

RNTCP in Sikkim: A success story

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Abstract

Revised National Tuberculosis Control Programme (RNTCP) in India has shown appreciable progress in achieving target cure rate and case detection rate. The objective of the study was to review the programme performance in a hill area with difficult geographical, physical and climatic conditions.

The data on sputum microscopy, registration of patients and treatment during NTP (year 1997-2000) and RNTCP (year 2002-2007) has been analyzed for the four districts of the state of Sikkim. The RNTCP performance has definitely been better than pre-RNTCP era. The cure / success rate of new smear positive patients in India (Sikkim in bracket) has been observed to be 86 % / 87 % (86 % / 87 %) for 2002, 85 % / 86 % (88 % / 89%) for 2003, 84 % / 86 % (88 % / 88%) for 2004, 83% / 86% (88% / 88%) for 2005, 84% / 86% (86% / 86%) for 2006, and 84% / 87% (85% / 85%) for the year 2007. The case detection rate has been shown to be 59% (111%) in the year 2002, 69 % (103 %) in 2003, 72 % (125 %) in 2004, 66 % (115 %) in 2005, 66% (116%) in 2006, 70% (112%) in 2007 and 72% (108%) in the year 2008, for India and Sikkim (in brackets).

A sincere, honest and dedicated effort in the programme implementation and management can ensure the attainment of targets of RNTCP and can change the epidemiological scenario of tuberculosis as evident from the programme performance of the hill state of Sikkim.

Introduction

Tuberculosis is still a major public health problem in India. The morbidity and mortality has remained high in spite of having a nationwide comprehensive TB control programme since 1962.

India is ranked as the highest burden country globally accounting for one fifth of the global incidence and about two third of the total cases in South East Asia. Each year 1.9 million new cases of tuberculosis occur in the country and 0.8 million of them are highly infectious new smear positive PTB cases.¹ Annual risk of tuberculous infection in India has been observed to be ranging from 1.0 to 1.9, average being 1.5%^{2,3}. Tuberculosis situation in most part of India continues to be grave with an average about 1100 – 1900 persons (in different zones) out of every 100,000 acquiring new tuberculosis infection each year and potentially at risk of breaking down into disease any time in future².

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National TB Programme (NTP) was evolved in the year 1961 and was subsequently launched in 1962^{4, 5}. The review of the programme after 3 decades of its functioning, in the year 1992 by Government of India together with WHO and SIDA baffled TB control programme authorities because the cure / treatment completion rate was less than half of the diagnosed cases and the case detection rate was less than one third of the expected. The main reasons for the non - performance of NTP were poor organizational set up, lack of funds and supervision, more reliance on X – Ray examination, interrupted supply and shortage of Anti-Tuberculosis drugs, weak and non-standard treatment regimens⁴⁻⁶.

Based on the findings and recommendation of the 1992 review Committee of NTP, Government of India revised its strategy and introduced RNTCP in Oct 1993. It was pilot tested in 1993 initially in the population of 2.35 million and later in 1995 in 13.85 million populations. Encouraged with the results of Pilot Projects, it was subsequently launched formally throughout the country in the year 1997. The target cure rate is 85 percent of all new sputum smear positive patients detected and case detection rate is at least 70 percent of all such cases after the target for cure rate has been achieved^{7,8}. All the states and Union Territories have been covered up by March 2006. The target cure rate / success rate and treatment completion rate for the year 2004 was 86 percent for the new smear positive patients, 87 percent for new smear negative PTB cases and 92 percent for new Extra PTB cases, which is more than three times than in NTP. The case detection in RNTCP was also more than twice than that of NTP⁹.

Sikkim, a small hilly north eastern state is encircled by Republic of China, Kingdom of Nepal and Bhutan and state of West Bengal and has a population of 6 lakhs. All the villages are not connected by all-weather or tar roads. The patients have to walk a long distance and may have to climb up the hilly areas to reach the health facilities such as District TB Centre (DTC), Designated Microscopy Centre (DMC) or Directly Observed Treatment (DOT) centre, for diagnosis and treatment of tuberculosis. The state is comprised of four districts, east, north, west, and south Sikkim with its capital at Gangtok.

Sikkim became the integral part of NTP in the year 1970. State followed NTP guidelines in the case detection and treatment of cases of tuberculosis. State TB cell (STC) was established in 1998 with State TB officer (STO) as state programme officer. There is no state TB demonstration and training centre and STO had the responsibility of Director STDC in carrying out training and other activities. STC started collecting the information from all over the state on case detection and treatment activities. The analysis done in 2001 showed the following startling figures (Table 1).

Table 1: Pre-RNTCP (NTP) Case detection and treatment activities

Year	Case Detection	Treatment Completion	Default Rate	Lost from Treatment
1997	2187	28 %	12 %	60 %
1998	2028	39 %	22 %	39 %
1999	2022	35 %	22 %	43 %
2000	1830	61 %	33 %	7 %

As there was no proper system of monitoring the treatment, reporting outcome at the end was incomplete and unreliable.

In sikkim, State TB Cell (Department of Health Care, Human Services & Family Welfare) started preparing for RNTCP in the Year 2000 by strengthening the infrastructure and man power deployment in all the districts of the state. It took about two years for planning and implementation of the programme and on 1st march 2002, RNTCP was launched in the state achieving full coverage of all the districts simultaneously in the same year, becoming first state in north east region to be fully covered by RNTCP.

Material and Methods

The study has been done in all the four districts of the state. The state has 4 districts, 5 TB units, 20 Designated Microscopy Centres, and 698 DOTS centres (Table 2).

Table 2: RNTCP Infrastructure in the state

Districts	4	East Sikkim	West Sikkim	South Sikkim	North Sikkim
DTC	4	Gangtok	Gyalsing	Namchi	Mangan
TU	5	2	1	1	1
DMC	20	8	5	5	2
NDMC	11	4	3	2	2
DOTS Centre	584	230	165	141	48
Population in (Lakhs)	6.0	2.79	1.32	1.44	0.45

The average population ratio is 1.2 lakhs per TU and 30,000 per MC. DOTS centre has been provided for an average 860 population, the reason being sparse population in hilly areas. Six lakh population is scattered in 7096 sq. kms area (85 people per sq. km).

Each TU has the posting of senior treatment supervisor (STS) and senior TB laboratory supervisor (STLS). One medical officer -TB Control (MO-TC) is responsible for TB control work of the TU. Microscopy centres function under the supervision of TU. Tuberculosis Unit thus plans, implements, coordinates, supervises and monitors the RNTCP activities in a defined area. The retrospective study was done between the year 1997 to 2000 and the previous data were reviewed and analyzed. The RNTCP activities were studied in the first week of every month for the previous months and were followed for the years- 2002 – 2008. The data obtained from district tuberculosis register for four years of NTP period (1997 – 2000) and seven years of RNTCP (2002 – 2008), from treatment cards, laboratory register, periodical reports (quarterly and annual from CTD, Ministry of Health & FW, GoI) were studied. Various programme

indicators as mentioned in operational guidelines for TB control have been compared for both the strategies.

Observations and Discussion

The last four years of NTP had shown low treatment completion rate which was 28%, 39%, 35% and 61% for the years 1997, 1998, 1999 and 2000 respectively. The default ranged from 12% to 33% in these years. The loss from treatment was also high and ranged from 60% in 1997, 39% in 1998, 48% in 1999 and 7% in the year 2000 (Table 1). After the start of RNTCP, there is significant increase in cure rate / success rate and case detection rate. The default, death and failure rates have been brought down as shown in Table 3. With the implementation of RNTCP, the target cure rate (85%) has improved. India showed high cure rate / success rate of over 80% as shown in table 3, figure 2. The cure / success rate among new smear positive cases is two and a half times than in NTP.

Sputum conversion of smear positive to the negative at the end of continuation phase is a reliable parameter which shows the performance of DOTS regimens under RNTCP. In Sikkim, during the initial 7 years of RNTCP, the conversion of sputum positive cases was 88 %, 90%, 90%, 88%, 87%, 90% and 90% in the years 2002 to 2008 respectively. The conversion was close to national conversion rate in these years (Table 3).

More reliance on sputum microscopy in RNTCP has resulted in increase in new smear positive case detection. The annual new smear positive case detection rate per lakh population in the state was 111, 103, 125, 115, 116, 112 and 108 in these years, which was considerably higher than the country's figures, which were 59, 69, 72, 66, 66, 70 and 72 respectively. The annual total case notification rate per lakh population during 2002 - 2008 was also observed to be fairly high i.e. 219, 245, 293, 261, 252, 262 in the state. It was also higher than the country's annual total case detection rate in these years (Table 3, Figure1). These figures show the excellent performance in the state of Sikkim.

Cat II regimen is advised to re-treatment cases (relapse, treatment failure, treatment after default and other cases)⁹. The cure rate is low as compared to cat I regimen (newly diagnosed smear positive and seriously ill smear negative PTB and EPTB cases) because of higher chances of harboring drug resistant bacilli. Table 4 shows cured / success rate for the country being 66 % / 70 %, 64.5 % / 70.5 %, 61.7 / 68.7%, 61.3%/68.6%, and 63% / 70.4% in the years 2003 to 2007. Sikkim also showed almost similar rates i.e. 66 % / 69 % for 2003, 64.0 % / 65.5 % for 2004, 72.1% / 72.1% for 2005, 63.1% / 64% for 2006 and 57.7% / 57.7% for the year 2007 (Table 4). Sikkim has shown low death rate and defaulter rate but higher failure rate than the national figure. The higher failure rate indicates probably drug resistance in the population, which has probably resulted from NTP's poor performance.

Thus, in the first seven years of implementation of RNTCP, the state of Sikkim has done extremely well with regards to cure rate, completion rate and case detection rate. The achievement was also highlighted in the North Eastern State regional review meeting of STO's. Director STC's and WHO consultants held in Gangtok on 17th April 2006. The efforts made in Sikkim were commended and other states were advised to follow these exemplary achievements. The main reasons for sustained and better performance are good infrastructure, trained and dedicated workers, effective management of drugs, equipments and logistics, regular training /

sensitization programmes and appreciation of RNTCP achievements made by the higher authorities.

A sincere, honest and dedicated efforts in the programme implementation and management can ensure the attainment of targets of RNTCP and can change the epidemiology of TB in India in near future.

Inference

RNTCP has placed main emphasis on sputum examination which is a reliable diagnostic tool to detect smear positive TB cases. DOTS strategy has been observed to be very effective in ensuring target cure rate. The high cure rate / success rate and considerably high case detection rate as observed in the initial seven years of the existence of RNTCP will have a favorable impact on the morbidity and mortality of tuberculosis in the state. If pursued with utmost seriousness and determination to sustain performance on case detection and cure rate, RNTCP will check the transmission of infection among the healthy individuals, prevent the development of MDR and will minimize the suffering and loss of productivity, thus contributing to prosperity of nation.

Abbreviations

DOTS-Directly Observed Treatment-Short Course, **NTP**-National Tuberculosis Control Programme., **STC**-State Tuberculosis Centre, **STO**- State TB Officer, **STC**- State TB Cell, **DTC**- District TB Centre, **TU**- Tuberculosis Unit, **DMC**- Designated Microscopy Centre, **STS**-Senior Treatment Supervisor, **STLS**- Senior TB Laboratory Supervisor, **NTI**- National Tuberculosis Institute, **PTB**- Pulmonary Tuberculosis, **WHO**-World Health Organization. **SIDA**- Swedish International Development Agency, **MDR**- Multi Drug Resistance, **EQA**- External Quality Assurance, **STC**- State Tuberculosis Centre

Table 3: Annual Performance of RNTCP Case detection, Smear conversion and Treatment outcome

Year/ Performance Indicators	Place	Population covered in Lakh	Total patients registered for treatment	Annualized total case detection rate per lakh	New smear positive patients registered for treatment	Annualized new smear positive case detection rate per lakh		3 Months conversion rate of new smear positive patients	Cure rate of new smear positive	Success rate of new smear positive patients
	2	3	4	5	6	7	8	9	10	11
		Nos.	Nos.	Nos.	Nos.	AR	%	%	%	%
<ul style="list-style-type: none"> •Case Finding 2002 •Smear Conversion Qtr 4, 2001 and Qtrs 1 – 3, 2002 •Treatment Outcome 2001 	India	5299	622873	128	245051	51	59	89	84	85
	Sikkim	5.4	993	219	445	95	111	88	-	-
<ul style="list-style-type: none"> •Case Finding 2003 •Smear Conversion Qtr 4, 2002 and Qtrs 1 – 3, 2003 •Treatment Outcome 2002 	India	7754	916472	132	358496	52	69	90	86	87
	Sikkim	5.7	1403	245	443	77	103	90	86	87
<ul style="list-style-type: none"> •Case Finding 2004 •Smear Conversion Qtr 4, 2003 and Qtrs 1 – 3, 2004 •Treatment Outcome 2003 	India	9472	1187353	138	465331	54	72	90	85	86
	Sikkim	6.0	1724	293	550	93	125	90	88	89

<ul style="list-style-type: none"> • Case Finding 2005 • Smear Conversion Qtr 4, 2004 and Qtrs 1 – 3, 2005 • Treatment Outcome 2004 	India	10800	1293083	128	506193	50	66	89	84	86
	Sikkim	6.0	1578	261	521	86	115	88	88	88
<ul style="list-style-type: none"> • Case finding 2006 • Smear Conversion Qtr 4, 2005 & Qtrs 1-3, 2006 • Treatment outcome - 2005 	India	11142	1397498	125	553660	50	66	89	83	86
	Sikkim	6	1458	252	505	87	116	87	88	88
<ul style="list-style-type: none"> • Case finding 2007 • Smear Conversion Qtr 4, 2006 & Qtrs 1-3, 2007 • Treatment outcome 2006 	India	11310	1475587	130	592635	52	70	89	84	86
	Sikkim	6	1538	262	493	84	112	90	86	86
<ul style="list-style-type: none"> • Case finding – 2008 • Smear Conversion Qtr 4, 2007 & qtr 1-3, 2008 • Treatment outcome 2007 	India	11477	1517333	276	616016	54	72	90	84	87
	Sikkim	6	1641	132	483	81	108	90	85	85

Table 4: Outcome of Smear Positive Re – Treatment cases

Year		Cured % age	Success % age	Died % age	Failure % age	Defaulted % Age	Transferred Out % age	No. Registered
1		2	3	4	5	6	7	8
2003	India	66	70	08	06	15	0.6	112304
	Sikkim	66	69	06	20	04	0.0	186
2004	India	64.5	70.5	7.3	5.6	15.7	0.7	146831
	Sikkim	64	65.5	6.2	21.5	5.7	1.1	177
2005	India	61.7	68.7	7.5	5.7	16.8	1.2	165283
	Sikkim	72.1	72.1	6.7	15.7	4.2	1.7	240
2006	India	61.3	68.6	7.7	5.6	16.5	1.7	185718
	Sikkim	63.1	64.0	7.0	19.6	6.5	2.8	214
2007	India	63.01	70.4	7.8	5.1	14.9	1.9	193397
	Sikkim	57.7	57.7	11.9	23.8	5.7	0.9	227

Figure 1: Annual case Finding –India Vs Sikkim

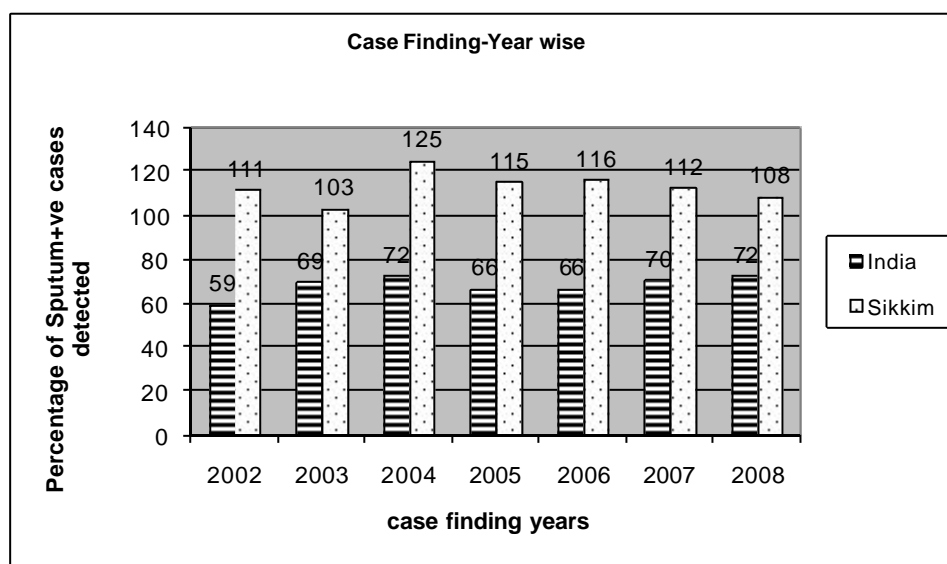
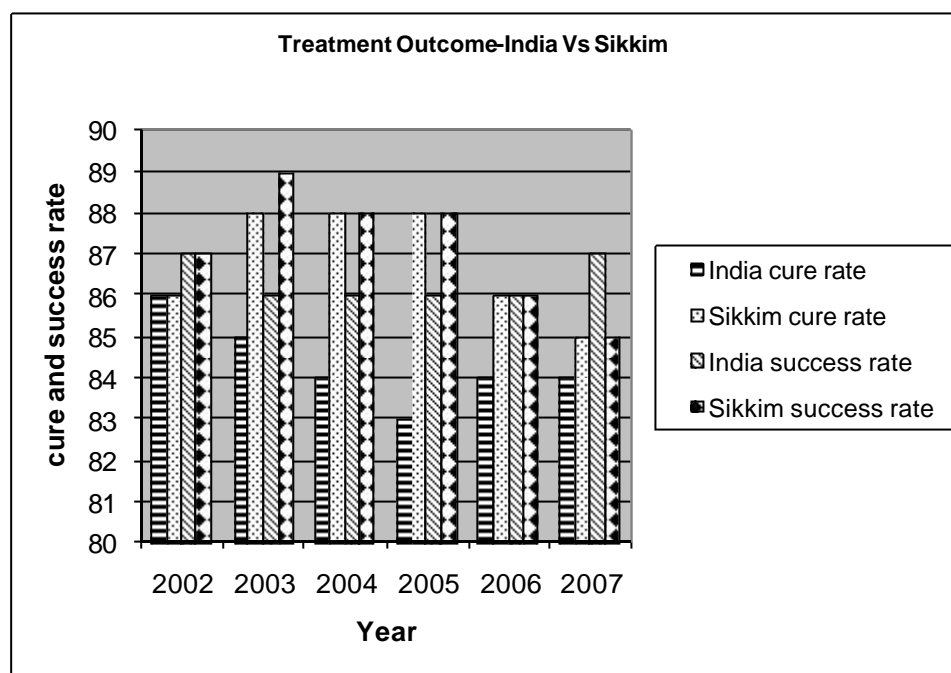


Figure 2: Treatment Outcome - India Vs Sikkim



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