

REASONS FOR NON-COMPLIANCE AMONG PATIENTS TREATED UNDER REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME (RNTCP), TIRUVALLUR DISTRICT, SOUTH INDIA

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Summary

Objectives: To elicit reasons for treatment default from a cohort of TB patients under RNTCP and their DOT providers.

Methods: A total of 186 defaulters among the 938 patients registered during 3rd and 4th quarters of 1999 and 2001 in one Tuberculosis Unit (TU) of Tiruvallur district, Tamil Nadu and their DOT providers were included in the study. They were interviewed using a semi-structured interview schedule.

Results: Sixteen (9%) had completed treatment, 25 (13%) died after defaulting, and 4 (2%) could not be traced. Main reasons given by the remaining 141 patients and their DOT providers were: drug related problems (42%, 34%), migration (29%, 31%), relief from symptoms (20%, 16%), work related (15%, 10%), alcohol consumption (15%, 21%), treatment from other centers (13%, 4%), respectively. Risk factors for default were alcoholism ($P < 0.001$), category of treatment ($P < 0.001$), smear status ($P < 0.001$), type of disease ($P < 0.001$) and inconvenience for DOT ($P < 0.01$).

Conclusion: This study has identified group of patients vulnerable to default such as males, alcoholics, smear positive cases, and DOT being inconvenient. Intensifying motivation and counselling of this group of cases are likely to improve patient compliance and reduce default. [*Indian J Tuberc* 2007; 54:130-135]

Key words: Default, non-compliance, tuberculosis, DOTS

INTRODUCTION

The failure to take prescribed medication is a universal perplexing phenomenon. This fact must be taken into consideration when one endeavours to treat a patient or control diseases in a community. TB is a communicable disease requiring prolonged treatment, and poor adherence to a prescribed treatment increases the risk of morbidity, mortality and spread of disease in the community. The World Health Organization (WHO) declared tuberculosis (TB) a global public health emergency in 1993 and since then intensified its efforts to control the disease world wide¹. The therapeutic regimens given under direct observation as recommended by WHO have been shown to be highly effective for both preventing and treating TB² but poor adherence to anti-tuberculosis medication is a major barrier to its global control^{3,4,5}. Factors associated with patients for poor compliance reported in the pre-DOTS (Directly

Observed Treatment Short-course) era were relief from symptoms, adverse reactions to drugs, domestic and work-related problems⁶.

In India, the Revised National Tuberculosis Control Programme (RNTCP), using the globally recommended DOTS strategy, has been implemented in a phased manner since 1998 through the primary health care system. Tuberculosis Research Centre (TRC) has been monitoring the programme implemented by the Government of Tamil Nadu in one of the Tuberculosis Units (TU) in Tiruvallur district, south India from May 1999. At the end of the year, the default rate was 20%. This high rate of default prompted us to look into the reasons for default. Since this was initial implementation period, we repeated the study 2 years after implementation. This paper reports reasons for non-adherence to treatment among defaulters, elicited during home visits.

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METHODS

Study area and population

The study area, one TU in Tiruvallur district of Tamil Nadu, south India, consists of five panchayat blocks. There are 17 Peripheral Health Institutions (PHIs) including 12 diagnostic facilities, covering a population of 580,000. Nine hundred and thirty-eight patients registered during 3rd and 4th quarters of 1999 and 2001 (May-Dec 1999 and July-Dec 2001) formed the study population. All the defaulters were visited during the year 2000 for first cohort and 2002 for second cohort periods.

Data collection

We obtained the list of defaulters, socio-demographic and clinical characteristics such as smear status, type of case, type of disease, category and treatment outcome from TB Register. Treatment details such as drug regularity, number of doses taken by the patients and time of default were obtained from treatment cards. Information on patient's literacy, occupation, and personal habits like smoking and drinking were taken from patient's information form which was collected by trained social workers within 8-weeks from the start of treatment.

All the defaulters were visited by the medical social workers, who interviewed patients or their close contacts by using a semi-structured interview schedule. This interview schedule provided information on type of DOT provider, treatment centre, and time of default. Reasons for default were obtained from both patients and DOT providers. The interviews were conducted at the patient's residence in a relaxed and conducive atmosphere. The corresponding DOT providers were also interviewed either at the DOT centre or their residence to elicit the reasons for patients' treatment default.

Definition of default

*'A patient who interrupted treatment for more than 2 months consecutively, at any time during the treatment period'*⁷.

Statistical analysis

Data were scrutinized for completeness and consistency. Univariate analysis was performed using Epi-Info (version 6.04d Centers for Disease Control, Atlanta, GA, 2001). The distribution of potential risk factors was examined among patients who completed treatment compared to those who defaulted from treatment. A $P < 0.05$ was considered as statistically significant.

RESULTS

The default rate was 20% (82/407 and 104/531) among both cohorts. The other programme indicators like conversion and cure rate were low compared to the national average, being 79% and 71% respectively. Other indicators like failure 6%, death 3% identified in this area during the study period. Since there was no difference between the default rate and basic characteristics between the two cohort periods, we combined all the defaults. Of the 938 patients registered under all categories, 186 (20%) were identified as defaulters. Among them, 16 (9%) had completed the treatment but were wrongly classified as 'default', 25 (13%) died after defaulting, and 4 (2%) could not be traced due to incomplete address. We elicited the reasons for default from the remaining 141 patients and 134 corresponding DOT providers. Seven DOT providers were not available for interview.

Table-1 brings out the socio-demographic and clinical characteristics of the study population. Eighty-five (19%), 65 (38%) and 36 (11%) of the patients from CAT-I, CAT-II and CAT-III respectively were identified as defaulters. Fifty-three of 74 (72%) smear positive patients from CAT-I had defaulted during intensive phase of treatment (IP). Most of the defaults occurred between 18-24 doses of the treatment (at the end of the IP). Treatment card was not available for one patient (Data not shown).

In univariate analysis the significant risk factors for default (Table 1) were: male [167 of 705 (24%) vs 19 of 233 (8%); $P < 0.001$], alcoholism [75 of 274 (27%) vs 73 of 582 (12%); $P < 0.001$], pulmonary TB [179 of 865 (21%) vs 7 of 73 (10%);

P<0.05], CAT-II 65 of 169 (38%), [P<0.001], smear positive [132 of 540 (24%) vs 54 of 398 (14%); P<0.001] and in-convenience to take treatment under observation [24 of 79 (30%) vs 118 of 701 (17%); P<0.01].

Reasons for default (Table 2) given by the patients were: drug related problems like nausea, vomiting, giddiness 59 (42%), migration 41 (29%), relief from symptoms 28 (20%), work related problems 21 (15%), consumption of alcohol 21 (15%), treatment from other private or public health

facility 19 (13%), domestic problems 11 (8%), stigma 4 (2%), too ill to attend 6 (4%). Old age, other illnesses, inconvenient DOT and dissatisfaction with treatment centre and DOT provider were included as other reasons given by 22 (16%) patients. Majority of patients gave multiple reasons for default.

The DOT providers attributed the defaults to the drug related problems 46 (34%), migration 41 (31%), relief from symptoms 21 (16%), work related problems 14 (10%), alcohol consumption 28 (21%), treatment from other private or other public health

Table 1: Risk factors for default among tuberculosis patients registered under RNTCP, Tiruvallur district, south India

Factor	Total (938)	Defaulters (186)		P-Value
	No	No	(%)	
Sex				
Male	705	167	(24)	<0.001
Female	233	19	(8)	
Age				
<45 yrs	480	85	(18)	NS
≥45 yrs	458	101	(22)	
Alcoholism				
Yes	274	75	(27)	<0.001
No	582	73	(12)	
Education				
Literate	494	79	(16)	NS
Illiterate	335	62	(19)	
Occupation				
Employed	567	104	(18)	NS
Unemployed	262	37	(14)	
Category				
I	449	85	(19)	<0.001
II	169	65	(38)	
III	320	36	(11)	
Smear Status				
Negative	398	54	(14)	<0.001
Positive	540	132	(24)	
DOT convenient				
Yes	701	118	(17)	<0.01
No	79	24	(30)	
Type of disease				
Extra-pulmonary TB	73	7	(10)	<0.05
Pulmonary TB	865	179	(21)	

Of the 938 patients included in the study, few were not available when interviewed at their residences after the start of treatment to elicit information on sociological profile and DOT convenient.

Table 2: Reasons for default among tuberculosis patients registered under RNTCP, Tiruvallur district, south India

Reasons*	Patients (141)	DOT Providers (134)
	No (%)	No (%)
Drug-related	59 (42)	46 (34)
Migration	41 (29)	41 (31)
Symptoms free	28 (20)	21 (16)
Work-related	21 (15)	14 (10)
Alcohol	21 (15)	28 (21)
Taking treatment else where	19 (13)	6 (4)
Domestic Problems	11 (8)	11 (8)
Stigma related	4 (2)	1 (1)
Too ill	6 (4)	5 (4)
Other	22 (16)	13 (10)

*Multiple reasons

facility 6 (4%), domestic problems 11 (8%), stigma related 1 (1%) and too ill 5 (4%). Others reasons like indifferent behavior of patients, old age and other concurrent illnesses were mentioned for 13 (10%). The DOT providers also gave multiple reasons.

We contacted the family members of patients, who had died as a result of default and obtained the reasons for the same. However, the reasons given by them were similar to those given by the patients who were interviewed (Data not shown).

DISCUSSION

Our findings showed that during early years of implementation of the programme, it had a default rate of 20%. A recent study from Bangalore also reported 25% and 45% in default from CAT-I & CAT-II regimens under RNTCP⁸. An earlier study from our centre prior to the implementation of RNTCP in two districts in south India reported that 40% and 46% defaulted from the treatment⁶. The 19% default among CAT-I patients in the present study was more than twice the national average⁹. The high default

rate documented here was similar to that observed in the early years of programme implementation elsewhere in the world^{10,11}.

In a study from our centre prior to RNTCP, 15% of the defaulters could not be contacted on account of inadequate address⁶ compared to 2% in the present study, showing the improvement in recording and documenting addresses. However, in the present study we found a higher rate of migration (29% vs 7%) among defaulters. The migration was mainly on occupational grounds and patients returning to their native place. Patients should be informed about the availability of same treatment in all areas and encouraged to report if they are shifting the residence so that treatment can be transferred to that area.

The main risk factors for default observed were gender (male), alcoholism, the category of treatment, smear status, type of disease and convenience for DOT. A study from South Africa also had reported that treatment interruption was more in men. In addition, the age group of 25-34 years and being diagnosed

for HIV was significantly associated with default¹². This brings out the need to evolve gender specific motivation strategies to minimize default. Alcoholism, which is identified as a risk factor in our study, has been identified as an important predictor of non-compliance elsewhere in India and different parts of the world^{8,13,14}. Improving compliance among alcoholic patients continues to be a challenge. Health personnel should be sensitive to this issue and evolve suitable motivation strategies. Sustained efforts should be made to counsel and motivate this group with their family members to ensure family support throughout the treatment period. Possibilities of mobilizing Non-Governmental Organization's support in the community should be explored.

The reasons for default given by the patients and DOT providers were similar. However, more DOT providers attributed default to alcoholism (21% vs. 15%) as compared to patients. Drug related problems were mentioned more by patients (42% vs. 34%), 13% of defaulters mentioned that subsequent to default, they had taken treatment from other sources as compared to 6% reported by the DOT providers. The DOT providers were not aware that patients had received treatment from other health facilities probably due to sub-optimal defaulter retrieval action underscoring the importance of timely and appropriate default actions.

A study from Bihar and West Bengal reported that improvement in symptoms (40% and 56%), intolerance to drugs (20% and 9%) and other illnesses caused defaults in some patients¹⁵. A study from Malaysia also reported similar findings¹⁶. In the present study 20% of the patients defaulted because of relief from symptoms and 42% had drug related problems. Initial counselling by the health personnel explaining the treatment plan before starting of the treatment, periodic motivation of patients and prompt action to tackle any problem, will enhance compliance. Adequate health education and information about tuberculosis has been demonstrated to be most effective when given as one-to-one counselling¹⁷. Providing DOT as per patient's convenience through community DOT

providers with periodic monitoring, may reduce the treatment default. Periodic monitoring of the community DOT providers by the health staff is important to minimise default.

Limitations of the study

The time-lag between default and interview was around one year, which could have resulted in a recall bias. The reasons for default were not elicited from patients, who had migrated.

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