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Defaulters' Awareness and Reasons for Discontinuation of Tuberculosis Treatment under DOTS Strategy: A Cross-sectional Study in Karnataka, India

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Abstract
Background: Inadequate treatment adherence, default is a challenge for Revised National Tuberculosis Control Program (RNTCP). Our objectives were to assess the knowledge and etiological factors associated with defaulters-pulmonary Tuberculosis patients registered for retreatment under RNTCP. **Methods:** A **c**ross-sectional study was conducted among 96 retreatment pulmonary tuberculosis patients reporting to DOTS Centers at Mangalore Taluk of Dakshin Kannada District of Karnataka, India; from April 2013 to March 2015. **Results**: The mean age of the participants was 45.7+/- 12.9. Majority (79.2 %) were males. Main reason for defaulting was "got rid of symptoms and feeling better." Median time of treatment taken before default was 4 months. Median delay to commencement of retreatment was 15 months, associated with serious symptoms. **Conclusion:** Understanding the factors for default is a first step to take necessary measures accordingly at the entry point of new DOTS clients.

Keywords: Tuberculosis, Reasons for Defaulting**,** Knowledge, DOTS.

1. Introduction

Tuberculosis (TB) is a major public health concern worldwide. Tuberculosis, an infectious disease caused by Mycobacterium Tuberculosis is a serious global health problem and requires much attention to stop TB cases globally [1]. The Directly Observed Treatment Short-course (DOTS) strategy under Revised National Tuberculosis Program (RNTCP) recommended by WHO , ensures that infectious TB patients are diagnosed and treated effectively till cure, by ensuring availability of full course of drugs [2].

DOTS is a comprehensive strategy for Tuberculosis cure which includes Diagnosis, Improved Drug supply and Program monitoring. It is the only strategy which has proven effective in controlling TB on a mass basis and is today the international standard for TB control Programs [2]. DOTS is being successfully implemented in 182 countries worldwide, including India [3].

India as a Upper low- middle income nation has adopted and tested the DOTS strategy in various parts of the country since 1993 with excellent results, and by March 2006 nationwide DOTS coverage has been achieved [2].

Resistance to anti TB drugs can occur when these drugs are misused or mismanaged. Examples include when patients do not complete their full course of treatment; when health care providers prescribe the wrong treatment, wrong dose, or the length of time for taking the drugs; when the supply of drugs is not always available; or when the drugs are of poor quality [4].

Default is defined as patients not taking anti-TB drugs for two months or more, consecutively after starting treatment. Default rate was calculated as the total number of patients who defaulted in each group divided by the total number of patients initiated on treatment in that particular group and was expressed as a proportion [5]. The estimates of default rates in DOT programs range from 6% to 30% [6,7,8]. The default rate reported in Mangalore taluk of Dakshin Kannada district in Karnataka in the year 2013 and 2014 was 8.4% and 7.1% respectively [9]

It is important to find out the epidemiological factors associated with default - discontinuation of DOTS by patients voluntarily without doctor's consultation. In view of this a cross-sectional study was planned in Mangalore, with the objectives of to assess Knowledge variables related to DOTS regime and to study the reasons for default among defaulters approaching for retreatment at DOTS centers in Mangalore. This study can give insight to formulate intervention package with behavior change communication for need based domains.

Methodology

A cross sectional study was conducted on randomly selected and willingly participating 96 retreatment pulmonary tuberculosis patients (with a history of previous default) reporting to DOTS Centers at Mangalore Taluk, Dakshin Kannada District of Karnataka, India; between April 2013 to March 2015.(2 years) Prior approval of Institutional Ethic Committee was taken and participants' consent sheet was filled up after explaining the purpose and assuring confidentiality . Also special permission of District TB Officer was obtained towards conducting this study.

Data is collected by interviewing study participants, using pretested, pre-validated, structured questionnaire tool. Data was analyzed using percentages and proportions; Fisher's Exact test was applied, with the help of SPSS 18.

Results and discussion

Out of 96 patients who participated in the study 79.2% were male and mean (+/- SD) age of the participants was 45.7+/- 12.9. In a Brazil study on defaulters, 59.4% were males and the mean age of the study population was 37.20 (SD 17.56). [10] Among the Study participants majority of them were Hindu by religion 86 (89.6%). According to modified BG Prasad's Classification [11] majority of them (45.8%).belonged to Class 2 of socioeconomic classification. Socioeconomic status is one of the factors which have been found to be associated with higher default rates in many studies [6, 7, 12]. This was also true in our study (P= .04, Table 1). In this study 11.5% of the participants had a history of tuberculosis in their family.

Table 1: Distribution of knowledge variables and Socio-economic status

Knowledge Variables questions	Yes/No response	Socioeconomic Classification			Total N= 96	P value*
		Class 1	Class 2	Class 3	No. (%)	
Were told about total duration of treatment by the health professional at 1st registration	Yes	32	39	11	82 (85.4)	0.04
	No	3	5	6	14 (14.6)	
Did you think that no symptoms are present so you got cured	Yes	27	37	16	80 (83.3)	0.3
	No	8	7	1	16 (16.7)	
Were you aware that discontinuation of treatment is dangerous	Yes	15	19	5	39 (40.6)	0.6
	No	20	25	12	57(59.4))	
Are you taking DOTS from the same centre	Yes	32	41	16	89 (92.7)	1
	No	3	3	1	07 (7.3)	
Are you aware that your incomplete treatment is dangerous to your family members also	Yes	31	41	17	89 (92.7)	0.4
	No	4	3	0	07 (7.3)	
Did you have any side effects after taking drugs	Yes	10	7	6	23(24)	0.2
	No	25	37	11	73 (76)	

B G Prasad's classification on Socio-economic status * Fisher exact test

Majority (85.4%) of the participants were aware of total duration of treatment as informed by the health professional at the time of 1st registration. In spite of that 80.2% of the participants defaulted as they got rid of symptoms and started feeling better, hence under wrong impression that they cured and indeed 59.38 % participants were not aware that discontinuation of treatment is dangerous (Table 1). The patient might not see the need to continue with treatment when they are feeling better or well; as observed in many studies and non-compliance was associated with being free of symptoms [8, 13-19]

Patient compliance is the key factor in treatment success. Our study participants were all those who approached DOTS centers for retreatment with past history of defaulting the treatment. Median delay to commencement of retreatment was 15 months, associated with serious symptoms and Mean +/- SD was 19+/- 17.3 months; this may be due to the fact that there were large variations in the gap between time of default and starting of retreatment. As seen in the figure, there is a typical drop of initial symptoms at the time of default; but the worst situation is after a gap of certain period (between default and retreatment), their original symptoms further exaggerated to a serious level so much so that the blood in sputum was reported among 14.6% of defaulters who did not have that history earlier at the time of 1st registration as new patients. (ref figure 1)

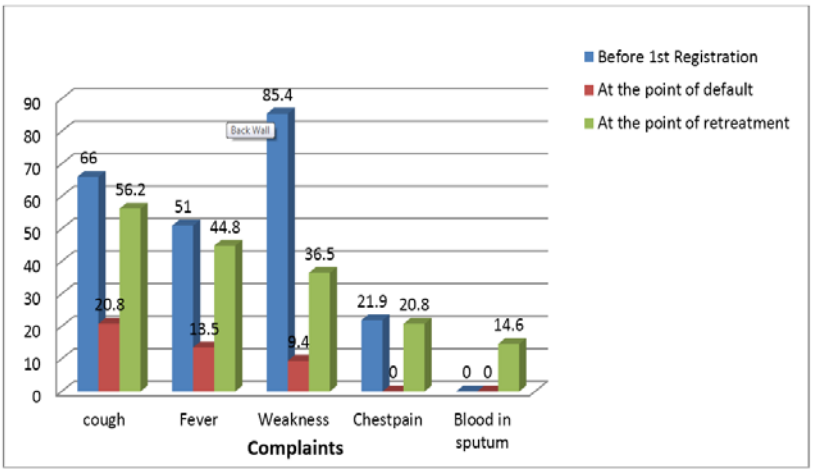

Figure 1: Diagram showing different symptoms before first registration, at the point of default and at the point of retreatment

Other reasons associated with default in this study were minor symptoms (45.8%), inconvenience (29.17%), Drug side effects (24%), afraid of being identified as TB patient(16.7%). (Table 2) Most of the time there were more than one reason which accounted for non-compliance to TB treatment as observed in this study and many other studies [8, 13-23]

Table 2: The Reasons for Defaulting among these patients (N=96)

Reason	Number(Percentage)
No symptoms and feeling better	77(80.2)
Minor symptoms	44(45.8)
No time to go to centre	3(3.1)
Drugs not available	1(1)
Side effects/ Adverse reactions	23(24)
Afraid of being identified as a TB patient	16(16.7)
Inconvenience due to long distance	8(8.3)
Inconvenience due to timing of centre	9(9.4)
Change of residence	7(7.3)
Unfriendly behavior of dots provider	3(3.1)

In this study, 24% of defaulters defaulted by 2 months of treatment,33.3% between 2 and 4 months of treatment and 42.7% after 4months.(Table 3).Chee et al in their Singapore study recorded that 30.2% of defaulters defaulted within 2months,27.9% between 2 and 4 months of treatment and 41.9% after 4months[24] In another similar Indian study by Uplekar et al, 12% of patients defaulted by 2 months,19% by 3 months,22% by 4 months,35% by 5 months and 41% by 6 months[25]. Mean time of default was 4 months in this study; the same being 6 weeks, , 66 days, 80 days ,85.4 days and 3.4 months in the studies conducted respectively by Jaiswal et al (2003),Santha et al (2002),Wares et al (2003), Lienhardt et al(1998) and Dodor(2004). [6, 12, 26-28].

Table no 3: Distribution of participants according to Time of default

Treatment taken (Months) Less than	Frequency	Percent
1	9	9.4
2	14	14.6
3	12	12.5
4	20	20.8
5	18	18.7
6	23	24
Total	96	100.0

There is an urgent need to improve patients' perception of treatment. Inadequate adherence to treatment is a potential cause for drug resistance. In many countries a significant proportion of patients stop treatment before completion, for various reasons. Promoting compliance through a patient centered approach is more effective than spending resources on defaulter tracing [29].

Conclusion:

Correct knowledge of patients regarding DOTS regime of anti-tuberculosis therapy is of great significance in completion of DOTS by all TB patients. Hence it is crucial to make them aware about the fact that feeling better with no symptom condition leading to not completing full DOTS course, is not true cure, but in fact dangerous as it can lead to further complications in terms of drug resistance; thus making it difficult to treat him/her later with usual drugs.3

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