Research Article

Management of tuberculosis patients by grass root level practitioners

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Received: 09 March 2016

Accepted: 10 April 2016

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ABSTRACT

Background: The tuberculosis bacteria are the top most infectious killing agents in the world. 9.6 million is the number of people that developed tuberculosis globally in the year 2014. The objective was to evaluate the management of Tuberculosis patients by grass root level practitioners as a one of the cause behind slow progress in TB control and increasing resistance to anti-TB drugs.

Methods: Cross sectional, observational study with pretested, semi structured proforma with open and close ended questions.

Results: Very few practitioners are updated about the renewed RNTCP guidelines. Only 25.58% know about cough for more than two weeks as a prime symptom, and 48.71% know that two sputum samples have to be taken for diagnosis. Most of them are not taking the recommended morning and spot samples. There is an overdependence on X-Ray for diagnosis and follow up. 64% of the practitioners do not notify the DTC. Only 22% knew of the two categories of TB patients according to the RNTCP guidelines. Supervision of treatment and intermittent dosing, as advised by RNTCP, are not strictly followed by most practitioners, and only 20% were doing a sputum examination at the end of two months and 6 months. Overtreatment is commonly seen. Awareness about applicability of DOTS on children and contraindication of Streptomycin in pregnancy is inadequate.

Conclusion: The knowledge and practice of the grass root level practitioners is significantly below mark and may contribute to the static or slow decreasing burden of TB, and increasing drug resistance. The practitioners should be registered, adequately trained, and properly equipped to deal with the TB patients, to avoid the emergence of newer drug resistant tubercular cases.

Key Words: Grass Root level Practitioners, RNTCP, DOTS, Tuberculosis

INTRODUCTION

The Tuberculosis bacteria are the top most infectious killing agents in the world. 9.6 million is the number of people that developed tuberculosis globally in the year 2014. 1.5 million is the number of people who died of TB in the same year. 95% is the magnitude of such deaths occurring in low and medium income countries, India being one of them. The millennium development goal target of halting and reversing the TB epidemic by 2015 has been met globally, however we have clearly failed to reach the 4,80,000 globally in 2014, who developed MDR TB despite vigorous efforts made by WHO,

NTCA, and various other national and international organisations, including our own government.¹

It has been acknowledged that the number of TB patients seeking help in the private sector is almost equal to those seeking help in the public sector.^{2,3} Many studies from India have documented that the private sector often deviates from the standard, internationally recommended, TB management practices. Inappropriate diagnostic practices may lead to diagnostic delay, perpetuating TB transmission. The most significant of these would be over reliance on X-Ray for TB diagnosis as has been continuing since even before the RNTCP was

implemented. Inappropriate treatment practices risk the amplification of drug resistance.⁴⁻⁶ Despite the RNTCP having achieved complete country coverage by March 20064, the private sector remains highly unregulated.

There have been significant efforts to engage the private sector with the RNTCP through various Non-Governmental Organization/Private Provider (NGO/PP) schemes.⁴

Due to the current lack of coordination between private and government TB control agencies, we were far from realizing our theme set by WHO for World TB day in 2015, Reach the three million. A TB test, treatment and cure for all. 6 in spite of 62.6% of total health expenditure being spent on private health providers in 22 countries with the highest prevalence of TB.⁷

The current focus is on the theme for World TB day 2016, STOP TB partnership, which cannot be achieved without proper public private integration since a large proportion of patients with TB first seek care with a private practitioner.⁸ In India this share is approximately 46%.⁹

The grass root level practitioners are the first level of contact between the community and the healthcare system. These practitioners play a major role in determining the fate of Tuberculosis, hence we conducted a study to find out whether these practitioners had adequate knowledge about the standard management practices of tuberculosis, and if they were updated about the recent changes in the RNTCP guidelines (Geneva, 2010).

The study was conducted with the objective of evaluating:

- Symptoms and investigations considered for first hand dealing with a tuberculosis patient by the grass root level practitioners.
- Knowledge and practices of these practitioners regarding the diagnosis and management of tuberculosis according to RNTCP.
- Awareness about revised RNTCP guidelines, DOTS, MDR-TB etc.
- Practice of DTC notification, giving health education and timely follow up.

METHODS

Study design is Cross sectional, Observational study. Study population was grass Root Level Practitioners. Study area taken was 5 Km radius of our medical college. Sample size was 100 Grass Root level Practitioners in our

study area, who agreed to participate in the study. And Study duration was 2 months.

Grass root level practitioners

By definition, the word Grass Root means the most basic level of an activity or an organization, so by Grass Root Level Practitioners, we are referring to those practitioners who are practicing in the community (mainly slums), and dealing first-hand with most patients. They constitute the basic level of the health care organization. In this category, we are including the practitioners who may be either qualified by a graduate degree in medicine (MBBS) or alternative medicine (BAMS, BHMS or Unani system), nursing or pharmacy, or may be totally unqualified.

RNTCP

Revised National Tuberculosis Control Program is the state-run Tuberculosis control initiative of the Government of India. It incorporates the principles of DOTS, the global TB control strategy of the World Health Organization.¹⁰

DOTS

Directly Observed Therapy Short Course is the internationally recommended strategy to ensure cure of Tuberculosis. It has become the standard for diagnosis, treatment and monitoring of Tuberculosis worldwide and has been implemented in 182 of 211 countries, covering more than 77% of world's population.¹⁰

NIKSHAY

A system introduced by the Government of India to keep a track of TB patients across the country. It is mandatory for the private health establishments, or government health establishments not covered under RNTCP, to notify Tuberculosis to the ministry of health and family welfare. Nikshay registers all such health establishments and entry of TB patients. It also provides with an 'SMS' service.¹¹

Symptoms of pulmonary tuberculosis:¹²

- Cough > 2 weeks
- Chest pain
- Haemoptysis
- Weakness
- Fatigue
- Weight loss
- Loss of appetite
- Chills
- Fever and night sweats

Initially, cough for >3 weeks was considered which has now been changed to >2 weeks.¹²

Collection of sputum samples: Previously, 3 sputum samples were collected for diagnosis of tuberculosis which was changed to 2 sputum samples in the year 2007 by WHO.¹³⁻¹⁵

The WHO, in 2010 (Geneva), declared the new regimen for treatment of tuberculosis. The initial regimen of 3 categories was changed to 2 categories.^{16,17}

- New categories includes former Categories I & III
- Previously treated is former Category II

MDR

TB (Multi Drug Resistant TB): defined as resistance to both H (Isoniazid) and R (Rifampicin), with or without resistance to other first line drugs.¹⁸

XDR-TB

TB that has developed resistance to at least R (Rifampicin) and H (Isoniazid), and to any fluoroquinolone, and to any of the three second line injectable drugs: Kanamycin, Capreomycin or Amikacin.¹⁸

Tuberculosis drugs that are contraindicated in Pregnancy: Streptomycin, Kanamycin, Amikacin, Capreomycin, Fluoroquinolones.¹⁹ DOTS is to be used for all children and adolescents with TB disease. Ethambutol is avoided in young children.²⁰

Pretested, semi-structured proforma was used to collect information from the Grass-Root level practitioners regarding suggestive symptoms, methods of diagnosis, treatment regimen, follow up investigation, awareness regarding categorisation of patients and the type of health education given to the patients. They were also be inquired about the referral of the cases and notification of the disease to the government authorities.

The questionnaire had open and close ended questions based on the above criteria.

The questionnaire was explained and distributed to these medical practitioners (who were willing to participate). They were requested to fill and complete them and the proforma was collected from them.

Data analysis

In-depth case studies were analysed by reading and re-reading the transcripts. Statistical analysis was done using Excel and analysis was done. Consent was taken from The Medical Ethics committee of the Medical College and Hospital, at the time of survey conduction.

RESULTS

About 72% of the practitioners that were included in the study did not have an MBBS degree. They were either related to AYUSH or had a GNM degree.

The grass root level practitioners were attending to a significant number of tuberculosis patients. The most suggestive symptoms of TB, as stated by the grass root level practitioners, were cough (86%) Weight loss and Low grade fever (64%), anorexia (58%). Other symptoms considered were weakness, chest pain, haemoptysis, fatigue and night sweats (Figure 1).

Figure 1: Symptoms of TB diagnosis.

Of those who considered cough, only about 1/4th (25.58%) were considering cough for more than 2 weeks (Figure 2).

Figure 2: Duration of cough.

The investigations employed for diagnosis were ESR (70%), sputum and x ray (68% in combination), only sputum examination (10%), only X-Ray (12%) Montoux test (46%), and clinical exam (30%). In certain cases, serology, CBC and USG were also conducted (Figure 3).

Figure 3: Investigations of diagnosis.

The number of Sputum samples for diagnosis also varied. Two samples were being taken by only 48.71% practitioners (Table 1).

Table 1: Sputum samples taken by grass root level practitioners (n=78).

Sputum Samples	Percentage (%)
Correct no. of samples collected	36 (48.71%)
Both morning and spot	4 (5.12%)

Out of the practitioners who considered sputum examination for diagnosis, 17.94% were taking only a morning sample, 2.56% were using only a spot sample, while only 5.12% were taking both morning and spot samples. Majority (74.35%) were taking other random samples (Table 1).

About 70% of the practitioners were referring the suspected TB patients to other centres, mostly government (86%). DOTS, as a treatment modality, was used by 86.66% of practitioners who were not referring their patients (Table 2).

Table 2: Treatment modality used by the practitioners (n=30).

DOTS/ other method	No. of individuals	Percentage (%)
DOTS	26	86.66
Other	4	13.34

About 2/3rd of the practitioners (64%) were not notifying the DTC regarding their encounters with TB patients, which is mandatory now (Figure 4).¹¹

About 60% of the practitioners did not know about the various categories under RNTCP, 18% were not updated about the new categorisation guidelines (i.e., they considered the former 3 categories), and only 22% were aware of the correct number of categories (2 categories) and were practicing accordingly (Table 3).

Their knowledge regarding RNTCP and DOTS revealed that about 2/3rd (64% and 62% respectively) of practitioners were unaware of even the full forms of these terms. Only 8% of the practitioners could tell the full forms of MDR TB and XDR-TB. Applicability of DOTS on children was known by 24% of the practitioners only, and only 16% could name the drugs that are contraindicated in pregnancy (Table 3).

Figure 4: DTC notification.

Table 3: Knowledge of Grass root level practitioners (n= 100).

Knowledge of practitioners	Correct responses
Correct no. of categories known (2)	22 (22%)
Full form of RNTCP	64 (64%)
Full form of DOTS	62 (62%)
Full form of MDR-TB	8 (8%)
Full form of XDR-TB	8 (8%)
Whether DOTS applicable to children	24 (24%)
Anti TB drugs contraindicated in Pregnancy (streptomycin)	16 (16%)

About three quarters of the practitioners (73.33%) were giving treatment as daily doses (out of 30) while only 20% as intermittent doses and 6.6% were giving both daily and intermittent doses. The treatment was supervised only in 63.33% cases (Table 4).

Table 4: Practice of grass-root level practitioners (n= 30).

Practice of practitioners	Correct responses
Categorisation according to RNTCP	20 (66.66%)
Intermittent doses	6 (20%)
Supervision of treatment	19 (63.33%)

Our study revealed the use of 4 different regimens for treatment of tuberculosis. In 73.3% of the cases, the practitioners were over treating their patients.

Only 34% of practitioners were giving health education.

Out of the practitioners who were themselves treating the patients, 86.66% were going for the follow up investigations of their patients. 46.15% of these practitioners were relying on sputum examination, 46.15% on X ray examination, followed by LFT, CBC and ESR. In 7.69%, 46.15% and 38.46% cases respectively (Figure 5).

The follow up investigations adopted by the grass root level practitioners who were treating their patients with TB (30) indicated that only 20% of the practitioners were repeating the sputum exam after completion of 2 months and 6 months of starting the treatment.

Figure 5: Follow up investigations.

DISCUSSION

The study was conducted on 100 grass root level practitioners who were running clinics in the 5 km radius of our medical college. Out of these, only 28% had an MBBS degree or were post graduates.

These practitioners have been serving the community for as long as 15 years, and attend to as many as 1500 patients per month. This makes their role in TB control programme indispensable.

The present study showed that Cough for more than 3 weeks as a symptom for tuberculosis was considered by 67.44% of the practitioners, as compared to 100% practitioners in a study conducted in Jamnagar by Yadav et al and 88.88% in a study conducted in Vadodara by Baxi et al.^{21,22} According to the WHO (Geneva, 2010), cough for more than 2 weeks is diagnostic for Tuberculosis according to the new RNTCP guidelines.¹² Only 25.58% of the practitioners were considering cough for >2 weeks in the present study. In a study conducted in Andhra Pradesh⁴ in 2013, two thirds of private medical practitioners followed standards for suspecting pulmonary TB based on a cough for >2 weeks. Other symptoms of Tuberculosis, according to the participants of the current study were weight loss (64%), anorexia

(58%) etc. The results are comparable to the findings in the studies from Jamnagar and Vadodara.^{21,22}

78% of the practitioners in the present study were following a sputum smear examination for TB diagnosis. A study in Jamnagar showed that sputum examination was considered by 57.14% practitioners. Similar results were seen in Kolkata (57.77%).^{21,23} The practitioners were showing a consistent overdependence on Chest X Ray. The proportion is 80% in the present study, 100% in Vadodara, 90% in a study conducted in Pune by Bharaswadkar et al, and 85.71% in Jamnagar.^{21,22,24} The number was only 40% in a study at Chandigarh by Thakur et al.²⁵ The overuse of X ray as a diagnostic modality invariably increases the cost of Tuberculosis management that leads to decreased patient compliance, added to the harmful effects of unnecessary X ray exposure, which eventually leads to increased Tuberculosis burden in the society.

Correct number of sputum samples (2 samples) was taken by a mere 20.51% of practitioners in the current study. In Jamnagar, the number was 21.43% and in Vadodara, it was 30.76% (3 samples as per the RNTCP guidelines when these studies were performed).^{21,22} This is most likely due to ignorance on the part of the practitioners about the updated RNTCP guidelines.

In the present study, only 5.12% of the practitioners were taking both morning and spot sample out of those who were considering sputum examination for diagnosis (78), the correct protocol according to WHO, Geneva, 2010. In Kolkata, 43.8% were following the correct protocol (spot-morning-spot; according to the former RNTCP guidelines).²³ Clearly, the practitioners need to be updated and properly trained, since incorrect diagnosis will inevitably lead to incorrect treatment.

Other investigations considered for diagnosis were ESR (present study- 70%, Jamnagar 42.86%, Vadodara 100% and Pune 92%, along with Montoux and clinical examination.^{21,22,24}

The present study shows that 70% of the practitioners were referring their patients instead of treating them. This may be due to lack of diagnostic or treatment modalities or services or ignorance about the services provided by RNTCP. Majority (86%) of the practitioners were referring their patients to government centres. In a study conducted in Vadodara, 47.78% practitioners were referring their patients.²² 86.66% of the practitioners who were treating their patients were using DOTS as a treatment modality. Those who were not following DOTS maybe doing it due to lack of awareness or inadequate training. It may also be due to the inconvenience of supervising the treatment and fixed drug regime in DOTS that is inconvenient to apply.

In the present study, only 22% of the practitioners were aware of the categorisation of the patients, (2 categories

as per updated RNTCP guidelines). Majority of the practitioners in the Vadodara study were unaware of the categories.²² In a Kolkata study, only 39% knew the correct no. of categories.²³

Only 20% of the practitioners were giving intermittent doses as advised by the RNTCP (80% give daily doses). In Jamnagar, Andhra Pradesh, Meerut, Mumbai and Vadodara, the trend was to give daily doses. In our study, 63.33% were supervising the treatment.^{2,4,6,21,22,24} Less than 20% were supervising in the Kolkata study.²³ Similar results were found in Jamnagar, Meerut and Vadodara.^{21,22,26}

Although daily dosing is predominantly seen in all the studies, our study shows an improved rate of treatment supervision.

Overtreatment of the patients by anti TB drugs appears to be a major cause for development of drug resistance among the patients and the close contacts. In the present study, 73.3% of the practitioners were over treating their patients. This is far more than what was shown in Jamnagar (51.3%).²¹

The practitioners in the current study were following 4 different regimes of treating their patients. The variability is far less as compared to the studies in Meerut (53), Jamnagar (11) and Vadodara(7).^{21,22,26}

86.66% of the practitioners in the current study (who were treating their patients) were doing a follow up examination. The follow up protocol of sputum examination at the end of 2 months and 6 months (correct protocol) was followed by 20% of the practitioners in the current study, as compared to 9.52% of the practitioners in the study in Jamnagar.²¹ The study conducted in Meerut, UP again showed overdependence on Chest X ray, with 94.8% of the practitioners asking for an x ray during follow up.²⁶ In the present study, the trend was followed only by 46.15%. Sputum examination for follow up was performed by 46.15% of the practitioners in the present study (irrespective of the time of doing it).

The practitioners were ignorant about notifying their cases to the DTC. Only 36% of the practitioners appear to be notifying the DTC. A study conducted in Pakistan by Shehzadi et al showed that only 6% of the practitioners were notifying the concerned authorities, while a study conducted in Kolkata, the rate was 9.9%. Our study therefore shows an improved rate of DTC notification, but there is obvious scope of improvement.^{23,27}

In the present study, we also asked the practitioners whether they were familiar with certain terms routinely used in TB management, and the results were compared with the study conducted in Kolkata by Dasgupta et al.²³ The results demonstrate the poor state of practitioners. 64% and 62% practitioners knew the full form of RNTCP and DOTS respectively, as compared to 63.9% and 27%

in Kolkata respectively.²³ Similarly the full forms of MDR and XDR TB were correctly stated by only 8% of the practitioners. Applicability of DOTS on children was known only to 24% of the practitioners in the current study and 60% in the Kolkata study, and only 16% practitioners correctly named the drugs contraindicated in pregnancy (59.6% in Kolkata).²³

Health education is a powerful tool that can be used to halt the spread of Tuberculosis. Practitioners, however, have clearly failed to use this easy and convenient tool, apparently due to their ignorance or increased patient burden. In the present study, only 34% of the practitioners admitted to giving proper health education to their patients. Similar results were seen in Kolkata (22%). The situation was not as bad as seen by the studies in Vadodara, Meerut and Jamnagar where majority of practitioners were giving proper health education to their patients (80.05% in Jamnagar).^{21-23,26}

CONCLUSION

The study has therefore concluded that the grass root level practitioners are a significant source of error in the management of tuberculosis patients in the community. They are highly unaware about the symptoms, investigations and correct follow up and remain ignorant about the updates in the policies of RNTCP, which is increasing the load of multidrug resistance in the community. This is a major concern for healthcare system in India because these practitioners are dealing with a very large number of TB patients.

It appears to be essential that these practitioners should be localised in the community, registered, given adequate training for TB management and equip them with facilities to improve patient follow up and DTC notification.

Also, there seems to be a need for developing an easy and convenient referral system for the practitioners to avoid inappropriate, costly or ignored reference to the higher centres.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Mangal S, Belani P. Management of tuberculosis patients by grass root level practitioners. *Int J Community Med Public Health* 2016;3:1235-41.