No	%	No	%	No	%
Cured	105	36.0	156	38.9	261	37.7
Treatment completed	176	60.3	225	56.1	401	57.9
Treatment Failure	—	—	1	0.2	1	0.1
Transferred Out	7	2.4	9	2.2	16	2.3
Death	2	0.7	2	0.5	4	0.6
Default	2	0.7	8	2.0	10	1.4
Total	292	100	401	100	693	100

## DISCUSSION

As a result of guidelines developed by the World Health Organization (WHO), data from close to 200 regions and countries of the world is collected and reported on standardised forms prescribed by the WHO each year.<sup>10</sup> This data collection and reporting system for tuberculosis is among the earliest and well-established systems for disease reporting.<sup>10</sup> A disease reporting system allows for continuous monitoring of disease and analysis of local as well as international trends related to a disease in addition to a critical appraisal of the efforts aimed at control of a particular disease. In Pakistan, National Tuberculosis Control Program supervises the efforts aimed at tuberculosis control and its surveillance. Despite the continuous efforts to control the tuberculosis epidemic, it has been reported that an estimated 3 million new cases of tuberculosis do not get reported to the respective tuberculosis control programs worldwide.<sup>11</sup>

The tuberculosis control programs report the tuberculosis data on quarterly as well as on annual basis and this data can be used to track the progress of efforts aimed at tuberculosis control. We studied the data collected at the Office of District Tuberculosis Officer (DTO) in District Mansehra in the year 2014.

The data for District Mansehra for the year

2013 has been reported earlier.<sup>12</sup> There was a slight increase in the number of female patients diagnosed with tuberculosis in year 2014. The increased prevalence of tuberculosis in females has been noted by many researchers from the region.<sup>12-15</sup> A recent report by Qadeer *et al* suggests that tuberculosis is under-detected in men and in the elderly, and the tuberculosis notification rates for these groups are also below-par.<sup>16</sup>

The number of patients reported cured in District Mansehra at the end of 2014 was 261 (37.7%), slightly less than the number of patients reported cured in 2013 (236, 37.8%).<sup>12</sup> When compared with the data from 2013, significantly higher number (57.9%) of patients were labelled 'treatment completed' in 2014. The significantly higher number of cases declared 'treatment completed' can be attributed to factors such as variable sensitivity of sputum smear in diagnosis of tuberculosis<sup>17</sup>, extrapulmonary tuberculosis and lack of sputum production etc. The Xpert MTB/RIF assay has been suggested as a good initial investigation for the diagnosis of pulmonary tuberculosis because of poor sensitivity of conventional ZN staining/microscopy<sup>18</sup>, its implementation as a first line test is not possible in resource-limited settings at the moment.

## CONCLUSION

The effective control of tuberculosis requires continuous assessment of situation and monitoring for achievement of objectives set by the regional TB control programs. This is, perhaps the only method to curb this epidemic and reduce the additional risk of development of drug resistant tuberculosis in future.

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