

## Public-Private Partnership For Tuberculosis Control In India: Are The Private Practitioners Anywhere Near To This RNTCP Sponsored Mission?

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### **Abstract:**

**Background:** Revised National Tuberculosis Control Program (RNTCP) sponsored Public Private Partnership (PPP) is undermined by poor participation by private practitioners (PPs). There is an urgent need to realize factors influencing private practitioners' preference of directly observed treatment short course (DOTS) for their patients. We attempted to study the knowledge and current practice characteristics of PPs while managing TB patients and to identify factors influencing their referral preferences for sputum microscopy and treatment under DOTS.

**Methods:** This was a cross-sectional survey involving 100 allopathic medical practitioners in private sector from an urban area. A self - designed and pretested questionnaire was administered to obtain data.

**Results:** The participants on an average managed  $6.15 \pm 14.87$  patients with tuberculosis (TB). Most of them relied on sputum microscopy for diagnosis however only 49% referred their patients to Designated microscopy centres. A significant number of participants still used serological and Mantoux testing for diagnosing TB. Very few participants knew correct regimens, dosage and duration of anti TB therapy but only 46% referred their patients for DOTS based treatment. Frequent use of fluoroquinolones in anti TB therapy was noted. Factors predicting referrals to DOTS were younger age of participants, recent years in clinical practice with lesser outpatient turnover and better awareness about DOTS services. TB notification rate was low (41%) possibly due to lack of awareness about procedure involved. A lack of communication was noted between RNTCP staffs and participants indicating a significant drift in the "partnership".

**Conclusion:** This study has highlighted fallacies in TB management in private sector and identified correctable factors leading to sluggish involvement of PPs in DOTS based management. We recommend large scale interventional studies to evolve strategies to further strengthen the Public Private Partnership.

**Keywords:** Public Private Partnership, Tuberculosis referral, Notification

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### I. Introduction

Global burden of tuberculosis is enormous and is increasing despite availability of good quality chemotherapy in organized regimens. Standardized diagnostic and therapeutic approach is the yardstick for unified struggle by mankind against Tuberculosis. World health organization declared TB as "Global Emergency" in 1993 and since then strongly advocates Directly Observed Treatment Short Course (DOTS) in standardized regimens delivered through national health programme across the world. India contributes to about one third of global TB burden and has gone a long way implementing DOTS through its Revised National Tuberculosis Control Program (RNTCP)<sup>1</sup>. Despite excellent coverage by RNTCP program, many patients with tuberculosis still continue to seek other source of health care like practitioners modern and alternate medicine in private sector<sup>3</sup>. It is estimated that between 34% and 57% of tuberculosis cases are diagnosed and managed outside the public sector<sup>5-8</sup>. The same is also confirmed by studies on Anti TB drugs sales in India which show that the number of cases treated in the private sector alone exceeds estimated overall TB incidences<sup>9</sup>.

While health sectors sponsored by government follow principles of DOTS, the status at private health sector is variable and often inappropriate via improper use of diagnostic modalities, inadequate therapy and inadequate mechanisms to ensure compliance and adherence to therapy<sup>2</sup>. Realizing the importance of involving private health sector for effective control over tuberculosis in India, RNTCP implemented public-private partnership (PPP) during the last decade with only limited success. An attempt was made through mandatory notification since 2012, to bring into account all TB cases managed in private sector which also suffers with poor progress<sup>4</sup>. There could be several reasons for sluggish participation of private practitioners in RNTCP which need to be identified urgently in order to evolve strategies to improve this vital partnership. This study, using a self-designed questionnaire, attempted to study knowledge and practice characteristics of urban private medical practitioners in managing tuberculosis patients, their awareness about DOTS, aspects of notification and their level of interaction with RNTCP. The findings of this study will be useful in designing interventions to

enhance participation of private health sector in the RNTCP sponsored “Public-private partnership” against tuberculosis.

## **II. Materials And Methods**

This study was a cross sectional survey conducted during October 2013 to March 2014, involving registered medical practitioners from the urban area of Coimbatore, Tamilnadu. All eligible doctors had basic qualification in modern medicine (MBBS) and their practice based in private sector health institutions like tertiary care hospitals, nursing homes, polyclinics, NGO sponsored or own clinics, located in the city of Coimbatore. Doctors with fulltime or part time institutional practice in Government sector at the time of recruitment for the study were excluded. Eligible doctors were conveniently sampled based on their willingness to participate in the survey. Institutional human ethics committee approval was obtained for the study and all participants gave written informed consent.

A self-designed and pretested questionnaire was used to collect data from all participants. The questionnaire was semi-structured containing questions grouped in three categories: Category A addressed demographic and practice characteristics of the participants; Category B characterized diagnostic and treatment methods for managing TB patients including participants’ referral preferences for further diagnosis and management; and category C questions dealt with participants’ awareness about RNTCP (DOTS) services and notification of TB cases. The questions were multiple choicetype with a few open ended questions.

Data were compiled and analyzed in SPSS version 19 (IBM Corporation). Continuous variables were expressed in mean  $\pm$  standard deviation and categorical variables were expressed in percentage. Responses to questions in all categories were compiled in tables and figures. Factors significantly influencing the participants’ preference to refer their patients to RNTCP services were identified using logistic regression analysis. A p value of 0.05 or less was considered statistically significant.

## **III. Results**

### **Demographic and practice characteristics**

In all, 100 doctors practicing modern medicine in an urban area participated in the study. General as well as practice characteristics of the study volunteers are summarized in table 1. The average age of the study population was  $36.15 \pm 10.99$  years of which 69% were males and 31% were females with an average  $9.53 \pm 10.16$  years of clinical practice. One third of the participants had their own freelancing or clinic practice whereas remaining two third had institutional practice with or without limited freelancing off duty hours. The study volunteers on an average attended to  $37.4 \pm 36.6$  outpatients per day. Eighteen of them had past service in Government health sector and only 15 participants had undergone at least some training session on TB management during the last 4 years. The average number of TB patients managed per month by the study group was  $6.15 \pm 14.87$ .

### **Knowledge and practices in TB management**

Table 2 summarizes the diagnostic and therapeutic practices adopted by participants during their day to day clinical work on TB patients. Only 32% knew that cough more than two weeks defines a pulmonary TB suspect. However, a vast majority could recognize sputum microscopy as the most confirmative test for diagnosing pulmonary TB and practiced the same. Sixty three (63.0%) never diagnosed TB with serological testing of antibodies while the remaining 37% would do so. A significant observation was that only 58% said that they would never diagnose or treat TB based on positive Mantoux test while the remainder 42% would start treatment based on a positive Mantoux test alone. Majority (82.0%) of the doctors knew that the minimum duration of anti TB treatment is 6 months. About half of the participants (54%) asserted that they never use fluoroquinolones for new or previously treated TB cases whereas 46% acknowledged frequent use of fluoroquinolones in anti TB therapy. When asked about appropriate therapy for new TB case weighing 60 kgs, only 21% knew the correct regimen. Only 5 participants gave the correct dosage for a 60 kgs patient and 18% knew the correct duration for the ATT regimen.

### **Awareness about DOTS and the referral pattern**

Most participants were aware about the good quality diagnostic and treatment services offered in Designated microscopy centres (DMCs), but less than half knew that these services could be extended upto their private clinics (Table 3). Despite reasonable knowledge about DOTS services, only 49% participants preferred to refer their patients for sputum microscopy to a nearby designated microscopy centres (DMCs) under RNTCP and another half (51%) of them preferred private laboratories (Figure 1). Similarly for management of TB patients, 20% of participants preferred to treat the patients under their own care while 34% preferred specialist referral. Only 46% preferred to refer their TB patients to a local DOTS centre for further management (Figure 2). On logistic regression analysis (table 4), younger age of the participants, recent years in clinical practice with

lesser outpatient turnover and better awareness about DOTS services were associated with referral preference to local DMCs for sputum microscopy. Such an association was independent of place and specialty of practice. Those participants who preferred to refer to DMCs for sputum microscopy were also strongly inclined towards referral for treatment under DOTS. Training in TB during last four years appeared to be associated with referral preference to DOTS based treatment showing trend towards statistical significance.

#### **Notification of TB and interaction with RNTCP workers**

Awareness about the TB as a notifiable disease was good (81%) however only 41% of participants knew the procedure for notification and did practice the same (table 5). Many of the participating doctors did not have knowledge about the whereabouts of the regional DOTS centres nor did they have acquaintance with the health care workers involved in DOTS services in their community. Only 24% of them knew that they could be DOT providers for their own patients.

### **IV. Discussion**

Public Private Partnership / participation, one of the strategies adopted by RNTCP holds considerable potential to improve tuberculosis control in India. The central TB division published guidelines for the participation of the NGOs (2001) and private practitioners (2002), providing them opportunity to formally collaborate with the RNTCP<sup>10, 11</sup>. Since then there has been a lot of initiatives taken to strengthen this partnership. With no precise mechanism to measure the success, the public private partnership is generally perceived to be still far from the expectations. Several studies have confirmed this perception by providing evidence of sluggish involvement by a majority of healthcare providers in the private sector. Some of these studies have also attempted to provide plausible explanation for this poor participation. Our study has highlighted knowledge and practice characteristics of private practitioners from an urban area, with respect to TB management and factors influencing participation of private practitioners in RNTCP.

Many studies published in last two decades have evidenced among private practitioners over-reliance on chest X-ray for diagnosing tuberculosis<sup>2, 12, 13, 14, 15</sup>. However, a vast majority of participants in our study relied on sputum microscopy for diagnosing TB. Going by the timelines of the previous studies, this glaring contrast in our study may be explained by the improving awareness among private practitioners consequent to decade long campaign about sputum microscopy by RNTCP. Our study found that a two third of participants could not define a 'pulmonary TB suspect'. It is important to note that a significant proportion of participants still used serological tests despite of the ban by RNTCP for its use in clinical practice. Other diagnostic deviations observed among our study participants include use of Mantoux test alone for diagnosing TB in adults.

With respect to treatment aspects, majority of the participants in our study vouched for at least six month duration of anti TB treatment. However, when responding to specific case scenario, only about 20% of participants could give correct regimen and duration while only 5% could give correct dosing of anti-TB drugs. This particular finding is consistent with many other studies from different parts of the country during last 25 years highlighting an unchanged dangerous situation in private sector that could fuel the already emerging epidemic of drug resistant tuberculosis. Adding to this realistic threat, almost half of our study participants acknowledged use of fluoroquinolones in their "customized" anti TB therapy.

Low preference for referral to RNTCP services for diagnosis and management of TB patients is generally observed in private sector<sup>12, 16, 17, 18</sup>. Our study also observed the same, with only half of the participants preferring to refer their patients to RNTCP services. This observation was despite of reasonable knowledge among the participants about good quality services by DOTS facility. We found several factors favourably influencing referral pattern among the participants namely younger age of the participants, recent years in clinical practice with lesser outpatient turnover and better awareness about DOTS services. Medical qualification before the implementation of DOTS and self-confidence of managing TB patients over long years of practice could be plausible explanations for senior doctors not referring their patients to RNTCP. Training in TB Management appeared to prompt participants' preference to DOTS facility which was highlighted in other studies also. Thakur JS et al, in his study found that almost 50% of private practitioners with past training in TB, followed RNTCP guidelines whereas only 8% of those without such training did refer their patients to DOTS facility<sup>2</sup>. This study also showed that private practitioners were eager to undergo regular training in TB management.

Most of our study participants knew that TB is a notifiable disease, however more than half of them did not know the procedure and hence did not notify. Low rates of notification was highlighted by a recent study by Yeole D et al who also found that non-allopathic practitioners made a significant contribution to overall notification rates from private sector<sup>4</sup>. The authors of this qualitative study emphasized simplified mechanisms for notification to ease the process for private practitioners.

Many studies indicate that success of public private mix (PPM) largely depend on the level of interaction between private and public health care providers<sup>19, 20, 21, 22, 23</sup>. These studies have shown that factors like regular visits by TB officers / health workers from public sector, periodic canvassing about DOTS services, availability of referral forms in private clinics and prompt feedback about patients referred for DOTS based management, will encourage active participation by private practitioners. The participants in our study hardly knew any of the RNTCP staff in their community indicating a very poor interaction between public and private sector. We believe that the poor interaction between private practitioners and the RNTCP staff reflected in our study is the single most important devastating factor for any PPM activity in the region. When we find an intense interaction between various players like hospitals, specialty clinics and primary care physicians within private health sector, through promotional /public relations activities, we need to ask ourselves why there is a drift between public and private sector especially in issues of national importance like tuberculosis control.

The main limitation of our study is smaller sample size of the participants. However they represented a typical urban health delivery system in India comprising private practitioners from institutions, freelancing, clinics and NGOs. The participants managed significant number of patients with tuberculosis and hence we consider their information authentic and representative of the real scenario in private health sector. Another limitation is that the self-administered questionnaires did not allow exploration of data in qualitative dimensions which was relevant for information regarding referral pattern among the participants. Such qualitative analysis could have been possible with in-depth interview for which our study was not designed.

### Figures and Tables

Table 1: Demographic and professional characteristics of study participants.

Demographic & professional characteristics of study participants	N = 100
Age ( in years + SD)	36.7 ±11.55
Gender	
Male	69 (69.0%)
Female	31 (31.0%)
Years of practice	10.07 ± 10.03
Type of practice	
General practice	37 (37.0%)
Specialty practice	63 (63.0%)
Place of practice	
Exclusive freelancing / clinic based practice	35 (35.0%)
Institutional practice	65 (65.0%)
Average outpatients per day	37.84 ± 36.15
Socioeconomic strata (SE) of outpatients	
Equal proportion of all strata	37 (37.0%)
Predominantly high SE strata	3 (3.0%)
Predominantly low and middle SE strata	60 (60.0%)
Current or past service in Government sector	18 (18.0%)
Attended training session on TB management during last 4 years	15 (15.0%)
Average number of TB patients managed per month	6.15 ± 14.87

Table 2: Diagnostic and therapeutic practices of participating doctors in TB management

Aspects of diagnosis and treatment of tuberculosis	No. of participants who gave correct response
“Cough more than two week” defines pulmonary TB suspect	32 (32.0%)
Sputum microscopy – most preferred for diagnosing pulmonary TB	85 (85.0%)
Shall never diagnose TB by serological testing of antibodies to TB	63 (63.0%)
Shall never treat TB in adults based on positive mantoux test alone.	58 (58.0%)
Minimum duration of anti TB treatment - six months	82 (82.0%)
If daily ATT regimen preferred for my patient...Shall never use fluoroquinolones for new or previously treated TB cases.	54 (54.0%)

Table 3. Awareness among participating doctors about RNTCP sponsored DOTS services.

Aspects of RNTCP sponsored DOTS services	No. of participants who are aware.
Good quality sputum microscopy available at free of cost.	89 (89.0%)
Sputum samples for smear microscopy given twice.	82 (82.0%)
Sputum samples collected in your clinic can be sent to nearby DOTS center, and patient need not go to DOTS center.	41 (41.0%)
Sputum smear reports are available on the same day.	36 (36.0%)
Anti TB treatment is given to the TB patients free of cost.	93 (93.0%)
Anti TB drugs provided in DOTS are of good quality.	94 (94.0%)
Anti TB treatment is given thrice weekly in DOTS.	78 (78.0%)
Anti TB treatment is directly observed to ensure compliance.	90 (90.0%)
Anti TB treatment is given by either category I or category II regimen.	74 (74.0%)

Table 4: Factors significantly influencing participants’ preference to refer their patients to designated microscopy centres (DMC) for sputum microscopy and anti TB treatment.

Factors predicting referral pattern among participants	Unadjusted odds ratio (95% confidence interval)	Adjusted odds ratio (95% confidence interval)
<b>Referral to DMC for Sputum microscopy</b>		
Age of the participants	0.944 (0.907 – 0.983)	0.954 (0.914 – 0.997)
Years of clinical practice	0.936 (0.893 – 0.981)	0.948 (0.902 – 0.996)
No. of outpatients seen / day	0.981 (0.967 – 0.996)	0.983 (0.969 – 0.997)
Adequate awareness about DOTS	2.19 (0.954 – 5.03)	2.972 (1.178 – 7.497)
<b>Referral to DMC for antituberculous treatment</b>		
Age of the participants	0.967 (0.931 – 1.005)	0.967 (0.929 – 1.006)
Training in TB during last 4 years	3.580 (0.890 – 14.39)	4.680 (0.843 – 25.99)
Participants' preference to refer to DOTS for sputum microscopy	12.96 (4.961 – 33.83)	15.67 (5.192 – 47.29)

Table 5: Awareness about RNTCP sponsored Public private partnership and notification of TB case detection.

Statements related to notification and interaction with local DOTS services.	Number of participants (%)
Aware that tuberculosis is a notifiable disease.	82 (82.0%)
Aware about to whom and how to notify TB cases under my care.	41 (41.0%)
I do inform / notify to district authority all TB cases under my care.	42 (42.0%)
I know the nearby DOTS centre.	55 (55.0%)
I know the Medical officer / STS / STLS of the tuberculosis unit in my region.	21 (21.0%)
I know that I can be the DOT provider for my patients.	24 (24.0%)

Figure 1: Graphical representation of referral preferences among participants for sputum microscopy.

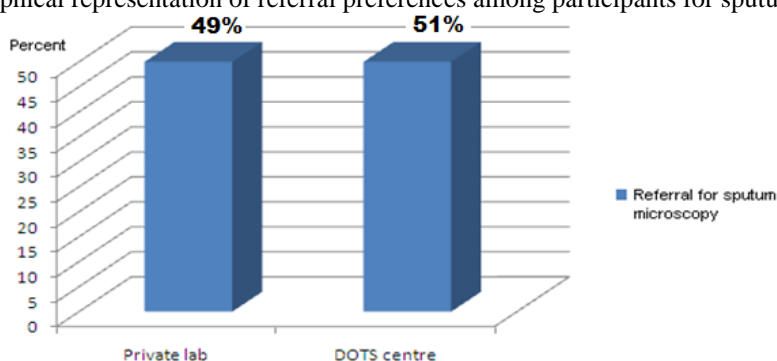
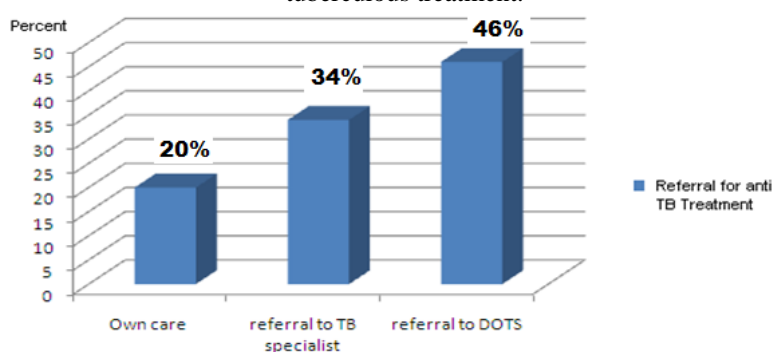


Figure 2: Graphical representation of referral preferences among participants for managing TB patients with anti tuberculous treatment.



### V. Conclusion

Our study has highlighted low level of involvement of private practitioners in RNTCP sponsored Public Private partnership for tuberculosis control in India. The study has also identified some of the modifiable factors leading to such sluggish participation. Tuberculosis management in private practice is shown to be inadequate and inappropriate. Notification of TB cases to district authority is at a low rate possibly due to lack of awareness about the procedure indicating an urgent need for sensitization of private practitioners. The study also observed a suboptimal communication between RNTCP staff and the private practitioners which we believe could devastate the combined efforts made by the government and private health sector to control TB in the country. We recommend a large scale survey of private practitioners as well as qualitative studies to explore into factors influencing Public private partnership and intervene appropriately and urgently.

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