Effectiveness of Different Models of DOTS Providers under RNTCP in Ahmedabad City, Gujarat

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ABSTRACT

Background: The most effective DOTS provider will be the one who is accessible, acceptable to the patient, and accountable to the health system. Objectives: The objective was to assess the effectiveness of the different types of DOTS providers functioning under Revised National Tuberculosis Control Programme (RNTCP). Materials and Methods: A total of 200 patients, treated under RNTCP during September to December 2004, were selected for the study. Results: A total of 105 and 95 patients were under the supervision of tuberculosis health visitors (TBHVs) and non-TBHVs, respectively. During the intensive phase, around 95% of the patients took the medicine under the direct observation in both the groups. Supervision of the first dose of treatment in a week during the continuation phase was significantly better with the TBHV (94.74%) as compared to the non-TBHV (79.31%). However, there was no significant difference in the cure and the completed rate which was 76.19% with the TBHV and 86.13% with the non-TBHV. Conclusion: The available community workforce could be involved in supervising the intermittent short course chemotherapy.

Keywords: DOTS, effectiveness, provider and RNTCP

Introduction

Tuberculosis (TB) remains a major cause of morbidity and mortality in many countries and a significant public health problem worldwide. TB kills more adults in India than any other infectious disease. Controlling TB in India is a tremendous challenge and the burden is still staggering. The Revised National Tuberculosis Control Programme (RNTCP), based on the DOTS strategy, was implemented in the country since 1993. A DOTS observer watches and helps the patient to swallow the drug and ensures the treatment for the entire course. DOTS is the only reliable and proven strategy of ensuring adherence to the treatment that has proven effective in controlling of TB on a mass basis. The adoption of DOTS has given impressive results with higher treatment success being reported from developing and industrialized countries.

In Ahmedabad Corporation area, treatment for TB is supervised by tuberculosis health visitors (TBHVs) who are appointed on a contractual basis as DOTS providers and also by non-TBHVs such as Anganwadi workers, community volunteers, teachers, private practitioners, etc. It is accepted that the most effective DOTS provider will be the one who is accessible, acceptable to the patient, and accountable to the health system. Thus the present study was carried out to assess the effectiveness of different DOTS providers working under RNTCP.

Materials and Methods

Patients who were diagnosed and treated during the last quarter of year 2004 were selected for the study. There were seven TUs in Ahmedabad Corporation area. The number of beneficiaries selected from each TU was based on the number of new cases treated in a year (out of which 10% of the cases were selected) and sample size
Maximum effort was made to include only category I patients, however, in some of the centers new cases were not supervised by non-TBHVs, in such cases, categories II and III were also included in the study.

The study was carried out by the medical social worker (MSWs) with predesigned and pretested proforma. Investigator followed these selected patients till the completion of the treatment to assess the outcome and other variables such as treatment taken during intensive and continuation phase, regularity of the treatment, health education, sputum examination, collection of empty blister packs, defaulter action, etc. They visited each patient three times, one in the beginning of the treatment, second completing the 2 months, and third at the end of the full course of the treatment. Supervisors monitored the data collection and verified with the treatment card.

Definitions for cured, treatment completed, defaulter, died, and failure were used as per the RNTCP guideline.9

To calculate the cured rate only patients treated under categories I and II were included and patients treated under all the three categories were included to calculate the treatment success rate.

Epi Info 3.2 version was used for data analysis. Ethical clearance for the study was obtained from the institutional ethical committee and verbal consent taken from all the patients. Administrative approval was also obtained from the DTO of Ahmedabad Municipal Corporation.

Results

Out of a total of 200 patients, 57.0% were males and 43% were females. Both males and females showed similar age distribution with the mean age 33.9 ± 14.9 years and 33.85 ± 14.03 years, respectively. TBHV's supervised total 105 patients of which 61.83% were of category I and treatment of 95 patients was supervised by non-TBHVs. Different providers included under non-TBHVs were private practitioners, NGOs, cured TB patients, link workers, and Anganwadi workers [Table 1].

Around 95% of the patients who were under the supervision of TBHVs and non-TBHVs took the medicine under the direct observation of the provider. A total of 4 out of 10 patients who had taken treatment at home without direct observation were supervised by private practitioners. The average distance to a DOTS center was 0.82 km ± 1.07 and to a DOTS provider place in the case of a non-TBHV was 0.55 km ± 0.706. This difference was statistically significant (Z = 2.07, P < 0.05).

A total of 97% of the patients had been informed about the importance of the regularity of the treatment. This observation was slightly higher in TBHVs (98.09%) than non-TBHVs (95.98%) but the difference was statistically insignificant (Z = 0.88, P > 0.05).

More than 90% of the patients had completed the intensive phase (IP) therapy in both the groups. All the patients (35) who were supervised by a link worker or an Anganwadi worker had completed the intensive phase. No significant difference was observed in the outcome of the intensive phase between TBHVs and non-TBHVs (Z = 1.50, P > 0.05) [Table 2].

A total of 184 patients out of 200 patients had continued the treatment after the intensive phase. It was found that 2 patients died within first 2 months and 14 were defaulters. At the end of the continuation phase, total 182 patients were analyzed as 2 more patients died during the continuation phase (CP). Overall 159 (87.36%) were reported to have taken the first dose of treatment in a week under supervision. But compliance to this norm was significantly high (Z = 3.14, P < 0.001) in the case of TBHVs.

### Table 1: Category-wise patients supervised by different DOTS provider

| DOTS provider | Category I | | Category II | | Category III | | Total |
|---------------|------------|---|------------|---|------------|---|
|               | No.        | % | No.        | % | No.        | % | No.        | % |
| TBHV          | 81         | 61.83 | 7          | 31.8 | 17         | 36.17 | 105        | 52.5 |
| Non-TBHVs     | 50         | 38.17 | 15         | 22.72 | 30         | 63.83 | 95         | 47.5 |
| a. Cured TB pt.| 4          | 3.05 | –          | – | –          | – | 6          | 3.0 |
| b. NGO        | 17         | 12.97 | 1          | 5.55 | 2          | 4.26 | 18         | 9.0 |
| c. Private practitioner | 14 | 10.68 | 9          | 40.90 | 13         | 27.65 | 36         | 18.0 |
| d. Anganwadi and link worker | 15 | 11.11 | 5          | 22.12 | 15         | 31.9 | 35         | 17.5 |
| Total (TBHV and non-TBHVs) | 131 | 100 | 22 | 100 | 47 | 100 | 200 | 100 |

### Table 2: Provider versus result of intensive phase therapy

| DOTS provider | Completed intensive phase |
|---------------|---------------------------|
|               | Yes | No |
| TBHV (n = 104) | 90.38 | 9.64 |
| Non-TBHVs (n = 94) | 95.74 | 4.26 |
| a. Cured TB pt. (n = 6) | 83.33 | 16.66 |
| b. NGO (n = 18) | 94.44 | 5.56 |
| c. Private practitioner (n = 36) | 94.29 | 5.71 |
| d. Anganwadi and link worker (n = 35) | 100.00 | – |
| Total (TBHV and non-TBHVs) | 92.33 | 7.67 |
(94.74%) compared to non-TBHVs (79.31%). However, both the groups collected empty blister packets while collecting another week’s treatment in 95% of the patients.

Regarding the treatment outcomes with the different models of DOTS providers, there was a significant difference (risk ratio 1.53, CI 1.15-2.03) in the cured rate which was 71.74% (66/92) with TBHVs and 60% (39/65) with non-TBHVs. However, no significant difference was observed in the treatment success rate (risk ratio 0.87, CI 0.76–0.99) between TBHVs (80/105) and non-TBHVs (83/95). A 100% cure or completed rate was observed among patients supervised by link workers and Anganwadi workers. The overall defaulter rate was found to be 12%. No significant difference was observed in the defaulter rate between TBHVs (14.28%) and non-TBHVs (13.33%).

### Discussion

In DOTS, each and every dose of the drugs during the intensive phase should be taken in front of DOTS providers. Lack of supervision was found to be more in non-TBHVs as compared to TBHVs; however, there was no significant difference in the outcome of intensive phase therapy between TBHVs and non-TBHVs. Regular supervision is required to ensure that the patients actually take all the drugs even during continuation phase but compliance was significantly better in TBHVs than non-TBHVs.

Distance traveled to the provider did not affect the outcome though the average distance to the DOTS center was significantly more compared to the distance to the provider’s place in the case of non-TBHVs. A similar observation was made in a study by Sophia Vijay et al.

Proper health education is a critical component of tuberculosis control. All the patients should be made aware about the risks of irregular or incomplete treatments. In the present study, more than 95% of the patients were informed about the importance of regularity of the treatment in both the groups.

Though the overall supervision both during intensive and continuation phase was better with the TBHVs, there was no significant difference in the outcome of treatment in terms of completed rate and defaulter rate except for the cure rate. Among non-TBHVs, five out of nine defaulters were supervised by private practitioners. Lack of supervision has been observed among private practitioners both during IP and CP. Private practitioners of allopathy, ayurveda and other alternative systems are the people, more than 50% of the tuberculosis patients consult for advice and service initially. Being a scientific group with deep-rooted ideas, this group requires a different approach for adopting the DOTS strategy.

Though the compliance during intensive and continuation phase therapy was better in the case of patients supervised by TBHVs, however there was no significant difference in the defaulter rates among TBHVs and non-TBHVs.

The RNTCP is a public health program meant for the health of the community. It is universally accepted that no public health program can succeed without the total involvement and participation of the community. Available community workforce could be involved in supervising the intermittent short-course chemotherapy as there was no difference in the outcome between TBHVs and non-TBHVs. Providers other than TBHVs especially private practitioners need to be trained and motivated to monitor the treatment for better supervision.

### References

1. Implementing the WHO stop TB strategy: a handbook for national tuberculosis control programmes. Geneva: World health organization; 2008
2. Available from: http://www.tbcindia.org/rntcp.asp [last accessed on 2009 Jul 25]
3. Central TB Division, New Delhi: National Consensus Conference on Tuberculosis Control, Directorate General of Health services, Ministry of Health and family services, 1997.
4. Sophia V, Balasangameswara VH, Jagannatha PS, VN Saroja, Kumar P. Defaulters among tuberculosis patients treated under DOTS in Bangalore city: A search for solution. Ind. J. Tub., 2003;50:185-95.
5. Central TB Division, New Delhi: Managing the Revised National Tuberculosis Control Programme in your area-Administering treatment. Directorate General of Health services, Ministry of Health and family services, 2002.
6. Shanthilal B.T: Private sector inputs in RNTCP to maximize DOTS dividends. Ind. J. Tub.2002;49:77-82.