Knowledge and practices about Revised National Tuberculosis Control Program among clinicians of a medical college in India: A cross-sectional study

RamBihariLal Shrivastava S.*, Saurabh Shrivastava P., Ramasamy J.

Department of Community Medicine, Shri Sathya Sai Medical College & Research Institute, Kancheepuram

ABSTRACT

Introduction: Tuberculosis (TB) continues to pose a major global health problem, causing an estimated 8.8 million new cases and 1.1 million deaths during 2010. The role of private sector in countering this global problem cannot be underestimated.

Materials and Methods: A cross-sectional descriptive study of two months duration (February – March 2013) was conducted among all the clinical teaching faculty of various departments of a private Medical College in Kancheepuram district. A pre-tested, semi-structured questionnaire was designed after thoroughly studying the Revised National TB Control Program (RNTCP) training modules (Modules 1-4). All the study participants were administered the questionnaire after obtaining their informed consent. Data entry and statistical analysis was done using SPSS version 17.

Results: Out of the 51 study participants only 4(7.8%) were trained in RNTCP. Almost 28(54.9%) participants wrongly responded that three sputum examinations are recommended for diagnosis of pulmonary tuberculosis. Approximately, half 25(49%) of the clinicians could not correctly ascertain the duration of treatment of TB .

Conclusions: As the private sector plays a significant role in diagnosis of a major proportion of TB cases, the RNTCP cannot afford to disregard this sector. The study findings demonstrate wide gaps in knowledge about RNTCP guidelines among clinical faculties. The findings of the study should be an eye-opener for the health policy makers and program managers. Need of the hour is to train all private sector doctors in RNTCP and motivate them to comply with RNTCP guidelines.

Key words: tuberculosis, Medical College, Mantoux test, Revised National Tuberculosis Control Program

***Corresponding author:**
Saurabh RamBihariLal Shrivastava
3rd floor, Department of Community Medicine
Shri Sathya Sai Medical College & Research Institute
Ammapettai village, Thiruporur - Guduvancherry Main Road
Sembakkam Post, Kancheepuram - 603108, Tamil Nadu, India
Tel: +919884227224, e-mail: drshrishri2008@gmail.com

Received: 24.05.2013
Accepted: 26.06.2013
Progress in Health Sciences
Vol. 3(1) 2013 pp 94-103

INTRODUCTION

Tuberculosis (TB) is currently the leading cause of death from a curable infectious disease [1]. TB continues to pose a major global health problem, causing an estimated 8.8 million new cases and 1.1 million deaths during 2010 [2]. Worldwide every second a person is infected with TB and every 10 seconds someone dies as a consequence [3]. A single person with sputum positive TB could infect 10–15 others in a year; therefore, early detection of such cases, followed by prompt treatment, is imperative for the successful control of TB in community [3].

The success of the Direct Observed Treatment and Short course strategy (DOTS) rest on a particular health-care system's ability to identify and follow-up TB suspects [4, 5]. Delay in either diagnosis or in initiation of effective treatment facilitates transmission of infection in the community to the susceptible contacts; increases patient expenditure; overburden the health system; and aggravates the risk of mortality [6]. Inappropriate / inadequate treatment or non adherence to the guidelines prescribed under National TB program has contributed in the emergence of drug resistant forms of TB [7].

Knowledge among the private practitioners about the diagnostic and treatment algorithm has been identified as the cornerstone in effective control of TB as a major bulk of the population consults doctors in the private sector initially [8]. Initiatives have been launched in many nations in an attempt to promote public-private mix in TB control activities with variable extent of success [9, 10].

In a study to identify factors associated with patient and health system delays in the diagnosis of tuberculosis in Mumbai, it was reported that long health system delay was observed when private providers were consulted first [11].

Similar results were obtained in a recent study done in Colombia where it was concluded that health care providers played a large part in the late diagnosis of pulmonary TB [12]. Findings of another study revealed that lack of knowledge among the private practitioners about the risk factors, clinical presentation and diagnosis process of the disease is the most important weak links in TB control [13]. In a community-based participatory study among Russian TB health care workers at five TB facilities it was reported that lack of knowledge about TB and infection control may have contribute to a higher risk of TB [14]. In a cross-sectional study done in Iraq among health care providers it was disclosed that though 95.5% health care workers had good knowledge about TB but only 38.2% handled suspected TB cases correctly suggesting a wide knowledge-practice gap which has to be bridged for improving the outcome of TB patients [15]. Revised National TB Control Program was launched in India in the year 1992.

At present, there are four categories (Cat I, Cat II, Cat III – abolished, Cat IV, Cat V) of treatment prescribed under the program based on different eligibility criteria and type of patients (new / re-treatment / multi-drug resistant / extremely drug resistant). Each of these treatment algorithms is well supported with laboratory investigations (sputum smear examination / sputum culture / drug sensitivity testing / others) for carefully monitoring the progress of patients put on treatment. To improve the outcome of this dreadful disease, human resources / infrastructure / multiple schemes for increasing participation of the private sector have been introduced under the program [16].

Majority of the TB patients who are diagnosed in medical colleges are referred to the nearest DOTS center for treatment, thus medical colleges have an important role in referral for treatment. In addition, Medical Colleges are considered to be the apex institutes in the programmatic management of TB and hence, it is foremost requirement that the clinicians should be aware of the basic concepts/modifications in the guidelines and recent advances/expansion of the program. The current study is planned with an aim to assess the knowledge and practices about TB and drug resistant forms of TB among the clinical teaching faculty of a private medical college.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted among all the clinical teaching faculty of various departments of a private Medical College in Kancheepuram district. The study was conducted for a period of two months from February 2013 to March 2013. Universal sampling technique was employed.

Inclusion criteria: Educational qualification of Bachelor of medicine and bachelor of surgery (MBBS) with either post graduate degree or diploma in clinical subjects like Ear-nose-throat (ENT), ophthalmology, community medicine, internal medicine, general surgery, obstetrics and gynecology, pediatrics, orthopedics, dermatology, radiology and psychiatry. All the teaching faculties who satisfied the inclusion criteria and gave informed consent were included as study participants. All the study

participants apart from teaching undergraduate medical students were practicing medicine in private sector only at the time of study.

Exclusion criteria: Teaching faculties who did not satisfy the inclusion criteria; those who refused to give informed consent and those who remained absent during the study period were excluded.

Data collection instrument: A pre-tested, semi-structured questionnaire was designed for clinical teaching staff regarding diagnosis and management of TB after thoroughly studying the Revised National TB Control Program (RNTCP) training modules (Modules 1-4) [16]. The questionnaire included details about knowledge and practices about various aspects related to diagnosis and management of TB/drug resistant TB. It also included the questions pertaining to recent advances in the Revised National Tuberculosis TB Control Program.

Methodology: All the study participants were administered the semi-structured questionnaire after obtaining their informed consent. Each of the study participants was instructed to completely fill the entire questionnaire and return back the filled questionnaire to the investigator immediately. The data was then compiled and analyzed.

Ethical consideration: Ethical clearance was obtained from the Institutional Ethics Committee prior to initiation of the study. Written informed consent was obtained from the study participants before obtaining any information from them. Utmost care was taken to maintain privacy and confidentiality.

Statistical analysis: Data entry and statistical analysis was done using Statistical Product and Service Solutions (SPSS) version 17. Frequency distributions were calculated for all the variables.

RESULTS

Out of the total 66 clinical teaching faculties present at the time of study only 51 participated in the study. None of the clinicians refused to participate in the study. The reasons for non-participation were mainly leave at the time of study and involvement of doctors in outreach camps in different neighboring village.

Table 1 shows the distribution of study participants according to socio-demographic parameters. Majority of the study participants 45(88.2%) belonged to 20 – 60 years age group and 32(62.7%) were males. It was observed that only 4(7.8%) study participants (Community Medicine – 3, Surgery – 1) have reported that they have been trained in RNTCP.

Table 1. Socio-demographic parameters of the study participants.

Socio-demographic parameters [n=51]		Number (%)
Age (in years)	20-40	21(41.2%)
	40-60	24(47.1%)
	> 60	6(11.7%)
Sex	Male	32(62.7%)
	Female	19(37.3%)
Trained in RNTCP	Yes	4(7.8%)
	No	47(92.2%)
Number of years after passing MBBS (Bachelor of Medicine & Bachelor of Surgery)	< 10 years	19(37.3%)
	10-20 years	7(13.7%)
	> 20 years	25(49%)
Department	General Medicine	6(11.8%)
	General Surgery	4(7.8%)
	Community Medicine	12(23.5%)
	Ear, Nose & Throat	3(5.9%)
	Dermatology	3(5.9%)
	Ophthalmology	4(7.8%)
	Psychiatry	2(3.9%)
	Pediatrics	6(11.8%)
	Orthopedics	7(13.7%)
	Obstetrics & Gynecology	2(3.9%)
	TB Chest & Disease	2(3.9%)

Table 2 shows the knowledge among study participants about RNTCP. Approximately half 25(49%) of the study participants could not correctly ascertain the duration of treatment of TB in Category I and Category II under RNTCP. Majority of the participants 35(68.7%) were able to correctly define cure for a TB patient. Correct knowledge about Multi-drug resistant TB suspect was found in only 17(33.3%) study participants. The best results pertaining to knowledge about TB and RNTCP were obtained from the teaching staff of the department of Community Medicine. This could be because of their active involvement in TB prevention and control activities and regular updating of their knowledge with recent advances in RNTCP guidelines. Further, department-wise analysis revealed that teaching faculties from the department of TB Chest & Disease /General Medicine/ Pediatrics displayed better knowledge and practices pertaining to RNTCP guidelines contrary to the faculties of other departments who participated in the study. This could be because of the more exposure of the faculties to the infectious disease as compared to the respondents from other departments and because of the practice of referral of TB patients to the medicine department for management by the faculties from surgical departments. On analysis of the results based on the variable of recent graduation versus graduation several years ago, it was revealed that though clinicians who have graduated many years ago were clear about the fundamentals of RNTCP but was not aware of the recent advances which have taken place in the prevention and control activities in the last 3-4 years. This clearly indicated the need of regular sensitization sessions about the updates which have occurred in the recent years.

Table 2. Knowledge about RNTCP among the clinicians.

Knowledge about RNTCP [n=51]	**Correct response (%)**	**Wrong response / Don't know (%)**
Ratio of sputum positive TB to sputum negative in general community	4(7.8%)	47(92.2%)
Percentage of adult out-patients that are considered as pulmonary TB suspects	7(13.7%)	44(86.3%)
Life time risk of TB among HIV negative and HIV positive patients	23(45.1%)	28(54.9%)
Duration of treatment in category I and category II under RNTCP	26(51%)	25(49%)
Monitoring of sputum positive patient put on treatment is based on	32(62.7%)	19(37.3%)
Definition of cure for a TB patient under RNTCP	35(68.7%)	16(31.4%)
Eligibility criteria for starting category II under RNTCP	27(52.9%)	24(47.1%)
Multi-drug resistant TB suspect under RNTCP	17(33.3%)	34(66.7%)
Category IV composition (drugs)	27(52.9%)	24(47.1%)
Honorarium for directly observed treatment providers in RNTCP	8(15.7%)	43(84.3%)

Table 3 shows the knowledge among study participants about RNTCP guidelines. It was observed that 28(54.9%) participants wrongly responded that three sputum examinations were recommended for diagnosis of sputum positive pulmonary TB under RNTCP. Only 21(41.2%) of the participants were aware about the fact that fluoroquinolones groups of drugs should not be used for TB suspects with negative sputum examination. About half of the participants 25(49%) knew that TB is a notifiable disease.

Table 3. Knowledge about RNTCP guidelines among the clinicians.

Knowledge about RNTCP guidelines [n=51]	Correct response (%)	Wrong response / Don't know (%)
Under RNTCP, number of sputum examinations recommended for diagnosis	23(45.1%)	28(54.9%)
TB control program is implemented exclusively through RNTCP staff	19(37.3%)	32(62.7%)
Fluoroquinolones can be used for TB suspects with negative sputum examination	21(41.2%)	30(58.8%)
To prevent TB spread, early diagnosis and treatment of sputum positive cases is the best way	42(82.4%)	9(17.6%)
Effectiveness of daily therapy is similar to intermittent therapy	27(52.9%)	24(47.1%)
TB is a notifiable disease	25(49%)	26(51%)

Table 4 reveals the practices of the clinical faculties in management of TB. It was observed that only 22(43.1%) of the study participants correctly reported that the results of serological test should not be used as a benchmark for diagnosis / initiating treatment of TB. About half of them correctly opined about managing a relapse case of TB.

However, 11(21.6%) clinicians correctly responded about the management of a patient who is sputum positive at the end of intensive phase in Category I. Also, 35(68.6%) study respondents clearly reported about the non-utility of Mantoux test in initiation of TB treatment in adults.

Table 4. Practices among clinicians in management of TB patients.

Practices among clinicians in managing TB patients [n=51]	Correct response (%)	Wrong response / Don't know (%)
Management of a patient who is sputum positive at the end of intensive phase in Category I	11(21.6%)	40(78.4%)
Management of a patient with positive Immunoglobulin-G serological result	22(43.1%)	29(56.9%)
Advice for follow-up sputum examination in Category II under RNTCP	17(33.3%)	34(66.7%)
Management of a relapse patient	25(49%)	26(51%)
Management of pregnant females suffering from multi-drug resistant TB	12(23.5%)	39(76.5%)
Management of an adult patient with positive Mantoux test	35(68.6%)	16(31.4%)
Most important criteria to suspect Pulmonary TB in most of the patients	29(56.9%)	22(43.1%)

DISCUSSION

The present study has depicted that 29(56.9%) of the respondents rightly cited that most important criteria to suspect Pulmonary TB is cough of more than two weeks duration. However, in a cross-sectional descriptive qualitative study conducted among private medical practitioners on TB in Kenya it was observed that only 7.8% of the respondents clearly stated that cough for more than two or more weeks should be used as a criteria to suspect pulmonary TB [17]. Results of another cross-sectional descriptive study divulged that less than 1% of the physicians were aware about the duration of cough for suspecting pulmonary TB while none of the practitioners were following National TB Control guidelines for prescribing drugs [18]. In a study to assess the adherence of the private sector to national TB guidelines in the Islamic Republic of Iran it was reported that though a high proportion of the doctors had correct knowledge about the major diagnostic criteria but there was a low level of knowledge and practice of TB management [19]. Inconsistent results obtained in different study settings could be because

of the variable extent of political commitment / priority of the issue / level of information-education-counseling activities in different countries to spread awareness about the disease / range of involvement of private sector in the government initiative.

Though it is well established that Mantoux test should not be used as a diagnostic tool in adults still 16(31.4%) clinicians felt that Mantoux test result can be considered for initiating treatment. In a study done in Pakistan to assess the utility of Mantoux test in reaching to a diagnosis of TB it was reported that tuberculin response in TB-endemic area cannot be used as a diagnostic marker for active TB [20]. Similar results have been reported in a questionnaire based survey [21].

This over-reliance on Mantoux test could be because of the inadequate exposure of the clinicians to the recent guidelines. Though Mantoux test was of great significance about a couple of decades ago, probably the time when the study participants have done their graduation, but in today's era utility of Mantoux test is negligible in adults. These findings again emphasize that clinicians should be kept abreast with not only the recent guidelines but also with the utility of different laboratory techniques in reaching a diagnosis.

In the current study it was observed that 24(47.1%) of the doctors were not aware about the eligibility criteria for starting category II under RNTCP. In a study done in rural district of Sindh it was recorded that more than 40% of private practitioners did not prescribe TB treatment regimen according to TB-DOTS category [22].

In a study evaluating the awareness about TB and approaches of TB therapy among the physicians in Turkey it was observed that first step practice physicians have insufficient knowledge regarding directly observed treatment short course (DOTS) strategy, diagnosis of TB and frequency of sputum examination [23]. The reasons for such a poor response could be because of the non-acquaintance of the clinicians with the TB treatment guidelines. It is a serious concern because if the clinicians practicing in private set-up are not aware about the correct regimen on which patients should be started, it will seriously reflect in terms of outcome (rise in number of defaulter/treatment failure / emergence of drug resistance) of the disease.

In the present study, 26(51%) of the clinicians were aware about the correct duration of treatment in category I and category II under RNTCP. In an epidemiological study done in Croatia it was reported that 61.9% of the primary health care physicians were not aware about the exact duration of treatment [24]. In another survey done across twelve cities in Turkey it was observed that only 33.5% doctors knew correctly about the duration of treatment [25]. The probable reason for the less awareness among the private practitioners could be because of their untrained status and ignorance towards the diagnosis and management of disease. In addition, experimentation with self-derived regimens or administration of some drugs under the influence of some pharmaceutical company drug representative is an issue which has to be addressed on an emergency basis.

Current study revealed that only 32(62.7%) of the clinical teaching staffs were aware that sputum positive patients put on anti TB treatment should be monitored for their progress with the help of periodic sputum examinations. However, in a cross-sectional survey of general practitioners from northern areas of Pakistan it was observed that only 28% participants correctly reported that sputum microscopy is the best investigation during follow up of pulmonary TB patients [26]. Findings of another study revealed that only 14% of private practitioners advised sputum microscopy solely for pulmonary TB diagnosis, while remaining 86% used different combination of tests (chest x-ray/sputum microscopy/erythrocyte sedimentation rate/tuberculin test) for TB diagnosis [22]. This clearly reveals that most of the private practitioners were relying on tests which are not recommended as the first line of investigations for making a diagnosis. Considering the multiple advantages which are associated with sputum smear examination (viz. simple, high sensitivity and specificity, minimum infrastructure requirement, and intra or inter-observer variations) it should be advocated on a mass scale for making a diagnosis as well as for following-up a patient who is put on treatment under the program.

Out of the 51 study participants, 24(47.1%) were aware that effectiveness of daily therapy is similar to intermittent therapy as prescribe under DOTS. However, in a survey conducted to assess the knowledge, attitude and practices regarding TB among private practitioners, only 11.5% of the doctors were of the opinion that the effectiveness of daily therapy is comparable with intermittent therapy [27]. Another study revealed that only 27% of private medical practitioners prescribed alternate day regimen [28].

In a public-private sector comparison regarding doctors' knowledge about TB management in India, it was disclosed that 60% of the overall participants had received RNTCP training and doctors in the public sector had 2.1 times better knowledge than private sector doctors [29]. However, a similar study concluded that there was a large gap

in knowledge, attitude and practices on TB and RNTCP among the practitioners of both the sectors [30]. On the contrary, in our study only 4(7.8%) of the study participants reported that they were trained in RNTCP and probably for this reason only the overall knowledge and practice pertaining to diagnosis and management of TB was not good.

The findings of the study specifically indicate that knowledge of the clinicians regarding RNTCP and RNTCP guidelines is not up-to the mark. To improve the current scenario, it is of utmost importance to collaborate with the program managers (District Tuberculosis Officer) to prepare a schedule for ensuring the training of the clinicians in RNTCP in a phased manner. The initiative should not stop here rather there is the immense need of the regular sensitization session for the clinicians so that they are abreast with the recent updates in the program.

The study had its limitations as the sample size was quite less so the findings cannot be generalized. Nevertheless, it clearly highlights the need of the regular sensitization / training session for the clinical faculties of a medical college considering that it is an apex institute in programmatic management of TB.

CONCLUSIONS

As the private sector plays a significant role in diagnosis of a major proportion of TB cases, the RNTCP cannot afford to disregard this sector. The study findings demonstrate wide gaps in knowledge about RNTCP guidelines among clinical faculties. The findings of the study should be n eye-opener for the health policy makers and program managers. Need of the hour is to encourage all doctors, particularly private sector doctors, to receive RNTCP training and practice DOTS methodology. These training sessions should give emphasis on the need of a high index of suspicion among out-patients (pulmonary TB suspect); diagnostic algorithm; follow-up of TB patients; and treatment of patients as per RNTCP guidelines.

Conflicts of interest: None to be declared

Source of support: Non-funded study

REFERENCES

1. Dye C. Global epidemiology of tuberculosis. Lancet 2006 Mar; 367(9514):938–940.
2. World Health Organization. Global Tuberculosis Control Report 2011. Geneva, Switzerland: WHO.
3. Lonnroth K, Raviglione M. Global epidemiology of tuberculosis: prospects for control. Semin Respir Crit Care Med 2008 Oct; 29(5):481-91.
4. Pehme L, Rahu K, Rahu M, Altraja A. Factors related to health system delays in the diagnosis of pulmonary tuberculosis in Estonia. Int J Tuberc Lung Dis 2007 Mar; 11(3):275-81.
5. Mirsaeidi SM, Tabarsi P, Mohajer K, Falah-Tafti S, Jammati HR, Farnia P, et al. A long delay from the first symptom to definite diagnosis of pulmonary tuberculosis. Arch Iran Med 2007 Apr; 10(2):190-3.
6. Bustamante-Montes LP, Escobar-Mesa A, Borja-Aburto VH, Gomez-Munoz A, Becerra-Posada F. Predictors of death from pulmonary tuberculosis: the case of Veracruz, Mexico. Int J Tuberc Lung Dis 2000 Mar; 4(3):208-15.
7. Liang L, Wu Q, Gao L, Hao Y, Liu C, Xie Y, et al. Factors contributing to the high prevalence of multidrug-resistant tuberculosis: a study from China. Thorax 2012 Jul; 67(7):632-8.
8. Khan JA, Malik A. Tuberculosis in Pakistan. Are we losing the battle? J Pak Med Assoc 2003 Aug; 53(8):320-1.
9. Newell JN, Pande SB, Baral SC, Bam DS, Malla P. Leadership, management and technical lessons learnt from a successful public-private partnership for TB control in Nepal. Int J Tuberc Lung Dis 2005 Sep; 9(9):1013-7.
10. Lambert ML, Delgado R, Michaux G, Vols A, Speybroeck N, Van der Stuyft P. Collaboration between private pharmacies and national tuberculosis programme: An intervention in Bolivia. Trop Med Int Health 2005 Mar; 10(3):246-50.
11. Tamhane A, Ambe G, Vermund SH, Kohler CL, Karande A, Sathiakumar N. Pulmonary tuberculosis in Mumbai, India: Factors responsible for patient and treatment delays. Int J Prev Med 2012 Aug;3(8):569-80.
12. Gaviria MB, Henao HM, Martinez T, Bernal E. The role of health care providers in the late diagnosis of pulmonary tuberculosis among adults in Medellín, Colombia. Rev Panam Salud Publica 2010 Feb; 27(2):83-92.
13. Uplekar M, Pathania V, Raviglione M. Private practitioners and public health: weak links in tuberculosis control. Lancet 2001 Sep; 358(9285):912-6.
14. Woith WM, Volchenkov G, Larson JL. Russian health care workers' knowledge of tuberculosis and infection control. Int J Tuberc Lung Dis 2010 Nov; 14(11):1489-92.
15. Hashim DS, Al Kubaisy W, Al Dulayme A. Knowledge, attitudes and practices survey among

health care workers and tuberculosis patients in Iraq. East Mediterr Health J 2003 Jul; 9(4):718-31.
16. Managing the RNTCP in your area - A training course (Modules 1-4). Available from: http://tbcindia.nic.in/documents.html [Cited 2013 Apr 22].
17. Ayaya SO, Sitienei J, Odero W, Rotich J. Knowledge, attitudes, and practices of private medical practitioners on tuberculosis among HIV/AIDS patients in Eldoret, Kenya. East Afr Med J 2003 Feb; 80(2):83-90.
18. Shah SK, Sadiq H, Khalil M, Noor A, Rasheed G, Shah SM, et al. Do private doctors follow national guidelines for managing pulmonary tuberculosis in Pakistan? East Mediterr Health J 2003 Jul; 9(4):776-88.
19. Shirzadi MR, Majdzadeh R, Pourmalek F, Naraghi K. Adherence of the private sector to national tuberculosis guidelines in the Islamic Republic of Iran, 2001-02. East Mediterr Health J 2003 Jul; 9(4):796-804.
20. Hussain R, Toossi Z, Hasan R, Jamil B, Dawood G, Ellner JJ. Immune response profile in patients with active tuberculosis in a BCG vaccinated area. Southeast Asian J Trop Med Public Health 1997 Dec; 28(4):764-73.
21. Khan J, Malik A, Hussain H, Ali NK, Akbani F, Hussain SJ, et al. Tuberculosis diagnosis and treatment practices of private physicians in Karachi, Pakistan. East Mediterr Health J 2003 Jul; 9(4):769-75.
22. Ahmed M, Fatmi Z, Ali S, Ahmed J, Ara N. Knowledge, attitude and practice of private practitioners regarding TB-DOTS in a rural district of Sindh, Pakistan. J Ayub Med Coll Abbottabad 2009 Jan-Mar; 21(1):28-31.
23. Deveci SE, Turgut T, Açik Y, Deveci F, Muz MH. The knowledge, attitude and behavior related to the tuberculosis and approaches of tuberculosis therapy by the physicians providing first step service. Tuberk Toraks 2003;51(1):40-7.
24. Jurcev Savicevic A. Gaps in tuberculosis knowledge among primary health care physicians in Croatia: epidemiological study. Coll Antropol 2009 Jun; 33(2):481-6.
25. Dagli CE, Cetin TA, Hamit A, Yilmaz P, Gurdal Y, Ekrem G, et al. A multicentre study of doctors' approaches to the diagnosis and treatment of tuberculosis in Turkey. J Infect Dev Ctries 2009 Jun; 3(5):357-64.
26. Shehzadi R, Irfan M, Zohra T, Khan JA, Hussain SF. Knowledge regarding management of tuberculosis among general practitioners in northern areas of Pakistan. J Pak Med Assoc 2005 Apr; 55(4):174-6.
27. Dosumu EA. Survey of knowledge, attitudes, and practices regarding tuberculosis among general and private medical practitioners in Nigeria. Afr J Resp Med. 2008;1:17-9.
28. Datta K, Bhatnagar T, Murhekar M. Private practitioners' knowledge, attitude and practices about tuberculosis, Hooghly district, India. Indian J Tuberc 2010 Oct; 57(4):199-206.
29. Vandan N, Ali M, Prasad R, Kuroiwa C. Assessment of doctors' knowledge regarding tuberculosis management in Lucknow, India: a public-private sector comparison. Public Health 2009 Jul; 123(7):484-9.
30. Srivastava DK, Mishra A, Mishra S, Chouksey M, Jain P, Gour N, et al. A comparative assessment of KAP regarding tuberculosis and RNTCP among government and private practitioners in district Gwalior, India: an operational research. Indian J Tuberc 2011 Oct; 58(4):168-77.

ANNEXURE - QUESTIONNAIRE

Part A

Name of Department - _____

Age- ____

Sex-_____

Trained in RNTCP / DOTS Plus – Y/N

Part B

1. Ratio of smear positive TB to smear negative TB in general community is

a) 2:1

b) b) 1:2

c) **1:1**

d) 3:1

2. What percentage of adult OPD patients should be considered as Pulmonary TB suspects in rural areas?

a) 2-3%

b) 1-2%

c) 5%

d) Don't know

3. Life time risk of TB among individuals infected with TB (HIV negative status) and among the HIV positive individuals infected with TB is

a) 30% & 50%

b) 20% & 30%

c) 10% & 60%

d) 15% & 50%

4. Most important criteria to suspect TB so as to identify most of the TB patients is

a) Weak patient with significant weight loss since the onset of illness

b) H/O cough since 1 months and previous history of cough that has subsided with treatment

c) Hemoptysis and chest pain

d) Cough more than 2 weeks

5. Duration of treatment in Category I and Category II is

a) Cat I (IP – 2 months, CP – 4 months) ; Cat II (IP – 2 months, CP – 6 months)

b) Cat I (IP – 3 months, CP – 3 months) ; Cat II (IP – 4 months, CP – 5 months)

c) Cat I (IP – 2 months, CP – 4 months) ; Cat II (IP – 3 months, CP – 5 months)

d) Cat I (IP – 2 months, CP – 4 months) ; Cat II (IP – 2 months, CP – 5 months)

6. 20y / F pt. on Cat II AKT was found to be sputum positive at end IP follow up. How you will manage this patient?

a) Extend IP for 1 more month & then shift patient to CP irrespective of sputum results

b) Once patient end IP sputum result has come positive, patient should be considered as a case of drug resistant TB and started on Cat IV ATT.

c) Replace Inj Streptomycin with Inj Kanamycin, and continue remaining Cat II as per schedule.

d) Don't know

7. 48y/M pt. comes to a general practitioner with a positive serological result of Ig G. What should physician do?

a) Advices patient to do TB Ig M and then take a call on treatment based on results.

b) Starts patient on Anti-Tubercular treatment.

c) Physician ignores the serological result, assesses the patient clinically and based on his past history and current symptoms take a call.

d) Advices patient to do Mantoux test and if positive, start patient on Anti-Tubercular treatment.

8. Monitoring of Smear positive TB patients put on treatment is based on

a) Chest X-ray periodically

b) Sputum examination periodically

c) Chest X-ray + sputum examination at end of treatment

d) Don't know

9. When should the follow up sputum examination be done for patients kept under Cat II of RNTCP

a) At 2, 4, 6 months into treatment

b) At the end of intensive & continuation phase

c) At 3, 5, 8 months into treatment
d) Don't know

10. What is meant by cure for a TB patient under RNTCP
a) Patient who has taken all the drugs provided for him / her through RNTCP
b) A sputum smear positive patient who completed treatment and had 2 negative smears on 2 occasions, one of which was at the end of treatment.
c) Initially sputum smear positive pt. who has completed treatment & had negative smear at end of treatment
d) Don't Know

11. 65y / Male patient was diagnosed with Sputum positive TB by a chest physician. He gives a past history of TB 29 years back for which patient took treatment for 4 months. What you will do for this patient?
a) Start on Cat I AKT
b) Start on Cat II AKT
c) Start on Cat I + (Inj Kanamycin x 4 months)
d) Don't know

12. Which patients are eligible for Cat II under RNTCP
a) All patients diagnosed with any form of TB at places where incidence of TB is higher than national figures.
b) All types of severely ill patients.
c) Any patient who has taken AKT for more than one month previously in their lifetime.
d) All TB patients where Private Practitioners / trained nursing staff are present who can give injections.

13. Multi Drug Resistant (MDR) TB suspect (under RNTCP) is
a) Patient who is sputum culture positive and whose TB is due to Mycobacterium tuberculosis that are resistant *in vitro* to isoniazid and rifampicin with or without other anti-tubercular drugs based on results from a RNTCP certified Culture & Drug Sensitivity Testing (DST) laboratory.
b) Patient who is sputum culture positive and whose TB is due to Mycobacterium complex that are resistant *in vivo* to isoniazid or rifampicin with or without other anti-tubercular drugs based on results from a RNTCP certified Culture & Drug Sensitivity Testing (DST) laboratory.
c) Patient who is resistant to isoniazid and rifampicin drugs.
d) Don't Know

14. Cat IV regimen comprises of drugs namely
a) Kanamycin, Levofloxacin, Ethionamide, Pyrazinamide, Ethambutol, Cycloserine
b) Rifampicin, Pyrazinamide, Ethambutol, Clarithromycin
c) Amoxicillin / Clavulanate, Moxifloxacin, para- aminosalicylic acid
d) Don't know

15. Honorarium paid to DOT providers in RNTCP is
a) Cat I / II – Rs 250 per pt. for every patient declared cured/ treatment completed; Cat IV – Rs 2500/ patient
b) Cat I / II – Rs 500 per pt. for every patient declared cured/ treatment completed ; Cat IV – Rs 2000/ patient
c) Cat I – Rs 250 ; Cat II – Rs 400 ; Cat IV – Rs 1500/ patient
d) Don't know

16. In Pregnant patients with MDR TB (State True / False)
a) If pregnancy is > 20 weeks – omit kanamycin and replace with PAS till delivery = **T** / F / Don't know
b) If pregnancy is < 20 weeks – advise MTP and start with Cat IV = **T** / F / Don't know
c) If pregnancy is < 20 weeks and patient is unwilling for MTP – Don't start Cat IV = T / **F** / Don't know

17. For diagnosing a patient with Sputum positive TB, three sputum examinations have to be done = T / **F** / Don't know

18. TB control program is a health program implemented mainly through RNTCP staff = T / **F** / Don't Know

19. Fluoroquinolones can be used for the TB suspects with negative sputum smear examination = T / **F** / Don't know

20. Best way to control TB and prevent the spread of TB is by early diagnosis and treatment of sputum positive cases = **T** / F / Don't know

21. Effectiveness of Daily therapy is similar to intermittent therapy = **T** / F/ Don't know

22. TB is a notifiable disease = **T** / F / Don't know

23. Positive Mantoux test in 32y / F is an indication for starting TB treatment = T / **F** / Don't know