357. Health care seeking among individuals with cough & tuberculosis: a Population based survey from rural India.

Fochsen G, Deshpande K, Diwan V et al; Int J Tuberc Lung Dis 10(9), 2006 : 995-1000

India is one of the 22 countries with highest burden of tuberculosis, and alone accounts for nearly one third of global TB burden. Despite increased coverage of Revised National Tuberculosis Control Programme (RNTCP), only 54 % of sputum smear positive cases are detected in India. A large proportion of TB suspects and patients are managed in the private health care sector without being notified.

A population based cross sectional survey was conducted in Ujjain district, Madhya Pradesh, where the RNTCP was implemented in the year 2003, to describe & compare health care seeking behaviour among men & women with cough of more than 3 weeks in a rural population of India, with special focus on utilization of private & public health care sectors. The study was carried out during Feb-Aug 2004, in 60 villages, representing 14,858 households with a total population of 71,306. The villages were selected from three development blocks (administrative units) based on their proximity to rural health care centre run by R D Gardi Medical college. The villages were located at a mean distance of 11 km from the health care centre. The study population consisted of all persons aged > 15yrs (n=45,716).

The prevalence of cough was respectively 2.8 % & 1.2 % among men & women. The majority of men & women reported seeking health care for their symptoms (69 % vs 71 %), but only 23 % visited a public provider at some point during their illness. No significant difference in health care seeking was found between men & women. Only 13% of those seeking health care, reported having had a sputum smear examination since the onset of cough. Factors associated with sputum examination were history of TB, haemoptysis & visiting a public provider.

The low utilization of public health care services & the few sputum examinations reported in this rural Indian setting illustrate the need for improved diagnostic practices as well as involvement of private providers in TB control activities.


Tuberculosis is among the most infectious causes of global morbidity and mortality, with more than 8 million new cases & 1.8 million dying from TB each year. Added to this threat is the emergence of multi-drug resistant TB (defined as resistant to at least INH & RMP) arising probably as a consequence of inadequate and irregular treatment. The transmission of MDR-TB strains continues in the general population, leading to an estimated global rate of 2.2 %. Implementation of DOTS ensures high cure rates and prevents MDR.

A survey was conducted to study the prevalence of MDR- TB from a retrospective analysis of the data in a tuberculosis unit where DOTS was implemented over a period of 6 years through public private mix (PPM).

Sputum smear positive patients (714 new & 195 re-treatment cases) attending the free chest clinic at Mahavir Hospital and Research
centre, Hyderabad, from Jan 2001 to Dec 2003 were included in the study. The criteria used to confirm diagnosis in these patients were culture and sensitivity testing.

Isoniazid (INH) resistance was found in 3.2 % (23) of new & 9.2 % (18) of re-treatment cases. Rifampicin (RMP) resistance was found in 1.5 % (11) of new & 7.2% (14) of re-treatment cases. MDR was present in only 0.14 % (1) of new & 2% (4) of re-treatment cases. New cases had cure rates of 96 % compared to 85 % in re-treatment cases.

The reasons for mounting of prevalence of MDR-TB may be due to poor funding and functioning of TB programmes, under-diagnosis of TB cases, inadequate or irregular drug supplies. A high multiplication rate of M.tuberculosis in HIV infected patients is another cause of MDR –TB.

High success rates with low levels of drug resistance are possible with early diagnosis and good patient adherence. This is achievable by early diagnosis and treatment initiation through patient referrals to private providers and creation of neighbourhood DOT centres in the community to ensure regular treatment and high cure rates.


Diagnostic process of tuberculosis initiates with a high clinical suspicion, and is supported through the use of various diagnostics. The only rapid test for presumptive diagnosis of tuberculosis is smear examination of the patient’s sputum specimen for acid-fast bacilli (AFB). Culture remains the final confirmatory laboratory diagnostic for tuberculosis. The need for more sensitive and specific techniques thus becomes obvious. Nucleic acid amplification using the principle of polymerase chain reaction (PCR) has the potential for the diagnosis of tuberculosis in a few hours with a high degree of sensitivity and specificity.

To assess the efficiency of PCR as compared to routine diagnostics like smear microscopy and culture in detection of M. tuberculosis, a study was conducted among tuberculosis suspects referred to tuberculosis clinic and symptomatics identified during a morbidity survey.

Sputum samples from 144 individual were examined by PCR, using MPB64 primers, culture and microscopy. 97 samples were from suspects referred to a tuberculosis clinic, 26 were from suspects identified during morbidity survey and 21 were from patients with disease other than tuberculosis. Study was conducted blind.

Total cases considered to be positive for tuberculosis by all criteria was 71. PCR detected 98 % of ‘culture positive’, 97 % of ‘smear positive, culture positive’, and 100% of ‘smear negative, culture positive’ samples. PCR was also positive for 86 % of smear negative samples from tuberculosis suspects diagnosed on the basis of other routine diagnostics and supporting clinical evidence. Seventeen samples were positive only by PCR but, based on clinical parameters only 7 were considered as true positives.

The sensitivity of PCR was 91.5 % compared to 51 % for smear microscopy and 68 % for sputum culture. This was due to the fact that PCR could pick up bacterial DNA even from saliva mixed sputum specimens, which are generally not considered appropriate for microbiology. The specificity of PCR (86 %) was found to be lower than other diagnostic tests.

PCR using MPB64 primers has potential and can be a useful adjunct to diagnose clinical
tuberculosis, particularly in smear negative paucibacillary cases. However, the major limitation of PCR is low specificity, mainly due to lack of a suitable gold standard to assess its efficiency.

360. Identifying effective communication channels in a rural community; a field report from south India.

Rajeswari Ramachandran, Jaggarajamma K, Muniyandi M & Rani Balasubramanian; *Indian J Tuberc* 2006, 53(4):206-211

TB control programme is a felt-need oriented programme as more than 80 % people with chest symptoms have been reported to seek relief of symptoms on their own. Poor awareness on all aspects of TB, including symptoms suggestive of TB, availability of free diagnosis and treatment facilities in the community might adversely affect the programme performance. Priority has been given to Information Education and Communication (IEC) in creating awareness about the National Tuberculosis Control Programme.

A study was conducted in 51 villages of Ellapuram block, Tiruvallur district, Tamil Nadu in the year 2004, to identify the communication channels that are available in rural community and also the channels that are utilized to get the information by different segment of population.

Key informants selected from the villages were interviewed by a Medical Social Worker. The questionnaire included information on modes of communication channels, availability of markers, public facilities, and local associations.

The study block included 9893 households covering a population of 39,255. Their main occupation was agriculture (86 %). Electricity was available in all the villages. More than 80 % of the villagers has community TV/cable connections, >50 % of the villages had cinema star fan associations, mahila mandals, youth clubs, self-help groups, anganwadi centers and ration shops. The main source of communication as per interview was television (100%), wall-posters (more than 50%); publicity through panchayat office meetings (53%) and dandora or beat of drums(43%).

Main communication channels, commonly used to disseminate information were TV and wall posters. More than 50% of villages have local associations which can be used for effective communication. This information is vital for disseminating information on public health programmes and educating the rural community.

361. Is it worth treating category I failure patients with category II regimen?


According to WHO’s DOTS strategy, newly diagnosed sputum smear positive (NSS) patients with pulmonary tuberculosis who remain sputum smear positive after 5-months of treatment with Category I regimen are declared ‘failures’. They are treated with Category II regimen. Concerns have been expressed that treatment with Category II regimen may not be effective for such re-treatment cases. It has been suggested that they may be treated with a stronger regimen since such cases are likely to harbour drug-resistant organisms.

A study was conducted in a sub-district population of 5,80,000 in Tamil Nadu to examine the drug susceptibility profile of category I failure cases in a DOTS programme to examine if these concerns had any basis.

Under the DOTS programme, tuberculosis (TB) cases were detected at 17 primary and secondary level governmental health facilities by
screening ‘chest symptomatics’ using the diagnostic algorithm of Revised National Tuberculosis Control Programme (RNTCP). NSS cases were treated with Category I regimen, consisting of Rifampicin (R), Isoniazid (H), Ethambutol (E) and Pyrazinamide (Z) given three-times – a week during the intensive phase of 2-months and R and H three-times-a-week during the continuation phase of 4-months. Treatment outcomes were defined according to international guidelines.

The study population consisted of all NSS pulmonary TB patients who registered for DOTS treatment during May 1999 to December 2002 and were treated with the Category I regimen. Additional sputum samples were collected from study subjects in sterile containers with Cetyl Pyridinium Chloride by the laboratory technicians of the respective centres at two time points, namely, on starting treatment and at 5/6 months after starting treatment, if sputum smear was positive. Sputum samples were cultured for M. tuberculosis on Lowenstein Jesnson (L-J) medium. The positive cultures were subjected to drug susceptibility for Isoniazid (H) and Rifampicin (R) by minimal inhibitory concentration (MIC) method. Resistance was defined as an MIC of 5mg or more for Isoniazid and 128mg for Rifampicin.

Of 1463 patients started on Category I regimen between May 1999 and December 2002, 74 cases were declared as ‘failures’ (smear positive at 5/6 months of treatment). We collected sputum samples from 60 (81%) of 74 ‘failure’ and 27% (16 of 60) of them were culture-negative for M. tuberculosis and 17% (10 of 60) had organisms resistant to Isoniazid and Rifampicin (MDR-TB).

In conclusion, our finding that nearly 80% of the ‘failures’ (as declared in the programme, based on smear results), have organisms susceptible to R, justifies the use of the currently recommended category II regimen for failures of category I treatment.

G. Umadevi
Field Investigator
NTI, Bangalore.