



*Original Research Article*

## **A Study on Knowledge of Tuberculosis, DOTS and MDR-TB among Interns of Medical Colleges in Bangalore**

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### **ABSTRACT**

**Background:** India has the highest burden of tuberculosis in the world, accounting for approximately 1/5<sup>th</sup> of global incidence. Medical colleges play a vital role in training the future generations of medical practitioners who will manage TB patients.

**Objectives:** 1. To assess the knowledge of interns about diagnosis and management of TB, and their awareness of DOTS. 2. To know their knowledge of MDR-TB and XDR-TB. 3. To investigate the relationship between attending TB-clinic posting and knowledge of TB diagnosis and management under DOTS.

**Methods:** A total of 207 interns from three medical colleges in Bangalore were interviewed. The questions assessed for their knowledge about various modes of transmission, symptoms and management of tuberculosis under DOTS, and also assessed their awareness of MDR and XDR-TB. Data collected was analyzed using Epi-Info statistical package.

**Results:** About 52.65% interns reported of having attended TB/DOTS clinic posting. Only 18.84% interns could correctly mention all the modes of transmission of TB. Only 38.16% interns correctly stated cough for three weeks or more to be the cardinal symptom of pulmonary TB. Majority, 71.01% responded sputum AFB examination as the best tool for diagnosing pulmonary TB. 75.36% correctly mentioned the definition of MDR TB however only 1.45% interns had complete knowledge of XDR-TB.

**Interpretation and Conclusion:** A statistically significant association was observed between them attending TB clinic posting and their knowledge and management of TB under DOTS. It is concluded that DOTS clinic posting should be made compulsory.

**Key Words:** Interns, Tuberculosis, MDR-TB, XDR-TB, DOTS clinic posting.

## INTRODUCTION

Tuberculosis although both preventable and treatable, continues to be the world's leading cause of death from an infectious agent. India is the highest TB burden country in the world. [1] TB was declared as a global emergency in 1993 by WHO. To counter the challenges posed by TB, Revised National Tuberculosis Control Programme (RNTCP) based on Directly Observed Treatment Short course (DOTS) strategy was launched in 1997. Since 2007 India has achieved the target of 100% coverage, 70% case detection and 85% cure rates. [2] Despite the existence of NTP since 1962, no appreciable change in the epidemiological situation in the country has been observed. The spread of MDR-TB is threatening to further worsen the situation. [3] Essentially a man-made problem, MDR-TB arises as a result of inadequate and incomplete AKT treatment. Drug resistance surveys in India have found limited prevalence of MDR-TB among new cases, whereas a higher prevalence is found among previously treated patients. [4] WHO has estimated that in India, about 4.1% of all 2004 incident new and previously treated cases, had MDR TB. This is second in absolute terms to China. [5] Data from studies conducted by TRC Chennai and NTI Bangalore are indicative of a primary drug resistance level of 1.7 to 2.2% and 12 to 13% in retreatment cases. [6] The situation is exacerbated by emergence of XDR-TB. It is not yet possible to estimate the magnitude and distribution of XDR-TB from available data. [7] A private hospital in Mumbai has reported, 33(8%) out of 409 MDR-TB isolates to have XDR-TB. [8]

Although government has embarked on the journey to tackle MDR-TB problem, but the highest priority would still be to prevent MDR and XDR TB through

effective DOTS. [6] Medical colleges are one of the important portal for management of patients with TB. Out of 307 medical colleges as on 30<sup>th</sup> October 2010, 282 medical colleges have been involved in establishing DOTS centres in these colleges. [9] To widen access and improving quality of TB services as well as for giving hands on training to students, involvement of medical colleges is paramount. Knowledge of tuberculosis is assimilated in parts over all the years in the medical college. A TB clinic posting exposes the medical student to the practical aspects of RNTCP, giving them an insight in to the day to day working of a DOTS clinic. Medical colleges play a central role in training and shaping the attitudes of the future generations of medical practitioners.

However, there is a dearth of data regarding the level of knowledge about TB and DOTS among medical students and interns who are the budding doctors and can make an impact on TB control. Previous studies conducted in India have focussed on the knowledge of TB and its management among practicing doctors, both in private or public sector. In view of the above background, this study was conducted with objective of assessing knowledge of the interns in three medical colleges in Bangalore, about various aspects of diagnosis and management of TB, including guidelines under RNTCP, with emphasis on MDR and XDR-TB.

### Aim

- To study the knowledge of interns regarding the management of tuberculosis under DOTS.

### Objectives

- To assess the knowledge of interns about diagnosis and management of tuberculosis.

- To assess their knowledge of DOTS and various regimens under RNTCP.
- To know their awareness of MDR and XDR- TB
- To investigate the relationship between attending TB clinic posting and their knowledge of TB/DOTS/RNTCP.

## **MATERIALS & METHODS**

This present cross sectional study was carried out in three medical colleges in Bangalore. A pretested, semi-structured questionnaire, consisting of items on the diagnosis, and management of tuberculosis and treatment regimens under DOTS was administered to interns posted in different departments of Dr. B. R. Ambedkar Medical College, KIMS and M. S. Ramaiah Medical College respectively. All interns who had completed a minimum of 6 months of internship were included in the study. Interns were requested to fill the questionnaire in front of the author and were made to return it at the same time. Repeated visits were made on subsequent two weeks in various departments to include the interns who were either absent, post duty off or busy in some procedures during first visit. Coverage in each department was cross checked from the list of interns posted in various departments. A total of 207 interns were thus interviewed with coverage of more than 80% in all the three colleges. The questionnaire had multiple choice questions, and had single or multiple responses that were correct. The subjects had a choice of not answering any question they did not know. Data collected was analysed using Epi-Info statistical package and test of significance was applied wherever required.

## **RESULTS**

Out of the total 207 interns surveyed, 57.49% were females and 42.51% males with the mean age of 23.2 years. A total of 109, 52.65% interns reported being posted to TB/DOTS centre posting during their undergraduate curriculum.

A majority of interns, 98.7% could correctly mention droplet infection as the chief mode of transmission of pulmonary tuberculosis. However, only 18.84% interns had a complete knowledge of all the modes of transmission of tuberculosis, which includes droplet infection, ingestion of unboiled milk and direct inoculation.

While only 79 interns, 38.16% correctly stated cough for three weeks or more to be the cardinal symptom of pulmonary tuberculosis.

When asked about the best tool for diagnosing TB under RNTCP, majority 71.01% correctly responded sputum examination for acid fast bacilli.

The role of x-ray chest for diagnosis under RNTCP is restricted to sputum negative patients with persistent cough even after two weeks of antibiotic use. However, only 9.66% interns were aware of this fact.

Nearly 70% ( 68.6% ), interns correctly stated that DOTS therapy is given thrice a week intermittently. Also more than three fourth interns, 89.37% were aware that DOTS caters to all age groups and 86.47% had knowledge that DOTS is applicable to both pulmonary and extra-pulmonary TB.

Out of 207 interns, 165 interns, more than 3/4<sup>th</sup> interns could correctly name all the five first line anti-TB drugs used in DOTS. However when asked about the DOTS regimens 75.36% interns had incorrect knowledge about Cat-I regimen, 78.7% had incorrect knowledge of Cat-II regime, whereas a majority 92.75% interns had incorrect knowledge about cat-II

regime. 77.29% interns correctly answered that streptomycin is contraindicated during pregnancy. 64.73% interns knew the fact that pyrazinamide and rifampicin is contraindicated in patients with liver disease.

Nearly three fourth, 75.36% interns could correctly define MDR-TB and a statistically significant association was seen between attending TB clinic posting and knowledge of MDR-TB. However, only 1.45% interns had a complete knowledge of XDR-TB.

**Table 1: Distribution of respondents according to knowledge of Management of TB under DOTS**

Question	Correct Response (N=207)		Incorrect Response(N=207)	
	No.	%	No.	%
DOTS given thrice a week intermittently	142	68.6	65	31.04
DOTS caters to all age groups	185	89.37	22	10.62
DOTS treats both PTB* and Extra-PTB**	179	86.47	28	13.5
Knowledge of first line AKT***	165	79.71	42	20.28
Streptomycin contra indication	160	77.29	47	22.7
Rifampicin & Pyrazinamide contraindication	134	64.73	73	35.26
Knowledge of Cat I regime	51	24.64	156	75.36
Knowledge of Cat II regime	15	7.25	192	92.75
Knowledge of Cat III regime	44	21.26	163	78.7

\*Pulmonary TB, \*\* Extra pulmonary TB, \*\*\* Anti Koch's Treatment

**Table-2: Respondents knowledge of various aspects of TB diagnosis and management under DOTS as per their TB/DOTS clinic posting attendance.**

Variable	Attended TB clinic posting			Not Attended TB clinic posting			Total	pValue
	Correct response	Incorrect response	Total	Correct response	Incorrect response	Total		
Best tool for diagnosing PTB under RNTCP	89	20	109	58	40	98	207	0.0003*
Contraindication for streptomycin	98	11	109	62	36	98	207	0.0001*
Contraindication for rifampicin & pyrazinamide	99	10	109	70	28	98	207	0.0003*
Knowledge of MDR-TB	93	16	109	63	35	98	207	0.0004*

\* P < 5% statistically significant

## DISCUSSION

With India being the highest TB burden country in the world, a good tuberculosis control programme is the need of the hour. However, since RNTCP is already in place and it has also achieved its target and goals, this programme needs to be supported by effective and trained medical practitioners. The knowledge level of doctors about TB and their attitudes may influence national TB control programmes. [10] The onus lies on the medical colleges and the curriculum so as to produce well trained and skilled medical practitioners.

It is observed in this study that, when asked about the modes of spread of TB mere 18.86% interns knew all the modes of TB transmission. However in a similar study conducted in Delhi, by Sanjay Rajpal et al even lesser 4.2% interns had complete knowledge of all modes of TB transmission. [11]

Cough for more than 3 weeks is the cardinal symptom for pulmonary TB was known to only 38.16% interns, this poor knowledge level can prevent the future medical practitioner from suspecting tuberculosis in a patient with the symptom of cough more than three weeks, and thus is detrimental in preventing the spread of TB in our country. However a totally opposite response was seen in a study among general practitioners of Jamnagar city who had 100% awareness for the cardinal symptom. [12] Whereas a similar finding was observed among physicians in Somalia, where the correct knowledge of cardinal symptom was known to 66% of them. [13]

It is heartening to know that 71.01% study subjects, nearly three fourth could correctly state sputum examination to be the best tool for diagnosing pulmonary TB under RNTCP. Whereas in a survey conducted in Pakistan, among medical interns only 38% considered sputum

examination as the best test for diagnosing pulmonary TB. [14] A nearly similar finding was observed among the doctors in Turkey, where only 28.8% stated bacteriological examination to be the first choice for diagnosing pulmonary TB. [10] This high level of knowledge could be the result of continuous reinforcement by the Government through the health education messages as well as the increase stress laid on sputum microscopy by the medical curriculum.

It is worrisome to know that only 9.66% interns were aware about the conditions during which X-rays are advised. Such low levels of knowledge can make these future practitioners irrationally use such expensive modalities for diagnosing pulmonary TB. That X-ray chest has a limited role in diagnosing pulmonary TB has to be stressed in the curriculum. In a study among private practitioners in Delhi, 89.5% recommended chest X-ray and only 12% advised sputum examination for diagnosis of pulmonary TB. [15]

Though more than 3/4<sup>th</sup> interns could correctly name all the first-line antituberculosis drugs, when asked about the various categories under DOTS and the regimens, a poor knowledge was exhibited. Many studies in India have shown that the private practitioners are not aware about the various regimens under DOTS and were also not prescribing drugs recommended under RNTCP. [16] Hands on experience and RNTCP training is essential so as to transform the attitudes and build the skills and increase the knowledge levels of these budding doctors, this will help in preventing the irrational and inadequate use of TB drugs.

75.36% interns could correctly define MDR-TB; however in a study in sub-Saharan Africa among medical interns only 27.1% interns could correctly define MDR-TB. [17]



A statistically significant association was seen between interns' attendance to TB clinic posting and their knowledge of best tool for diagnosing pulmonary TB, the contraindications for streptomycin, pyrazinamide and rifampicin and their knowledge of MDR-TB. This finding highlights the importance of TB clinic posting.

## CONCLUSION

Tuberculosis being the major public health problem in India, it needs a higher priority in the medical curriculum. The knowledge level of interns in the present study was found to be poor for the various aspects of tuberculosis management under DOTS programme. However those interns who had attended the TB clinic posting had better level of knowledge and this was statistically significant. This study highlights the inadequate and incomplete knowledge of interns regarding TB treatment using DOTS, and emphasizes the need for more regular training sessions along with strict supervision of trainees. This study thus concludes that TB/DOTS clinic posting and training should be made mandatory for all the medical students to increase their knowledge and skills for effective management of patients with tuberculosis and thereby in the long run preventing the further rise of MDR and XDR TB cases.

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