A cohort analysis of performance of RNTCP in Karnataka

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Summary

Directly Observed Treatment Short Course (DOTS) is a systematic strategy with five key components viz. Political and administrative commitment, Good quality diagnosis, Good quality drugs, the right treatment given in the right way and Systematic monitoring and accountability. Comparing its achievement with the expectations assesses the efficiency of the programme, which is in turn obtained from the periodic reports.

The performance of Karnataka has been compared with all India performance of RNTCP during 2001-2006. The performance of the state is evaluated on the key parameters such as case finding, ratio of smear negative to smear positive detected cases, sputum conversion and treatment success. The case detection rate has been consistently stable for Karnataka whereas for All India, it has been consistently increasing. The ratio of smear negative to smear positive lies within the expected range of 0.4 to 1.2. Sputum conversion rate and treatment success rate of Karnataka were less than All India but range is as per the expected norms.

The overall performance in Karnataka was consistently lower than the All India performance.

Introduction

Tuberculosis has got high priority within the health sectors as it is a major public health problem. TB Kills more people in India than HIV, STD, Malaria, Leprosy and tropical diseases combined (1). Every year, 30,000 children are forced to leave school because their parents have tuberculosis, and 100,000 women lose their status as mother and wives because of the social stigma. The National TB Programme (NTP) started in 1962, could not achieve the desired epidemiological impact, since its performance in terms of case finding and treatment success were below expectation (2). In 1992, the Government of India, together with the World Health Organization (WHO) and Swedish International Development Agency (SIDA), reviewed the national programme and concluded that it suffered from managerial weakness, inadequate funding, over-reliance on x-ray, non-standard treatment regimens, low rates of treatment completion, and lack of systematic information on treatment outcomes. As a result, a Revised National Tuberculosis Control Programme (RNTCP) was designed adopting DOTS, a comprehensive strategy for TB control. To date, 180 Countries are implementing the DOTS strategy. India has tested and adapted DOTS in various parts of the country since 1993, with excellent results, and the RNTCP now covers more than 1 billion populations in over 616 districts in 29 states and 7 union territories (3). About 6.8 million cases of TB have been treated under DOTS since the inception of the national programme in 1993. As many as 1.4 million cases of TB were brought under the DOTS programme in 2006.

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In the present article, a cohort–wise analysis is attempted to assess the performance of RNTCP in Karnataka state, which was fully covered under RNTCP by September 2004. The performance is evaluated on the key parameters / indicators such as case detection rate, Smear conversion rate, and treatment success.

Geographically Karnataka is located in the southern part of India and having borders with the states of Maharashtra and Goa in the North, Kerala in the West, Andhra Pradesh in the East and Tamil Nadu in the South, Karnataka lies ensconced in between 11.5 degree North and 18.5-degree North latitudes and 74 degree East and 78.5-degree East longitudes. Karnataka is located on a tableland that lies where the Eastern Ghat hills meet the Western Ghat hills. The location of Karnataka is such that it covers a length of 760 kilometers from the north to the South and sprawls over a width of 420 kilometers from the east to the west. It has a sprawling sea coast of nearly 260 kilometres. Major parts of the State lie in the Deccan plateau, mostly in the rain-shadow areas.

According to the 2001 census of India, the total population of Karnataka is 52,850,562 of which 26,898,918 (50.89%) are male and 25,951,644 (49.11%) are female, or 1000 males for every 964 females. This represents a 17.25% increase compared to the population in 1991. The population density is 275.6 per km². About 34% of the population live in urban areas.

Methodology

A standardized set of performance indicators / parameters have been identified to monitor RNTCP. These indicators help the programme managers at various levels in assessing the performance of the programme for corrective action (5). The quarterly performance reports published by the Central TB Division from 2001 to 2006 have been used for the analysis of the performance of Karnataka. The quarterly reports on case finding, sputum conversion, treatment outcome, programme management and logistics are used as important tools to assess the performance of the programme. The methodology for collecting data and reporting are uniform and devised by the Central TB Division. The performance of Karnataka has been compared with all India performance of RNTCP.

Results

For the state of Karnataka, the ratio of the number of new smear negative to new smear positive cases varies in the range 0.6 to 0.9 whereas for All India the ratio was in the range 0.7 to 0.9 (Fig 1). The New Smear positive (NSP) case detection rate for Karnataka was around 62 % for majority of the quarter during 2001-2006, against the expected incidence of NSP cases being revised to 75 per lakh population, the state has to therefore improve its performance in terms of case detection. The NSP detection rate particularly during 2003 – 2006 is consistently lower than All India performance (Fig 2). The sputum conversion and treatment success rate has been consistently lower than the national average (fig 3 and 4). Treatment sucess varied between 77-84% during 2001-06 and has shown a declining trend during 2002-06. The case detection rate has been consistently stable between the range 60-70 % (both in Karnataka and All India). In Karnataka, it was in the range of 59-61 % during 2006.

Discussion

The RNTCP has set certain expected levels of performance against which the performance of RNTCP at districts and state levels is evaluated. There should ideally, be a one to one relationship between the number of new smear positive cases and new smear negative cases. The detection of smear –ve
cases also needs improvement for effective control of TB in the community. This ratio should however be never higher than 1:1.2. From Fig 1, it can be seen that for the state of Karnataka, the ratio lies within the range of 0.6 to 0.9 for all the quarters during 2001-2006.

Case detection rate indicates the extent to which patients with pulmonary smear positive tuberculosis are being treated by the public health system. The estimated incidence rate used in the programme planning is 75 NSP cases per lakh of population for Karnataka state and also for All India level, of whom at least 70% are expected to be detected in the Government health facilities. From Fig 2, it can be observed that case detection rate in Karnataka has been lower than the all India performance and needs improvement.

New smear positive cases and relapses should have at least 90% conversion from sputum positive to negative at the end of intensive phase of treatment. A high conversion rate is usually followed by high cure rate, except in special situations where there is high HIV incidence and instances of transfers are more. From Fig 3, it can be seen that for each cohort of NSPs detected in the different quarters in 2001-06, the smear conversion rate on an average is around 86 % which is nearer to the expected norms.

Outcome indicators such as cure, completion, default, failure, death and transfer rate are crucial for assessing the health of the programme. The cure/success rate achieved for new pulmonary smear-positive cases treated under DOTS is the most important indicator of effectiveness of chemotherapy in treating TB cases and hence success of the programme. Unsatisfactory achievement of treatment success of Karnataka state and its declining trends in particular are worrisome and need immediate corrective actions in implementation of DOT.

To improve the performance and break the transmission of TB, it is necessary for the State to address the issues of MDR-TB, TB-HIV coordination activities, intensifying the IEC activities, building and strengthening partnerships with all major health providers and conducting operations research on continuous basis to improve the quality and reach of the programme. The high quality of care and strict adherence to the RNTCP guidelines should be continued and maintained to improve the smear conversion and success rates under the programme.

References :


Fig 1 - Cohort Analysis - Karnataka & All India
Ratio of Smear -ve to Smear +ve
Fig. 2 - Cohort Analysis Karnataka & All India
Annualised NSP Detection rate 2001-2006

Fig 3 : Cohort Analysis - Karnataka & All India
3 Months Smear Conversion rate: 2001-06