

**Original Article**

# EVALUATION OF PERFORMANCE OF REVISED NATIONAL TB CONTROL PROGRAMME IN JAMNAGAR DISTRICT, GUJARAT

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**Financial Support:** None declared

**Conflict of interest:** None declared

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**How to cite this article:**

Pithadia PR, Lodhiya KK, Parmar DV, Yadav SB. Evaluation of Performance of Revised National TB Control Programme in Jamnagar District, Gujarat. Natl J Community Med 2012; 3(4):612-6.

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**Date of Submission:** 16-7-12

**Date of Acceptance:** 22-9-12

**Date of Publication:** 30-12-12

## ABSTRACT

**Background:** Knowledge about performance of DOTS services in a given area shall provide vital information to find out discrepancies in DOT services and take necessary steps to strengthen the services in that area. The objective of the study is to evaluate functioning of DOT centres (both DOT providers and TB patients) by various indicators like record keeping, compliance of patients, proportion of supervised doses etc.

**Methods:** It was a cross-sectional study. We identified and interviewed health personnel involved, reviewed the documents and records of all four Tuberculosis Units (TUs) of Jamnagar district. TB registers of all TUs of the district were reviewed and every 3<sup>rd</sup> TB patient registered from 1<sup>st</sup> January, 2009 to 30<sup>th</sup> June, 2009 (i.e. first two quarters of year 2009), was selected by systematic random sampling method.

**Results:** About half of TB patients (52.16%) were representing the productive age group, with a male female ratio being 2.1:1. Every fifth patient was irregular in the treatment during Intensive Phase. Treatment was delayed by more than a week after diagnosis in 10% patients. Entry of Continuation Phase in treatment card was satisfactory in 61.29% patients. Compliance of patients was found satisfactory only in 74.19% patients. 85.68% patients found location and timing of DOT centre convenient. In only 81.37% of total defaulted TB patients, retrieval actions were taken by a TB worker.

**Conclusion:** There is an urgent need to strengthen performance of the programme by training and motivating DOTS providers by effective supervision of DOTS, proper record-keeping and efficient supervision by district health officials.

**Keywords:** RNTCP, DOT strategy, DOT providers, Evaluation

## INTRODUCTION

India is the highest Tuberculosis (TB) burden country globally accounting for one fifth of global incidence of TB and tops the list of 22 high TB burden countries. TB still exists in India as a significant public health problem. In 2009, out of estimated global annual incidence of 9.4 million cases, 2 million were estimated to have occurred

in India.<sup>1</sup> Tuberculosis is responsible for 5% of all deaths worldwide and 9.6% of adult deaths in the 15-59 year old economic productive age groups.<sup>2</sup> It is also among three greatest causes of death among women aged 15 to 44 years.<sup>3</sup> To overcome this enormous burden of TB, the Directly Observed Treatment Short Course (DOT) strategy was introduced in India in 1997,

under Revised National Tuberculosis Control Programme (RNTCP).<sup>4</sup>

DOT strategy has been integrated successfully within existing general health services to achieve widespread coverage. DOTS can produce cure rates of up to 95%, even in the poorest countries. Trained health workers and community volunteers can administer treatment. Patients can remain within their families and return to work within few weeks.<sup>5</sup> this strategy has led to dramatic reduction in morbidity and mortality among TB patients, as well as reduction of multi-drug resistant tuberculosis.

The RNTCP has adopted this internationally recommended DOTS strategy. In this programme, there is a political and administrative commitment to ensure the provision of organized and comprehensive TB control services; uninterrupted supply of good quality anti-TB drugs; effective and patient-friendly treatment given under direct observation; and accountability through proper recording and reporting, and effective supervision.<sup>5</sup>

Through present study, an attempt was made to evaluate functioning of DOT centres and DOT providers as well as the perspectives of beneficiaries relating to services provided by DOT centres.

## METHODOLOGY

It was a cross-sectional study carried out during the period from 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2009, in Jamnagar district of Gujarat state covering both urban and rural areas. In this study, both the beneficiary (TB patient) and the DOTS provider (DP) were observed during service delivery and interviewed.

Through this study information relating to service components of DOTS providers, their knowledge, record keeping and communication skills were evaluated through oral questionnaire method using pre-tested semi-structured proforma.

### Evaluation of the program:

#### Study Area: District Jamnagar

The total Population of Jamnagar district is 21, 59,130, spread over 10 talukas, 16 towns and 756 villages. The total population of Jamnagar city is 5, 29, 308.<sup>6</sup> The district has four TB Control Units (TU), 20 Designated Microscopic Centres (DMC),

36 Primary and 11 Community Health Centres and 2 general hospitals, including one hospital attached with Medical College. The RNTCP was first started implementing in this district in the year 1998. There are four TUs in the District, namely Jamnagar, Dhrol, Lalpur and Jam-Khambhaliya.<sup>7</sup>

### Inclusion Criteria:

We included all TB patients registered between 1<sup>st</sup> January 2009 and 30<sup>th</sup> June 2009 (i.e., first two quarters of the year 2009) in TB Registers of all four TUs in Jamnagar district. The period for data collection was from 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2009. We included all TB patients on anti-TB treatment under DOTS, of any category, of any age, who received at least one week of IP (to know their experience with DOTS), and who did not default (i.e., who have not left AKT for 2 months or more), whereas we excluded patients who had not completed 1 week of IP, who had defaulted (i.e., left AKT for 2 months or more) at the time of study period and who were on non-DOTS treatment.

### Sampling methods

There were 516 patients in Jamnagar TU, 377 in Khambhaliya TU, 254 in Lalpur TU, and 209 in Dhrol TU, thus total 1356 patients registered in both quarters of year 2009 in all four TUs as per TB Registers of all TUs of the district. Of 1356 patients, one third of patients were selected by systematic random sampling method from both quarter in each TU to make it representative of the entire district, thus total 452 patients selected. Of this, 26 patients refused to participate in the study. Thus, finally, a sample of 426 patients was part of the study. If the selected patient didn't fulfil the eligibility criteria, the very next patient from the TB Register of the TU was selected. Each TU had been visited; the TB register of each TU was reviewed to carry out systemic random sampling to include every 3<sup>rd</sup> patient in each quarter in each TU.

The DOTS centres in each TU were first visited; the purpose of the study explained and checked for compliance of patients in Intensive Phase (IP) and Continuation Phase (CP) of treatment, proper record keeping and entry in treatment cards, status of sputum smear examination at the end of IP, convenience of DOTS centre etc. Then patients were interviewed at DOT centre or at his/her home, informed verbal consent taken, checked the compliance of the treatment and other details, using pre-

structured proforma. In case, if the patient was a minor, the guardian of the child was interviewed.

#### Data Analysis:

Data generated were entered in MS-Excel spreadsheet and analyzed in Epi info version 3.5.1.

## RESULTS AND DISCUSSION

In this study, about half of the patients (52.16%) were found between 21 and 40 years, i.e., representing the productive age groups. i.e. About 5.39% patients belonged to the extreme age groups. i.e. less than 10 years and more than

60 years each. About 68.08% patients were males. Majority of patients were in category-I (65.96%). About 27.7% TB patients had past history of TB and treated for the same, so they were classified as category-II patients, while 6.34% patients were being treated as category-III. About 10.09% of patients had positive family history at present or in the past. In this study, majority of patients were suffering from Pulmonary TB (80.52%), a small proportion of patients (18.80%) had extra-pulmonary TB, whereas 0.7% of patients had both pulmonary and extra-pulmonary TB disease. At the time of interview, 248 (58.22%) patients were taking treatment in continuation phase, while 178 (41.78%) patients were in intensive phase.

**Table 1: Summary of selected indicators of performance of DOTS services under RNTCP in Jamnagar district\* (Total sample size: n=426)**

Selected Indicators	Value (%)	95% C.I.
No. of patients compliant during IP	140 (78.65)	72.57-84.73
No. of patients compliant during CP.	184 (74.19)	68.74-79.64
Discrepancy between recorded doses on treatment card and empty blister packs during Intensive phase	31 (21.01)	15.03-26.99
Patients having Gap of more than 7 days between diagnosis and initiation of treatment.	45 (10.56)	7.64-13.48
Patients having Gap of more than a month between registration & initiation of treatment	43 (10.09)	7.23-12.95
Inconsistency of sputum smear results found between laboratory registers, treatment cards and TB registers.	23 (5.40)	3.25-7.55
No. of patients having minimum 22 supervised IP doses	38 (10.50)	7.34-13.66
Weekly cross-checking of blister packs in CP found satisfactory	234 (94.35)	91.48-97.22
Entry of CP in treatment card at the DOTS Centre found satisfactory	152 (61.29)	55.23-67.35
Information about side effects given to the patients by TB worker	347 (81.46)	77.77-85.15
Home Visit by health worker paid for address verification.	330 (77.46)	73.49-81.42
Convenience of DOTS centers in terms of location and timing.	365 (85.68)	82.35-89.01
Retrieval action taken for defaulted TB patients.	83 (81.37)	81.29-81.45
End IP sputum smear examinations done	292 (89.02)	73.81-88.93

In this study, we found that 21.35% patients were taking drugs irregularly during intensive phase (IP). i.e., every fifth patient was irregular in treatment. This is serious concern and reflects adversely on functioning of DOTS centre. In a study by P.G. Gopi and others in 2007<sup>8</sup>, 23% patients were non-adherent during IP. In 21.01% patients, there were discrepancies found between recorded doses on treatment card at DOTS centres and empty blister packs of respective boxes during IP. This shows serious lapses on the part of DOTS functioning of the programme.

As per RNTCP guidelines, all TB patients should be put on treatment within 7 days after diagnosis. Similarly, there should not be a gap of

more than one month between registration and initiation of treatment. In this study, the gap of more than 7 days found between diagnosis and initiation of treatment in about 10.56% patients, whereas, 10.09% patients had a gap of more than one month between registration and initiation of treatment. This observation indicates that in every tenth patient, treatment was initiated with delay of more than a month, which harms the treatment outcome and also contributes to spread of the disease in the community.

As per the report of internal evaluation of RNTCP in Jamnagar district conducted in January 2008 by WHO<sup>9</sup>, there were only 3% patients whose treatment was started more than 7 days after diagnosis.

In this study, in about 5.4% patients, inconsistency of sputum smear results were found between laboratory register, treatment cards and TB register. In an internal evaluation of Junagadh and Porbandar districts done by WHO in collaboration with Government of Gujarat, during 2006, this type of inconsistency of sputum smear results were also observed between laboratory register, treatment cards and TB register.<sup>10</sup> The results indicates a casual attitude by some RNTCP workers in record keeping resulting in such discrepancies.

Only 81.46% patients had been informed about side effects of anti-tubercular drugs by health workers, which is very crucial as TB patients if not briefed properly may discontinue anti-TB treatment.

About 77.46% patients said that a health worker visited their homes either before or during treatment for address verification. So about a quarter of patients were not paid a home visit either before or during treatment, which indicates laxity on part of TB worker. Other studies also indicate lacunae in this aspect. As per internal evaluation report of Ahmedabad (rural) conducted on 23-25 September, 2003 by Government of Gujarat in collaboration with WHO, 78.1% new smear positive cases interviewed reported that a TB worker had visited their homes for address verification before starting treatment.<sup>11</sup> In an evaluation of RNTCP in Kangra district, Himachal Pradesh, numbers of supervisory visits conducted were 75%.<sup>12</sup>

The study showed that 85.68% TB patients found the DOTS centre convenient in terms of location and timing from where they were given treatment. On exploring treatment compliance of patients, it was found that compliance of patients during CP was satisfactory in only 74.19% patients, while it was unsatisfactory in 25.81% patients. Moreover, 89.5% of total eligible patients had minimum 22 doses supervised, while 10.5% patients didn't have 22 doses of IP supervised by DOT providers. This poor compliance and supervision of doses could be one of the most common reasons for increasing prevalence of Multidrug resistant TB (MDR-TB).

Of total irregular patients, retrieval actions were taken only in 81.37% patients and in as many as 18.63% patients, retrieval actions were not taken by TB worker. This observation suggests that there are gaps in treatment compliance by

patients and retrieval actions by TB workers in case of defaulters.

According to the internal evaluation report of Jamnagar district, conducted in 2005, all patients (100%) found the location and timing of DOTS centre convenient.<sup>13</sup> According to the internal evaluation report of Ahmedabad (rural), 97.0% & 85.3% of total new smear positive cases interviewed reported that the DOT Centre was convenient to them in terms of timing & location respectively.<sup>11</sup>

Out of 426 patients in the study, 328 patients (77%) were eligible for the end IP sputum examination. i.e. they have completed all IP doses in their respective category. It was noted that out of these 328 eligible patients, 292 patients (89.02%) had their sputum smear examined at the end of IP, while 10.98% of eligible patients didn't have their sputum status examined at the end of IP which was mandatory for all the patients. In the report of internal evaluation of RNTCP of Dahod district, 56.92% patients had their end IP sputum smear examined.<sup>14</sup>

It was found during the study that about 89.50% patients were not receiving supervised doses of intensive phase of treatment. In an evaluation of RNTCP in Kangra, Himachal Pradesh, proportion of cases receiving supervised doses were 96%.<sup>12</sup>

## CONCLUSION

In this study, various components of DOT functioning and perspective of TB patients were evaluated, and it was found that some of them were not satisfactory. The major components which need to be taken care of are drug compliance of patients during IP and CP and discrepancies and maintenance of record keeping. Similarly, home visits and briefing about side effects to the TB patient by TB workers were lacking in about one-fifth of patients. Supervisory functions and cross-checking of blister packs were found unsatisfactory in about 10% of patients, which needs further attention. Defaulter retrieval action was also lacking in 19% patients. So, it is concluded that all the aspects of DOT functioning were found satisfactory ranging from 75 to 90%, but there is definitely a scope of further strengthening DOT services.

## RECOMMENDATIONS

The performance of the programme should be improved by training and motivating DOTS providers and TB workers through periodical in-service sensitization and advocacy workshops to keep their motivation and sensitization high towards quality care. Also, patients should be counselled about the importance of directly observed treatment to improve compliance to the treatment.

## ACKNOWLEDGEMENT

Authors are thankful to the District TB Centre, Jamnagar and all the TB Control Units of Jamnagar district and DOTS Providers for helping in data collection and providing necessary records and information.

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