PERFORMANCE OF REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME IN RAJASTHAN AND TAMIL NADU DURING 2ND QUARTER 2001 TO 1ST QUARTER 2002

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INTRODUCTION

India accounts for nearly one third of the global tuberculosis (TB) burden. Every day more than 20000 people are getting infected and out of these 5000 develop TB and more than 1000 people die of TB. More than 80% of the TB patients are in the economically productive age group of 15-54 years.

National Tuberculosis Institute (NTI) formulated National Tuberculosis Control Programme in 1962 on a 50:50 sharing basis between center and state. The objectives of the programme were to reduce the morbidity & mortality, to reduce disease transmission and to diagnose as many cases of TB as possible and to provide free treatment nearer to the TB patient's home. However, it could not make much of an impact on this disease. According to findings of programme review report -1992 (Government of India (GOI) & World Health Organisation (WHO), the GOI evolved the revised strategy in the forms of Directly Observed Treatment Short course (DOTS), with the objective of curing at least 85% of the smear positive patients and detecting at least 70% of them. DOTS, known as the Revised National Tuberculosis Control Programme (RNTCP) in India, is a comprehensive strategy for TB Control. DOTS strategy has five components. It includes sustained government commitment, effective laboratory based diagnosis, standard treatment given under direct observation, secured drug supply & systematic monitoring and evaluation.

This strategy was pilot tested in 1993 on a population of 2.35 million in 5 states (Delhi, Kerala, West Bengal, Maharashtra and Gujarat). This was expanded for assessing technical and operational feasibility of the programme to a population of 13.85 million during 1995. The scale of expansion was stepped up substantially since 1998. By the end of June 2002, 49% of population of the country has been covered under RNTCP. The states of Rajasthan, Kerala, Delhi, Himachal Pradesh, Tamilnadu, Manipur, Sikkim and Union Territory of Chandigarh have achieved 100% RNTCP population coverage by March 2002.

OBJECTIVE

This paper appraised the performance of two fully implemented RNTCP states, viz. Rajasthan and Tamil Nadu with all India performance of RNTCP in terms of case finding & treatment activities for the financial year 2001-2002 (i.e. 2nd Quarter 2001 - 1st Quarter 2002).

MATERIALS & METHODS

Quarterly report on case finding, smear conversion and cohort analysis of the treatment results originated from different districts. These reports were analyzed by Central TB Division, Directorate General of Health Services, Government of India, New Delhi. The consolidated report on performance of these districts published by Central TB division constitutes the material for this paper.

RNTCP has laid down certain expected level of performance in terms of the monitoring parameters. The following are the expectations in respect of some key indicators:

1. The ratio of smear positive to smear negative cases should be about 1:1
2. The proportion of initially sputum smear positive patients having laboratory evidence of sputum conversion to negative at the end of 3 month should be 90%.
3. New sputum smear positive case detection rate per lakh population is expected to be 40-85.
4. Total case detection rate per lakh population is expected to be 135.
5. The treatment cure rate among smear positive cases is expected to be at least 85%.

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In India estimated incidence rate used in programme planning is 85 new smear positive cases per lakh population of whom 60% (51 per lakh) will attend the government services. The expected breakup of total case detection rate of 135 per lakh population is as follows.8

New smear-positive: New smear-negative 50 : 50

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Smear-positive</th>
<th>Smear-negative</th>
<th>Extra-pulmonary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I</td>
<td>50</td>
<td>10 (seriously ill)</td>
<td>2 (seriously ill)</td>
<td>62</td>
</tr>
<tr>
<td>Category II</td>
<td>25</td>
<td>Nil</td>
<td>Nil</td>
<td>25</td>
</tr>
<tr>
<td>Category III</td>
<td>0</td>
<td>40</td>
<td>8</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>50</td>
<td>10</td>
<td>135</td>
</tr>
</tbody>
</table>

Quarter-wise performance of these parameters is compared with the expected norms in the states of Rajasthan, Tamil Nadu and for all India.

**BRIEF HISTORY OF THE SELECTED STATES**

The state Rajasthan is located in the northwestern part of the sub continent. The state has an area of 132,140 sq. miles (Fig 1). Rajasthan is relatively dry and infertile; this area includes some of the Thar Desert also known as the 'Great Indian Desert' with a population of 56,473,122. The sex ratio in the state is 920 females per 1000 males9. The state has 32 administrative districts. RNTCP in the state has been fully implemented in all the 32 districts since 2000.

Tamil Nadu state is situated in the extreme south of India peninsula with a population of 62,110,839 (Fig 1). The state has area of 130,058 sq. km. The sex ratio in the state is 950 females per 1000 males9. The state of Tamil Nadu is divided into 30 administrative districts. Tamil Nadu has 1000-km long coastal line.

RNTCP was implemented in phased manner in the state of Tamilnadu. Twenty districts were implemented RNTCP by the end of 2nd quarter 2001. Four districts were implemented during 3rd quarter 2001. During 4th quarter 2001 four more districts implemented the RNTCP. One district implemented the RNTCP during 1st quarter 2002. 99% of the population in Tamil Nadu is covered under RNTCP.
1. Annualized smear positive & total case detection rate

Annualized smear positive & total case detection rate give the trend in the TB case notification. If a programme is able to achieve the 85% cure rate, it will significantly reduce the chain of transmission of TB in the community. Hence incidence of new cases in the community will decline in the younger age group. If incidence is reduced, then the notification rate will also come down after few years of proper implementation of the programme.

Table 1: Number of smear positive and total cases treated

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Rajasthan</th>
<th>Tamil Nadu</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total cases</td>
<td>New Smear +ve cases</td>
<td>Population in lakhs</td>
</tr>
<tr>
<td>II, 2001</td>
<td>22942</td>
<td>9407</td>
<td>10928</td>
</tr>
<tr>
<td>III, 2001</td>
<td>23021</td>
<td>9060</td>
<td>11941</td>
</tr>
<tr>
<td>IV, 2001</td>
<td>20494</td>
<td>7919</td>
<td>14994</td>
</tr>
<tr>
<td>I, 2002</td>
<td>19810</td>
<td>7680</td>
<td>18697</td>
</tr>
<tr>
<td>Total</td>
<td>86267</td>
<td>34066</td>
<td>56560</td>
</tr>
</tbody>
</table>

Table 1 shows the detection of new smear positives and total cases during the period. It is observed that new smear positive case detection rate per lakh population is ranging from 54 - 67 which is satisfactory in Rajasthan, 38 - 45 is just below the satisfactory level in Tamil Nadu and 44 - 49 is satisfactory for all India (Fig 2a).
Total case detection rate per lakh population is ranging from 140-163 which is satisfactory in Rajasthan, 99-123 is below the satisfactory level in Tamil Nadu and 115-124 is below the satisfactory level for all India (Fig 2b).
2. **Ratio of smear positive to smear negative**

The most cost-effective method of detecting the infectious cases among pulmonary TB suspects in a high prevalent population is by sputum microscopy. Ratio of smear positive to smear negative is an important indicator to know the diagnostic practice by the programme manager.

![Fig 3: Ratio of smear positive to smear negative patients](image)

Figure 3 depict the ratio of smear positive to smear negative case detection during the period. It is observed that ratio ranging from 1.3 - 1.4 is just above the expected level in Rajasthan, 0.9 - 1.3 is in expected level in Tamil Nadu and 1.1 - 1.4 is just above the expected level for all India.

3. **Smear positive to smear negative conversion rate**

Smear conversion rate is not only an indicator of the effective treatment regimen but also effectiveness of the programme implementation. Sputum microscopy is much more informative than radiology in following the progress of treatment. In order to anticipate the result of treatment (which would otherwise be not available for another 12-15 months) it is essential to monitor the sputum conversion rates achieved at the end of 2 and / or 3 months. A high conversion rate is usually followed by high cure rate. This gives an indication about the efficacy of the treatment regimen and the degree of supervision during the intensive phase of the treatment.
Figure 4 depict the smear positive to smear negative conversion rate, for patients treated during 1st quarter 2001 to 4th quarter 2001. It is observed that rate is ranging from 88 - 91 % in Rajasthan, 82 - 88 % in Tamil Nadu and 87 - 89 % for all India.

4. Cure rate

Cohort analysis is the key management tool used to evaluate the effectiveness of the TB control programme delivery. Cure rate is most important indicator in the cohort analysis. The main goal of RNTCP is to achieve the 85% cure rate among new smear positive patients. By achieving a high cure rate, the rate of transmission of TB in the community will reduce.

A program, which achieves at least 85% cure rate in smear positive pulmonary TB patients, will have the following impact.

(i) TB prevalence and the rate of TB transmission both decreases.

(ii) TB incidence decrease in younger age group and gradually decrease in older age group.

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Rajasthan</th>
<th>Tamil Nadu</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>85</td>
<td>70</td>
<td>82</td>
</tr>
<tr>
<td>III</td>
<td>85</td>
<td>74</td>
<td>83</td>
</tr>
<tr>
<td>IV</td>
<td>85</td>
<td>79</td>
<td>83</td>
</tr>
<tr>
<td>I</td>
<td>84</td>
<td>80</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>76</td>
<td>83</td>
</tr>
</tbody>
</table>
Table 2 shows the cure rate of new smear positive patients treated during 2nd quarter 2000 to 1st quarter 2001. It is observed that rate ranging from 84 - 85 % is satisfactory in Rajasthan, 70 - 80 % which is below the expected level in Tamil Nadu and 82 - 83 % which is nearer to expected level for all India.

5. Conclusion

Overall the performance of RNTCP in Rajasthan and for all India is satisfactory with respect to the programme indicators. This implies that DOTS strategy is implemented effectively in this state as well as in the country. If Rajasthan would have been a separate country, it would be the second largest in the world, after Vietnam, to have reached the global targets for case detection and cure rate.

It was observed that overall performance of case detection rate and cure rate in Tamil Nadu state is below the expected level. This can be improved by giving proper training, supervision to health workers and correct timely follow-up examination of patients. Cure rate can be achieved by ensuring patient adherence to treatment by continuing education programme to patients and family and active follow up of the defaulter patients by health worker.

REFERENCES

9. Census of India 2001, Table 1: Population, decadal growth rate, sex ratio and density - States/Union territories and Districts.