

Full Length Research Article

A Demographic Study of Sputum Smear Positive Cases of Tuberculosis in Raigarh District

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This is a unit-wise study of tuberculosis in which case finding and new smear positive conversion rate is undertaken in patients registered under RNTCP on a quarter period basis during 2014 and first quarter period of 2015. The analysis revealed that the number of new smear positives and new smear negatives are increasing in successive quarterly periods indicating improved efficiency of the tuberculosis units. Other parameters also indicate the positive approach of all tuberculosis units.

Key words: New Smear Positive, New Smear Negative, New Extra Pulmonary, Relapse.

INTRODUCTION

Tuberculosis, a recognized public health problem not only in India but globally WHO/HTM/TB/2008.393). Around 1.9 million new cases annually in India share a highest TB burden in the world and its accounting for about 1/5th of total new TB cases in the world and 2/3rd of all the new cases in Southeast Asia (WHO/HTM/TB/2008.393; World Health Organization, 2008). To access the burden of TB in a particular region, prevalence study is an operative tool and play a vital role in collecting the epidemiological information on TB. However, information on TB burden in the Chattisgarh state particularly in Raigarh District are limited and a very few literature available on TB burden in nearby area (Chakma et al., 1996; Datta et al., 2001; Murhekar et al., 2004; Mayurnath et al., 1984; Narang et al., 1999). A bacteriologically confirmed TB case is one from whom a biological specimen is positive by smear microscopy, culture or WRD (such as Xpert MTB/RIF). All such cases should be notified, regardless of whether TB treatment has started. The diagnosis of pulmonary tuberculosis under RNTCP is primarily based on sputum examination, in accordance with the guidelines of WHO and IUALTD.

Based on sputum results and history of previous treatment with anti-tuberculous drugs, patients are categorized into the following three categories and are treated by DOTS:

- **Category I-** Newly diagnosed, sputum smear positive cases, seriously ill sputum smear negative or extra-pulmonary cases.

- **Category II-** Sputum smear positive cases, failure, relapse or 'retreatment after default' cases.
- **Category III-** Sputum smears negative, pulmonary or extra pulmonary cases (not seriously ill).

Strict quality control is maintained over smear microscopy by a specially trained laboratory technician posted at each microscopy cum DOTS sub-centre (Tuberculosis Unit) under the supervisory control of the Senior Tuberculosis Laboratory Supervisor (STLS) and District TB Centre. The results of the sputum examination (along with the slides) are reported in a special laboratory form in order to be noted in the TB register kept at District TB Centre. The sputum smears are graded, according to the number of bacilli seen in the slide, as recommended by WHO. Therefore, the present study is to focus and assess the area-wise prevalence of a new smear positive conversion rate of tuberculosis as a predictor of treatment outcome.

MATERIALS AND METHODS

Various Tuberculosis Units were established in Raigarh district, as Microscopy-cum-DOTS centres to provide diagnostic and treatment facility under RNTCP. A Specially trained Laboratory Technician and a Health Visitor are posted at each unit. To ensure quality sputum microscopy, the Laboratory Technician's work is cross-checked by STLS. Three sputum specimens from each chest symptomatic are examined (spot, early morning and spot), over two consecutive days as per guidelines of RNTCP. Grading of the sputum smears is done according to the following table:

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All the newly diagnosed sputum positive patients registered under RNTCP as Category I were reviewed in detail. These patients had been given intensive phase of intermittent supervised chemotherapy (comprising Rifampicin, Isoniazid, Pyrazinamide and Ethambutol) for a period of two months. If, at the end of this period, they were still sputum positive by direct microscopy, the intensive period of treatment (with same drugs) was extended by one more month.

Those among them, who attained sputum conversion, were switched to a regimen comprising Rifampicin and Isoniazid for a further period of four months.

RESULTS

The total numbers of various categories of patients in the district as a whole and area-wise during 3rd and 4th quarter 2014 periods are given in Table 1.

	Result	Grading	No. of fields examined
More than 10 AFB per oil immersion field	Positive	3+	20
1-10 AFB per oil immersion field	Positive	2 +	50
10-99 AFB in 100 oil immersion fields	Positive	1+	100
1-9 AFB in 100 oil immersion fields	Scanty	Record actual number	200
No AFB in 100 oil immersion fields	Negative	0	100

Table 1. Case Finding Raw Data Listing for Raigarh District (Chattisgarh)

Tu Name	Qtr	Year	NSP	NSN	NEP	Relapse	Failure	TAD	Other	Total
Raigarh	3	2014	100	67	12	1	2	1	9	192
Sarangarh	3	2014	44	46	6	1	2	0	0	99
Gharghoda	3	2014	39	30	6	0	0	1	3	79
Dharamjaygarh	3	2014	20	32	1	0	0	3	3	59
Total (Raigarh Dist.)			203	175	25	2	4	5	15	429
Tu Name	Qtr	Year	NSP	NSN	NEP	Relapse	Failure	TAD	Other	Total
Raigarh	4	2014	109	116	9	2	0	3	6	245
Sarangarh	4	2014	85	58	4	0	1	0	2	150
Gharghoda	4	2014	50	37	1	4	0	1	7	100
Dharamjaygarh	4	2014	81	91	2	0	0	7	15	196
Total			325	302	16	6	1	11	30	691
Grand Total: (3 rd Quarter & 4 th quarter)			528	477	41	8	5	16	45	1,120

Table 2. Shows New smear positive conversion rate for the period of 2nd, 3rd and 4th quarters in 2014

TU Name	Qtr	Year	Total Registered	Negative at 2 months	Negative at 3 months	Conversion Rate
Raigarh District	2	2014	189	170	5	93%
Dharamjaygarh	2	2014	24	22	0	92%
Gharghoda	2	2014	38	31	3	89%
Raigarh Proper	2	2014	75	65	2	89%
Sarangarh	2	2014	52	52	0	100%

TU Name	Qtr	Year	Total Registered	Negative at 2 months	Negative at 3 months	Conversion Rate
Raigarh District	3	2014	203	176	8	91%
Dharamjaygarh	3	2014	20	20	0	100%
Gharghoda	3	2014	39	28	6	87%
Raigarh Proper	3	2014	100	89	2	91%
Sarangarh	3	2014	44	39	0	89%

TU Name	Qtr	Year	Total Registered	Negative at 2 months	Negative at 3 months	Conversion Rate
Raigarh District	4	2014	325	290	9	92%
Dharamjaygarh	4	2014	81	76	0	94%
Gharghoda	4	2014	50	41	4	90%
Raigarh Proper	4	2014	109	95	5	92%
Sarangarh	4	2014	85	78	0	92%

Table 3. Case Finding Raw Data Listing for Raigarh District (Chattisgarh) For 1st quarter 2015

Tu Name	Year	NSP	NSN	NEP	Relapse	Failure	TAD	Other	Total
Raigarh District	2015	326	337	17	11	4	4	37	736
Baramkela	2015	14	10	4	0	1	1	1	31
Dharamjaygarh	2015	38	27	0	0	0	1	11	77
Garghoda	2015	21	73	1	3	0	0	7	105
Kharsia	2015	27	36	0	0	0	0	3	66
Lailunga	2015	67	56	0	4	0	0	9	136
Raigarh	2015	86	81	9	3	3	2	5	189
Sarangarh	2015	73	54	3	1	0	0	1	132
Grand Total		326	337	17	11	4	4	37	736

Case Finding Raw Data Listing. Tu=Tuberculosis unit; Qtr=quarter; NSP= New smear positive; NSN= New smear negative, NEP= New extra pulmonary cases; TAD= Treatment after default 429 cases were registered during 3rd quarter of 2014. Out of them, 203 were new smear positive; 175 were new smear negative; 25 were new extra pulmonary; 2 were relapse cases; 4 were failed to respond to treatment and 5 come under treatment after default.

Maximum number of all kinds of cases come from raigarh proper, due to the proximity of services. 3 Out of 5 defaulters are from Dharamjaygarh. 691 cases were registered during 4th quarter of 2014. Out of them, 325 were new smear positive; 302 were new smear negative; 16 were new extra pulmonary cases; 6 relapses; 1 case of failure and 11 treatment after default cases.

Most of the cases of extra pulmonary tuberculosis (9 out of 16) were reported from raigarh proper. Relapse cases are more from Gharghoda (4 out of 6) whereas TAD (7 out of 11) are more from Dharamjaygarh. Table 2: Shows New smear positive conversion rate for the period of 2nd, 3rd and 4th quarters in 2014.

DISCUSSION

Sputum positive patients are capable of transmitting infection and those whose sputum is positive on direct microscopy are most likely to infect their contacts (8-14). This demographic study demonstrates that sarangarh and dharamjaygarh Tb. unit patients show cent percent smear conversion rate, which indicates good compliance on the part of the patient. But, the number of patients registered from dharamjaygarh are less in 3rd quarter of 2014. Whereas dharamjaygarh Tb. unit had shown tremendous improvement in registration during the 4th quarter i.e. 81 in 4th quarter against 20 in the 3rd. Finally, Baramkela, Kharsia and Lailunga Tb. units are covered under study in the year 2015 to improve the survey and government services.

Conclusion

India is the highest TB burden country in the world in terms of absolute number of incident cases that occur each year. It accounts for one-fourth of the estimated global incident TB cases in 2013. The present study has revealed that certain places like Gharghoda need more attention for treatment compliance on the part of the patient, as the smear conversion rate is less. It is also observed that remote place, Lailunga Tuberculosis Unit has reported more number of all kinds of cases, indicating improved quality of services.

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