PHYSICIANS' KNOWLEDGE REGARDING THE RECOMMENDED ANTI-TUBERCULOSIS PRESCRIBED MEDICATION REGIMEN: A CROSS-SECTIONAL SURVEY FROM LUCKNOW, INDIA

Nimisha Vandan[1], Moazzam Ali[1], Rajendra Prasad[2] and Chushi Kuroiwa[1]

[1]Department of Health Policy and Planning, School of International Health, Graduate School of Medicine, University of Tokyo, Japan; [2]Department of Pulmonary Disease, King George Medical University, Lucknow, UP, India

Abstract. We conducted a cross-sectional, descriptive survey among 141 medical physicians treating tuberculosis (TB) patients, registered with local chest physicians association in Lucknow District, India. A semi-structured questionnaire was used to evaluate the physicians' knowledge of anti-tuberculosis prescribed medication regimens. Sixty percent of eligible physicians had Revised National Tuberculosis Control Program training, mostly in the public sector. Only two-thirds of physicians could correctly state the recommended TB drugs. Physicians, especially in the private sector, had inadequate knowledge of the approved anti-tuberculosis prescribed medication regimen. This study demonstrates the need for adequate training in both public and private sectors regarding the correct anti-tuberculosis treatment regimens.

INTRODUCTION

Tuberculosis (TB) is the most common cause of death worldwide in adults due to a single infectious agent (Ministry of Health, India, 2005). In 1992, the Third World Congress on Tuberculosis concluded that, in spite of its global magnitude, the problem of tuberculosis was not being adequately addressed (Snider and La Montagne, 1994). Despite all the advances made in treatment TB still remains a major public health problem, particularly in developing countries. India accounts for nearly 30% of the global TB burden. Every year, India has 1.8 million new cases of TB, of which 0.8 million are new smear positive cases. In 1991 the WHO advocated the use of the directly observed treatment short course (DOTS) strategy. India adopted it in 1993 under the Revised National TB Control Program (RNTCP) through government public health facilities (WHO, 1997).

In India, private practitioners manage a large proportion of unreported TB cases. They offer better geographical access and more personalized care than public facilities, however, this treatment remains unregulated (Uplekar, 2003).

The reasons for increased TB prevalence include improper diagnosis and treatment, poor drug compliance, increased travel and migration, presence of TB-HIV coinfection and multi drug-resistant TB (MDR-TB)(Singla and Singla, 1998). The recent global concern regarding the treatment of TB is the emergence of resistance to the two most potent anti-tuberculosis drugs: isoniazid and rifampicin (Sharma and Mohan, 2004). The response of patients with MDR-TB to treatment is poor and

Correspondence: Dr Moazzam Ali, Department of Health Policy and Planning, School of International Health, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan.
Tel: +81 3 5841 3699; Fax: +81 3 5841 3637
E-mail: denube5@yahoo.com

the mortality rate is usually high. These patients need to be treated with expensive, sometimes toxic, second line drugs, and may require hospitalization to manage (Paramasivan and Venkataraman, 2004).

In India, anti-tuberculosis drug resistance has been found in previous studies (Indian Council of Medical Research, 1968, 1969). The recommended dosages of the most essential drugs used for the treatment of TB, as found in the RNTCP Technical and Operational Guidelines (Ministry of Health, India, 2005) are: isoniazid 600 mg, rifampicin 450 mg, pyrazinamide 1,500 mg, streptomycin 0.75 mg and ethambutol 1,200 mg thrice a week (intermittent mode of prescription) for adult patients.

This study reports on research carried out as part of a broader study to assess TB control and management issues in public and private sectors in Lucknow, India. In this study we assessed the knowledge of physicians regarding recommended prescription doses of anti-tuberculosis medicine, in their practices.

MATERIALS AND METHODS

In March 2007, a cross-sectional descriptive survey was conducted in Lucknow District, India among medical physicians treating TB patients, registered with Chest Physicians Association, Lucknow, India. The majority, 141 out of 170 physicians, were recruited into the study. An English language, self reported semi-structured questionnaire was given to all participants who were willing to participate in the study. Ethical approval was obtained from the University of Tokyo, District TB Office, Lucknow, India. Written informed consent was obtained from each participant before the interview.

RESULTS

Of 141 physicians who participated in the study, 93% were males with a mean age of 45 years; 56% were working in the public sector. About 60% (85/141) of the physicians had received training under the RNTCP, 73% (58/79) of physicians from the public sector and 44% (27/62) from the private sector. Sixty-nine percent of physicians reported that they were following DOTS methodology for TB treatment either after receiving training or without receiving any training, by using study material of DOTS methodology issued by the government (Table 1).

Eighty-four percent of physicians stated that under RNTCP guidelines, the therapy for TB should last six months, however only a few (39%) physicians could accurately identify the recommended intermittent mode (thrice a week) of prescription for TB treatment, as proposed by the RNTCP guidelines.

Only 67% of physicians could identify all the primary anti-tuberculosis drugs stated in the RNTCP guidelines. A large percentage of physicians either overprescribed or under prescribed the anti-tuberculosis drugs.

Nearly 70% of physicians (67% in the public sector and 73% in the private sector) prescribed a dosage of isoniazid below the recommended regimen. Thirty-one percent of physicians (32% in the public sector and 29% in the private sector) prescribed a dosage for pyrazinamide below the recommended regimen. Fifty-nine percent of physicians (57% in the public sector and 61% in the private sector) prescribed a dosage of ethambutol below the recommended regimen. In case of streptomycin, 31% of physicians (47% in the public sector and 23% in the private sector) prescribed a dosage above the recommendation stated in the RNTCP guidelines. In the case of rifampicin, 72% of physicians (77% in the public sector and 66% in the private sector) identified the correct regimen as per RNTCP guidelines, while 20% of physicians (15% in the public sector and 26% in the private sector) prescribed a dose above the recommended dosage for rifampicin (Table 2).

Table 1
Characteristics of physicians (*N*=141).

Characteristics	Public sector *N* (%) = 79 (56%)	Private sector *N* (%) = 62 (44%)	Total *N* (%)
Age of respondent [Mean(SD)= 45.1(12)]			
≤45 yrs	39 (49.4)	30 (48.4)	69 (48.9)
>45 yrs	40 (50.6)	32 (51.6)	72 (51.1)
Medical qualification			
Under graduate degree	18 (22.8)	23 (37.0)	41 (29.0)
Specialized degree	61 (77.2)	39 (62.9)	100 (71.0)
Years of practice [Mean (SD)= 17.3(12.08)]			
≤17 yrs	42 (55.3)	31 (50.8)	73 (51.7)
>17 yrs	34 (44.7)	30 (49.2)	64 (45.3)
N/A	3 (3.7)	1 (1.6)	3 (2.1)
Received RNTCP training			
Yes	58 (73.4)[a]	27 (43.5)	85 (60.0)
No	21 (26.6)	35 (56.5)	56 (40.0)
Followed DOTS (provider's perception)			
Yes	65 (82.3)[a]	32 (51.6)	97 (69.0)
No	14 (17.7)	30 (48.4)	44 (31.0)

[a]Chi-square test p-value<0.001

Table 2
Dosage of anti-TB drugs.

Drugs mentioned in RNTCP guidelines[a]	Less than recommended guidelines	Same as recommended guidelines	More than recommended guidelines	Did not respond
Rifampicin	0 (0.0%)	102 (72.3%)	28 (19.8%)	11 (7.8%)
Isoniazid	98 (69.5%)	29 (20.5%)	3 (2.1%)	11 (7.8%)
Pyrazinamide	43 (30.5%)	68 (48.2%)	18 (12.7%)	12 (8.5%)
Ethambutol	83 (58.8%)	36 (25.5%)	11 (7.8%)	11 (7.8%)
Streptomycin	6 (4.2%)	67 (47.5%)	43 (30.5%)	25 (17.7%)

[a]RNTCP technical and operational guidelines. Ministry of Health, India (2005)

DISCUSSION

The emergence of drug resistance in *Mycobacterium tuberculosis* has been associated with a variety of patient, provider and management related factors. Irregular, incomplete and inadequate treatment along with improper drug regimens are the most common causes of drug resistance (Paramasivan and Venkataraman, 2004; Sharma and Mohan, 2004). TB patients in India get treated with the DOTS regimen through RNTCP programs, but the vast majority receive treatment from private medical practitioners. This study highlights the inadequate and incomplete knowledge of physicians regarding TB treatment using DOTS,

especially in the private sector. Besides treatment failures, inappropriately prescribed anti-TB medicines may also contribute to drug resistance. This may cause a barrier in the control of TB and increase the risk for MDR-TB.

In order to eradicate TB it is vital to understand and control the factors responsible for resistance to drugs among patients. Although many physicians received training under the RNTCP program, our findings emphasize the need for more intense and focused regular training sessions along with strict supervision of trainees to ensure continuity of quality in care. High-quality, regular training of physicians in both public and private sectors could bring improvement in quality of care for to TB patients, and thus prove to be an important step in the right direction to eliminate TB from India. This study also draws attention to the need for a more vigorous supervisory and monitoring system among the RNTCP network of physicians to ensure consistent quality among service providers. Clear, sustained and more focused efforts are needed to overcome the escalating threat of MDR-TB in India.

REFERENCES

Indian Council of Medical Research. Prevalence of drug resistance in patients with pulmonary tuberculosis presenting for the first time with symptoms at chest clinics in India, part 1. Findings in urban clinics among patients giving no history of previous chemotherapy. *Indian J Med Res* 1968; 56: 1617-30.

Indian Council of Medical Research. Prevalence of drug resistance in patients with pulmonary tuberculosis presenting for the first time with symptoms at chest clinics in India, part 2. Findings in urban clinics among patients giving no history of previous chemotherapy. *Indian J Med Res* 1969; 57: 823-35.

Ministry of Health, India. RNTCP. Technical and operational guidelines. New Delhi: Ministry of Health, 2005.

Paramasivan CN, Venkataraman P. Drug resistane in tuberculosis in India. *Indian J Med Res* 2004; 120: 377-86.

Sharma SK, Mohan A. Multi drug-resistant tuberculosis. *Indian J Med Res* 2004; 120: 354-76.

Singla N, Singla R. Survey of knowledge, attitude and practice of general practitioners in Delhi. *Int J Tuberc Lung Dis* 1998; 2: 384-9.

Snider DE, La Montagne JR. The neglected global tuberculosis problem: a report of the 1992 World Congress on Tuberculosis. *J Infect Dis* 1994; 169: 1189-96.

Uplekar M. Involving private health care providers in delivery of TB care: global strategy. *Tuberculosis* 2003; 83: 156-64.

World Health Organization. WHO report on the tuberculosis epidemic. *WHO/TB/97.223.* 1997.