

22,243 primary health centers which are all government owned^{22,23}. So it is clear that the number of drug information centers developed so far is not enough to serve all hospitals and clinics in India. This situation calls for the networking of DICs, in order to avoid duplication of cost, and enable exchange of personnel, and organizing joint group trainings²⁴. Thus, many hospitals can benefit of the existing facilities.

The world health authorities such as the WHO should fund such centers to promote the rational use of drugs through providing drug information. Such stimuli are essential for developing countries like India.

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Knowledge, attitudes and practices for tuberculosis among doctors in India

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Introduction

Today's health-care is highly complex. Care is often delivered in a pressurized and fast-moving environment, involving a vast array of technology. Such an environment is not the most favorable for patient safety. In its broadest sense, enhancing the safety of patients requires: (a) increased ability to learn from mistakes, through better reporting systems, (b) greater capacity to anticipate mistakes and probe systemic weaknesses (c) identifying existing knowledge resources, within and outside the health sector; and (d) improvements in the health-care delivery system itself¹.

In this context, looking at Tuberculosis (TB), over the last decade significant efforts were made to improve patient safety, by improving control TB by national health authorities in India. The authorities implemented and expanded the Directly Observed

Treatment Short course (DOTS) strategy under the Revised National TB Control Program (RNTCP).

In spite of all the efforts to combat TB, it remains a major public health problem due to, amongst other reasons, the continued neglect of the control of tuberculosis, and its inadequate management. The pandemic of the Human Immunodeficiency Virus (HIV) in the later decades of the last century has fuelled the spread of tuberculosis. In many countries, TB and HIV are inextricably linked; HIV progressively weakens the immune system and makes people vulnerable to a host of opportunistic infections such as tuberculosis. The majority of the people with HIV/AIDS live in countries where the prevalence of tuberculosis is high. TB is the earliest manifestation of the development of AIDS in over half of all the cases in developing countries and accounts for about a

third of all AIDS deaths, thus becoming the leading killer of people with HIV in the developing world².

There is evidence in several countries^{3,4,5,6,7,8,9} that HIV epidemic facilitates the emergence of multi resistant strains of *Mycobacterium tuberculosis* and this compromises patient safety. These findings hold serious implications for TB control as the presently available anti tuberculosis drugs may not be adequate to combat an epidemic of multi drug resistant TB.

In 1993, the World Health Assembly declared TB as a global emergency, calling upon member countries to adopt and implement national tuberculosis control strategies and programs based on a new WHO Framework for Effective Tuberculosis Control¹⁰.

In this context, the present baseline study was aimed to understand the knowl-

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edge, attitudes, and practices for tuberculosis by doctors in Karnataka, India.

Method

During the seminars annex workshop on the topic of "Quality care and ethical practice", conducted by the Indian Medical Association, Karnataka State Branch along with Government of Karnataka, Health and Family Welfare Department, "Rational Use of Drugs" was included as one of the topics. More than five hundred doctors from government hospitals and some from private practices attended the program which was conducted in six different zones in Karnataka, namely - Gulbarga, Belgaum, Shimoga, Mysore, Kolar and Davanagere. One workshop per month from July to December 2001 was organised.

The seminars dealt with various issues of ethics in medicine and rational drug use. The participating doctors received a pre-tested questionnaire that previously also had been used in a study at Delhi, India¹¹. Anonymity was optional and confidentiality was guaranteed.

Results

One hundred and twenty three doctors completed and returned the questionnaire. Sixty-seven respondents were general practitioners, and thirty-five were specialists (e.g. pediatricians, gynecologists, surgeons, and dermatologists). Twenty-one doctors did not specify their specialty. The responses given to the various questions are described below.

Percentage of patients with TB in the different practices

The responses provided by the respondents regarding the percentage of patients with TB in their respective practice are provided in the table below. Five doctors did not respond to this question.

Table 1: Percentage of patients with TB in the different practices

Number of doctors (%)	% of patients with TB
14 (11.4)	<1
90 (73.2)	1-10
8 (6.5)	10-20
3 (2.3)	20-30

Time elapsed before patients present for treatment after development of symptoms

Table 2 below shows how much time the

respondents thought had elapsed in general after the symptoms developed before patients would present themselves. Four doctors (3.3%) did not respond while 26 doctors (21.1%) presented additional information like patients presenting within 1 year after the symptoms developed, or patients presenting after they had stopped treatment for some reason.

Table 2: Time elapsed before patients present for treatment after development of symptoms

Number of Doctors (%)	Time (months)
69 (56.1)	0-3
18 (14.6)	3-6
6 (4.9)	6-9

Type of TB treated

Pulmonary TB was the type that respondents treated the most (108 doctors, 88%) and 15 doctors (12.2%) mentioned other types like intestinal, ocular, secondary pulmonary TB and lupus vulgaris.

Diagnosing suspected pulmonary tuberculosis

To investigate the TB, chest X-ray examination was recommended by 109 doctors (88.6%), sometimes in combination with other tests such as sputum examination, or Erythrocyte Sedimentation Rate (ESR). Thirteen doctors (10.6%) recommended only sputum examination and one doctor mentioned sputum examination with ESR.

In the group of doctors who recommended chest X-ray, 27 doctors (22%) also recommended sputum examination, while 40 doctors (32.5%) recommended sputum examination and ESR.

Twenty-two doctors (17.9%) recommended X-ray, sputum and ESR together with other tests like CSF, pleural fluid, CT scan, tissues biopsies, HIV. The remaining 16 doctors (13%) recommended combinations (like sputum, ESR, CSF) with chest X-ray while three doctors (2.43%) recommended chest X-ray only.

The response to the question of preferred test that confirmed the diagnosis of TB was varied amongst the doctors. 26 doctors (21.1%) quoted sputum as the test they preferred to use for diagnosis while 06 doctors (4.8%) felt chest X-ray was more satisfactory to confirm the diagnosis of TB.

Treatment and referral

Ten doctors preferred to treat patients on their own. 11 doctors stated that they would always ask for help from a specialist colleague, 36 doctors would often ask for help, while 66 doctors rarely would take help with the TB treatment.

If patients needed to be refereed, 76 doctors preferred to refer their patients to TB institute (tertiary center) while 47 doctors preferred to refer to other physicians or chest specialists at the district TB center (secondary care center).

As for the treatment, 75 doctors quoted the National Tuberculosis Control Program (NTCP) regimen while 32 doctors quoted the Revised National Tuberculosis Control Program (RNTCP) regimen, which actually is the DOTS. 14 doctors did not mention the regimen while two doctors stated that they used both the regimens, depending on which ever would work for the patient.

Patient adherence

Fourteen doctors stated that all their patients were adherent with the treatment, while 28 doctors estimated 75-95% of their patients as adherent. Seventeen doctors felt 50-75% of their patients adhered with treatment, while 23 doctors quoted adherence at 25-50%. Sixteen doctors felt only up to 25% of their patients adhered while four doctors expected only 1% adherence and 1 doctor quoted that none of his patients were adherent. Ten doctors did not respond to this question.

Among the reasons for the non-adherence, doctors named the following: non availability of drugs, side effects, long treatment duration, patients stopping the treatment as soon as they start feeling better, lack of motivation, lack of mass media promoting adherence issues and addressing patient concerns, false beliefs of patients, and negligence from the side of patients.

Nine doctors did not answer this question.

Regarding non-adherence, 98 doctors felt that patients responded at an emotional level when they defaulted, meaning that when they were told about the consequences of non-adherence, they would try to adhere to the required therapy. Other (13) doctors felt that some patients did not respond when they tried to explain the consequences of non-adherence. Twelve doctors did not respond to this part of the questionnaire.

Most doctors (95) stated that they would give the list of non-adherent patients to the TB center (secondary care centers) for follow up. But 21 doctors responded that they did not supervise the follow up nor did they

provide the list of defaulters to other health care workers. Seven doctors did not answer this question.

About the evidence of multi drug resistant TB (MDR-TB), 56 doctors did not respond. The remaining doctors in the survey quoted the TB treatment card, patient not recovering, X-ray and sputum tests as evidences for the MRD-TB.

Adverse reactions

Various side effects that were commonly seen were mentioned by 35 doctors, such as hepatic damage, peripheral neuropathy, drug induced gastritis, jaundice, ototoxicity, skin rashes, Steven Johnson syndrome, or giddiness. Eleven doctors felt that very few of their patients faced side effects and five doctors mentioned that ADRs were rarely seen. Eleven doctors mentioned drug resistance issues and 26 doctors did not respond to the question.

Need for qualified and trained pharmacist to assist doctors

Most (107) doctors said that they felt a need for qualified and trained pharmacists to assist clinicians. Only 15 doctors felt that pharmacists are not required to assist doctors and one doctor did not respond to this question.

Patient health education

The responses are tabulated below.

Means of updating knowledge about TB

Twenty-five doctors quoted only conferences as the means of updating their knowledge about TB while 8 named journals. Other doctors opted for various combinations of journals, conferences, medical representatives, and textbooks.

Discussion

The majority of the doctors in this study claimed that 1-10% of their patients suffered from TB. Is not surprising, because Tuberculosis (TB) continues to be a major public health problem in India, and there are an estimated 2.5-3 million sputum positive cases and 5-6 million noninfectious cases in the country¹².

This study showed that according to the doctors, more than half of all TB patients seek medical assistance within the first three months of the appearance of the symptoms. At the same time, the doctors in this study also pointed out that some patients stop their treatment half way through and come back for treatment when symptoms resume. Other studies highlight that adherence to tuberculosis therapy is influenced by several factors, including the health care system, complexity of therapeutic regimens and patient's characteristics. Individual factors that negatively influence patient's adherence are the most difficult to counter.¹³

Close to 89% of this study group quoted recommending chest X-ray with or without other tests such as sputum, ESR, etc. A similar study in India showed that in a suspected case of tuberculosis, sputum examination was advised by only 12% of the private practitioners, while 89.5% would recommend chest X-ray¹⁴. Another study in India showed that almost all doctors (99.8%) used chest X-ray, while 49.2% advised chest X-ray alone for the diagnosis of Pulmonary TB. On the other hand, 50.6% performed sputum microscopy while none used it without chest X-ray. This shows that not using a sputum smear microscopy and continued reliance on chest X-ray only might have serious public health implications. Strategies for continued medical education and audit of practices of

doctors should be implemented without delay¹⁵.

The national TB control program (NTCP) was launched in India in 1962 on a 50:50 sharing basis between Centre and State in regard to supply of anti-TB drugs. The Government of India evolved the Revised National TB Control Programme (RNTCP) based on Directly Observed Treatment Short Course (DOTS) strategy with the objective of curing at least 85% of new sputum positive patients and detecting at least 70% of such patients.¹⁶

The RNTCP began on a pilot basis in October 1993¹⁷. Sixty percent of the doctors in this study said they still used the NTCP regimen. If the doctors are not using the RNTCP regimen, this has serious implication and other studies in India confirm our findings.

A study of prescriptions for tuberculosis recommended by 102 private doctors, practicing in the slums of Mumbai, showed that 100 private doctors prescribed 80 different regimens, most of which were both inappropriate and expensive¹⁸. Another study in India showed that 187 private practitioners (PPs) were using 102 different regimens for treating tuberculosis, and only 29.4% was using the regimen recommended by the RNTCP¹⁹. Another study reflected that poor awareness of the WHO guidelines and low compliance among physicians, and a high loss to follow-up of patients. All these studies show that efforts are needed to create physician's awareness about the WHO guidelines and their use²⁰ and interventions are required to improve a better implementation of the revised national tuberculosis control program in India²¹.

The extent of patient non-adherence to treatment is an issue that has featured in this

Table 3: Patient health education

	Number of doctors who agreed	Number of doctors who disagreed	Number of doctors who did not respond
Patients aware of the need for regular treatment to cure TB	108	14	1
Patients aware of the need for a good diet	109	13	1
Patients aware of the need for proper disposal of sputum	62	58	3
Patients aware of the need to cover their mouth while coughing	76	44	3
Patients aware of the need to avoid smoking and alcohol	80	43	-
Doctors advised surveillance of family members	118	3	2

study. The majority of the doctors in this study only provide the list of defaulters to the TB centers, but there is no constant follow up. Strategies to improve treatment adherence should concentrate on methods to increase patient's motivation for treatment²². Improved communication skills and attention from the medical staff could encourage more patients to complete their TB treatment²³. Although 107 doctors in the present study accepted that there is a need for qualified and trained pharmacists to assist clinicians, the reality in India is that the concept of pharmacy practice and pharmaceutical care is still limited to a few centers of excellences in the country. A study by Bhat et al. showed that awareness of harmful sequelae of inadequate and incomplete treatment was as high as 93% but knowledge per se of adequate duration of treatment was poor in a half (50%) of the patients. Attitude towards domiciliary treatment was generally positive (88%)²⁴.

As far as the patient education is concerned most of the doctors in this study felt that their patients were aware of the need for regular treatment, need for good diet, proper disposal of sputum and the need to cover the mouth while coughing. Another study is needed to reveal the true extent of this knowledge amongst TB patients. In the same study of Bhat et al., however, practices regarding safe sputum disposal and preventive measures practiced in the families were poor in nearly two thirds of patients. This shows that health education efforts need to be strengthened to create better awareness of these important aspects of tuberculosis diagnosis, treatment, and control.²⁴

The means of updating knowledge about TB by doctors is another area that needs to be monitored closely if RNTCP program needs to be successful in India. Early detection and optimal treatment constitute the most important measures in the control of tuberculosis. This study and the literature review highlight the need for effective communication between national tuberculosis programs and the practicing doctors. Continuing Education of doctors for updating their knowledge and their active participation in at least those national disease programs for which their curative functions could contribute significantly to control of a disease, is essential.²⁵

Conclusion

Close cooperation between National programs and health care providers is essential for successful implementation of disease

control programs. In case of communicable diseases, equal importance is required in ensuring ongoing health education for the whole population. This will help reducing the stigma and the social consequences of TB, and prevent the spread of the disease. The major patient safety issue in the TB treatment in India seems to be the proper adherence to therapy, to improve treatment results and prevent resistance.

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