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STC Newsletter

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in this issue

Inauguration of
Eighth Meeting of the Governing Board of SAARC TB Centre and
Meeting of TB Programme Managers in the SAARC Countries
22nd - 26th December 1998, Kathmandu, by the then
Hon'ble Minister of Health, Mr. K. B. Gurung

SAARC TB Centre family wish our readers
A Very Happy New Year 1999

SAARC Tuberculosis ***Centre***'s Newsletter publishes every six-month and it includes reports on the works, decisions of important meetings of the centre and recent information on tuberculosis.

SAARC TUBERCULOSIS PUBLICATION

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STC NEWS

STC held its Eighth Meeting of the Governing Board and Meeting of the TB Programme Managers

Eighth meeting of the Governing Board and Meeting of the TB Programme Managers of the SAARC Member Countries was held in Kathmandu on 22nd - 26th December 1998. The meeting was inaugurated by the then Hon'ble Health Minister, Mr. K. B. Gurung at the special function organised in Kathmandu. In his inaugural address, Mr. Gurung expressed a warm welcome on behalf of His Majesty's Government of Nepal to the distinguished Members of the Board and guests. He recalled the historic event of the establishment of SAARC TB Centre in Nepal and appealed to the experts of the field of TB control to work collectively to find appropriate solution of the killer disease and control the same as soon as possible. The inaugural ceremony was presided over by Dr. Nirmal Prasad Pandey the Hon'ble Member of the National Planning Commission of His Majesty's Government of Nepal.

On the occasion, Mr. B. R. Pokharel, the Secretary of Health and, Dr. K. B. Singh Karki, Director General of Health Services of Nepal also expressed their views on plan, policy and strategy of TB control in the Region. Ms. K. C. Namgyel, Director, SAARC Secretariat, addressed the gathering and informed about the commendable work performed by the centre.

Ms. L. Savithri, Chairperson of the Governing Board of STC and representative from India, expressed her views about the control of TB in the Region.

Dr. D. S. Bam, Director, STC, extended a very warm welcome to the distinguished Board Members, TB Programme Managers, Chief Guest and all National & International dignitaries.

Dr. P. Kumar, Deputy Director, STC proposed a vote of thanks.

The Board reviewed the progress in the implementation of the decisions taken at the Seventh Meeting of the Governing Board. The Director, STC, presented the report of the Centre regarding activities carried out by the Centre since last Governing Board Meeting held on 26th - 27th Oct. 1997. By expressing satisfaction on the progress made by the Centre, the Board recommended the following programmes for the year 1999:

a) SAARC trainers training course for TB control managers.
b) SAARC-CIDA workshop for formulation regional strategy of TB and HIV/AIDS control.
c) SAARC meeting to formulate urban TB control programme
d) SAARC seminar on gender and sociological issues related to TB.

A three-day meeting of the TB Programme Managers on the status & progress of revised strategy of TB control in Member Countries was held following the meeting of the Governing Board. The participants from Bangladesh, India, Nepal, Pakistan and Sri Lanka attended the meeting. The objective of the meeting were as follows:

- ✓ Review the status & progress of revised strategy of TB control programme (DOTS) in the Member Countries.
- ✓ Identify the problems in the implementation of the revised strategy.
- ✓ Find the appropriate solutions of identified problems in the implementation of the revised strategy.

The following recommendations were made:

i. Member Countries will develop a regional strategy of TB & HIV control and establish laboratory and data bank at STC with the assistance of CIDA.

ii. STC would organise two weeks training course for trainers in TB control programme management every year to support training need of Member Countries.

iii. Member Countries would supply six monthly reports of TB & HIV control activities to STC for compilation & dissemination of information to TB institutions of Member Countries.

iv. Member Countries would involve medical colleges and medical associations to support NTP.

v. Member Countries should develop a strategy for implementation of DOTS in urban areas.

vi. Member Countries will strengthen quality assurance of smear microscopy network.

Training Programme for Regional TB Coordinators

A six-day training programme for regional TB coordinators was organised by STC in Kathmandu from 1st to 6th Dec. 1998. Participants from Bangladesh, Bhutan, India, Maldives and Nepal attended the programme.

Dr. D. S. Bam, Director, STC, extended warm welcome to the participants and the guests, in the inaugural ceremony. Dr. P. Jagota, Director, National TB Institute (NTI), Bangalore, India expressed

her views and paid gratitude to STC for inviting her as a facilitator. Dr. K. Osuga, Chief Advisor, JICA/HMG TB Control Project, Phase II pointed out the importance of training in revised strategy of TB control to implement the DOTS. Dr. Ian Smith, WHO Medical Officer, highlighted the importance of implementation of the revised strategy to control this disease.

Dr. P. Kumar, Course Co-ordinator for the training programme delivered a vote of thanks and paid gratitude to the Member Countries for sending participants, to SAARC Secretariat for excellent co-ordination and to facilitators for accepting request to facilitate the training.

The programme began with the lecture of Dr. D. S. Bam, on *TB Control in SAARC Region.* Dr. Ian Smith gave lectures on *DOTS strategy to combat TB, TB/HIV co-epidemic in SAARC Region, Advocacy and Presentation Skills and Preparation of Action Plan.* Dr. K. Osuga and Dr. N. Yamada took a *X-ray session on role of radiology in TB and Respiratory Diseases.* Ms. Fujiwara, an expert from JICA on logistic management gave lecture on logistic management while Ms. Minamikawa, expert of TB laboratory management taken a lecture on use of laboratory in TB control. Mr. D. Khadka, Laboratory Technologist, NTC, gave lecture on quality control of smear microscopy. Role of NGO and private practitioners in TB Control was discussed by Dr. S. B. Pande, Senior Researcher, Nuffield Nepal Research Project. Dr. P. Malla, Chest Physician and Training & Supervision In-charge, NTC has given lectures on *Role of Training and Supervision in National TB Control Programme.*

Most of the forenoons of the training days were covered by the lectures of the experts of TB control and afternoon sessions were concentrated on the modular discussions. Dr. P. Jagota and Dr. P. Kumar facilitated all the modules during training course.

News on study tour

On the invitation of WHO, Dr. P. Kumar, Deputy Director participated in the fourth annual meeting of the

National TB Programme Managers of South East Asia Region in Bangkok on 21st to 23rd November 1998. He also attended the global lung conference organised by IUATLD in Bangkok from 24th to 26th November 1998. Dr. Kumar presented the activities of SAARC TB Centre in the conference. He along with the Director, STC and TB programme managers of SAARC countries had an interaction with CIDA and Health Canada officials on SAARC-CIDA co-operation project on TB & HIV control.

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His Majesty the King and IUATLD awarded Dr. D. S. Bam

His Majesty the King has conferred a medal, ***SUPRABAL GORKHA DAKSHIN BAHU*** to *Dr. Dirgh Singh Bam*, Director, SAARC TB Centre, Kathmandu on the occasion of His Majesty's 54th auspicious birth day.

International Union Against Tuberculosis and Lung Diseases (IUATLD) has awarded Dr. Dirgh Singh Bam, Director, SAARC TB Centre by Dr. K. Styblo International Public Health award first time in the history, - for his contribution to TB control in Nepal and in the Region.

(Dr. D. S. Bam, Director, SAARC TB Centre (left) receiving award from Dr. Nils Billo, MD, MPH (right), executive Director, IUATLD, Paris, at General Assembly of the 29th World Conference of the IUATLD, in Bangkok, Thailand on 25th Nov. 1998)

INTERNATIONAL UNION AGAINST TUBERCULOSIS AND LUNG DISEASE

UNION INTERNATIONALE CONTRE LA TUBERCULOSE ET LES MALADIES RESPIRATOIRES

PUBLIC HEALTH PRIZE
PRIX DE SANTE PUBLIQUE

AT ITS SESSION OF / LORS DE SA SÉANCE DU 25 November 1998

THE GENERAL ASSEMBLY HAS CONFERRED / L'ASSEMBLÉE GÉNÉRALE A CONFÉRÉ

THIS DISTINCTION TO / CETTE DISTINCTION À *Dr. D.S. Bam*

for his contribution to the tuberculosis control in Nepal and in the South-East Region

DIPLOMA

This prize is given for the first time in the name of Dr. Karel Styblo, former director of scientific activities, in recognition of Dr. Bam's contribution to Nepal, the Region and the global fight against tuberculosis

THE PRESIDENT OF THE IUATLD / LE PRÉSIDENT DE L'UICTMR

THE CHAIRMAN OF THE EXECUTIVE COMMITTEE AND COUNCIL OF THE IUATLD / LE PRÉSIDENT DU COMITÉ EXÉCUTIF ET DU CONSEIL DE L'UICTMR

THE CHAIRMAN OF THE AWARDS COMMITTEE OF THE IUATLD / LE PRÉSIDENT DE LA COMMISSION DES DISTINCTIONS DE L'UICTMR

SPECIAL ARTICLES AND TECHNICAL INFORMATION ON TUBERCULOSIS

Treatment Seeking Behaviour and Social Belief of Women with Tuberculosis in Rural Bangladesh

Elizabeth Fair, Md. Akramul Islam, Sadia A. Chowdhury

Summary:

The Bangladesh is a country of 122 million people. The National TB Control Programme estimates that there are 150,000 new cases and 80,000 deaths occur from TB every year with a 2% Annual Risk of Infection(ARI). The TB records of BRAC, a Bangladesh NGO and the government programme suggest that approximately 30% of reported TB patients those are receiving treatment are women. Prevalence and detection rates are lower for women, although among children below fifteen years of age the case detection and incidence rates are similar between the sexes. To explore reasons, why fewer adult women are being detected and treated for tuberculosis, a study area was chosen where the BRAC TB Control Programme has been in place since 1992. Data from 1995 and 1996 were analysed with a focus on the age and gender distribution of TB patients; the analysis demonstrated that the chosen area was representative of the national TB statistics. Next, six single-sex focus groups with community members, female TB patients, and local health providers were conducted to assess the local perceptions of TB and treatment seeking behaviour of women. Strong prejudices toward TB patients persist in the community including an openly stated fear and avoidance of these individuals. These social beliefs are more severe for women and have an impact on female treatment seeking behaviour. Women have tendencies to hide or ignore symptoms for fear of punishment from the community or their family. In general, married women fear they would be rejected by their husband and sent back to their father's home, while unmarried women fear that contracting TB would ruin their chances of married and brings shame to their family. The majority of participants believe that TB is hereditary and an infected woman will pass it on to her children. Participants agreed that women feel most comfortable going to local village doctors or traditional healers for health problems because they are familiar, accessible, and less costly. These findings highlight the need to break down the persisting stigmas and myths of TB. Collaboration with the village doctors and traditional healers in TB control efforts is especially important in reaching women. Health care providers should be made aware of these gender issues and assist the patients with the social consequences of the illness in addition to the medical treatment for the disease.

Introduction of NTP:

Bangladesh is a country of 122 million people. There are an estimated 150,000 new TB cases and 80,000 deaths from this disease occurred every year, with 2% of ARI. The data records of both the BRAC Tuberculosis Control Programme and the Governmental National TB Control Programme (NTP) suggest that only about 30% of TB patients being reported and receiving treatment are adult women. Prevalence and detection rates are lower for women, although among children below fifteen years of age the case detection rate and incidence is similar between both the sexes. Why are fewer women detected and treated for TB? Are they at less risk of contracting the disease than men? Are they under-reported in the national TB records? Are they not able or willing to access testing and treatment facilities for TB? This study seeks to answer these questions; it is an exploratory look into the care seeking behaviour of women, and the social consequences and pervading beliefs about TB and gender.

Some important and interesting findings on tuberculosis:

Distribution of cases:

Review of the cumulative data from the WHO global TB reports and National and community based TB programme in Bangladesh from the year 1995 indicates that there is a significantly lower number of women (~30%) receiving treatment for tuberculosis. Data from the government programme, BRAC programme and other NGO programme illustrate that women comprise an estimated 23% to 29% of the total number of new smear positive tuberculosis cases in Bangladesh in 1995. The age and sex distribution of the new smear positive cases of tuberculosis from all BRAC health centres in 1995 illustrates that an equal, if not higher number of females are contracting TB in the 0-14 age group (61.9% of cases in the 0-14 age group are female). For females, the number of cases are more in the 25-34 age group where as in males the numbers are significantly higher and more in the 35-44 age group.

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There is a significant difference in the numbers of individuals who are tested for tuberculosis and those who are actually found to be sputum positive.

The higher number of females being tested is in the 35-44 age group, where 8.7% are sputum positive, for males the 55-64 age group is most tested with 10.3% positive. The largest number of sputum positive individuals was in the 25-34 age group. 9.9% of females tested in this age group were found sputum positive and 14.4% of males tested in this age group were found sputum positive.

Women have better cure rates in both the new TB cases (90% females cured versus 75% males cured) and the retreated cases (100% females cured versus 85% males cured). There is a category for both "cured" and "treatment completed" because in few cases a patient may complete the prescribed treatment regimen but still not be completely cured.

Treatment seeking behaviours of women:

Women will most likely go to the village doctor or to a traditional healer first for treatment. Participants also mentioned that the women might also go to the Shastho Shebika, BRAC facilities, or a private clinic. The Shastho Shebikas and programme organisers were quicker to mention these other BRAC facilities, but they too agreed that initially the woman with symptoms of cough, fever and loss of appetite would first go to the village doctor. The focus group of female patients who were then undergoing treatment with BRAC also mentioned the traditional healers and village doctors first, but then talked more about the Shastho Shebikas and BRAC.

The majority said that in general a women would inform her family if she found she was sick but married women might be afraid to tell her husband and her in-laws. Some participants also mentioned tendencies of women to hide their symptoms or treat them or their own because they would not want to upset their family or call attention to their problem. These hiding tendencies occur because women fear that if the

community learns that she has TB then she will be shamed and ignored or ostracized by the community. Most participants stated that married women fear their husband's family will become angry with her, that she will lose her social position and that she will be sent back to her father's home for treatment and be abandoned or divorced by her husband. In addition, most felt that unmarried women and her parent fear that if people discover that she has had TB, she may have difficulty in getting married, as people believe that the TB will spread to her children.

When asked why women would feel more comfortable going to the village doctor, traditional healer, or Shastho Shebika, the majority said that because they feel comfortable with these people. They feel like they are part of their community, they are neighbors and understand their problems, they are easily accessible with no transportation costs, they are easy to communicate with, they can understand the treatment they recommend and most of all they feel confident that they will keep their health problems a secret. When asked whether a health worker would gossip about their problems, most commented that health clinic workers would gossip but that they never fear that s Shastho Shebika will gossip.

When asked about actually going to get tested, everyone agreed that a woman would rarely go to seek medical resting or treatment alone, in most cases she is accompanied by her husband, a guardian, sibling, or neighbour.

Accessibility of education and health care for women:

When asked about where most people received their information about TB and what treatment is available, BRAC facilities and forums and information sessions held by the SS were mentioned the most. Some participants learned about the disease from neighbours and relative. A few also mentioned that some women still are not informed about the disease. About half of the community members had seen posters or visual aids demonstrating symptoms or some kind of information about TB.

Risk of Infection:

Tuberculosis transmission is dependent on the environment (crowding, poor

ventilation and lighting) and frequency of exposure (contact with other infected individuals and the number of infected individuals within the population). These two variables could play an important role in determining this difference in gender rates of infection. From adolescence men have higher rates of infection than women. A study in Wardha district in India demonstrated a significantly higher proportion of males infected with TB (2.59 sputum positive men and 1.49 sputum positive women per 1000). The authors hypothesized that males in the study area had a larger number of social contacts where as women tended to stay home where they have less social contact or worked in the fields where there is better ventilation and sunlight.

Looking at these findings in relation to our own study, it seems likely that sexual division of labour and varying mobility may be active determinants in terms of the at-risk environments and exposure to TB. Social factors that may explain these findings include the fact that younger girls have more mobility and freedom to interact with a greater range of people in public areas. As they get older, however, their lives generally become more centrally located in the home and within their own family units. It is possible that as women grow older their chances of being exposed to others infected with TB may decrease. On the other hand, as girls and young women may be the care givers for the sick, they may have more exposure to infectious agents, thus possibly a factor in the higher rate of young women with TB.

Following this same line of reasoning, it is possible that men have a higher risk of contracting TB as they grow older. A large portion of the males in the study population are employed as day labourers in the field or mills or as rickshaw pullers and are often in public places where the spread of TB is much more likely than it is in the home. In addition, more males smoke which damages lung tissues and may increase vulnerability.

Detection and Treatment Seeking:

Potential reasons for this lower rate of women being reported could be biological, environmental, or treatment seeking behaviour. Behavioural factors

relating to possible under reporting and detection and treatment including, knowledge and awareness of symptoms and the disease, attitudes (often fear or lack of trust) toward allopathic medicine, use of the private sector including traditional healers and village doctors and economic and physical access to health care.

A study from Nepal found that in rural areas men tend to utilise health posts more while women tend to seek advice from traditional healers. Also, mobile clinics had higher rates of female attendance than the fixed health posts, suggesting that transportation and access to clinics is more of an issue for women. Another possible determining factor for the lower number of female cases is in the method of identification of potential TB patients.

Another study from Nepal on active case finding versus self-referral found that the ratio of men to women in active case findings was 1.2:1 while the ratio in self-referral was 2.6:1. In addition, the timing for care seeking is an important determinant and it has been found in many studies that in general women tend to wait longer in reporting symptoms. A study of 297 new smear positive cases in a rural area of Nepal found that the mean reported duration of cough before diagnosis was 27 days in men and 49 days in women. This may be combination of both female accesses to health care and social stigmas that may inhibit women from actively seeking care.

Treatment Compliance:

Cost plays a large role in compliance, particularly for women in rural areas, where there are constraints in terms of the cost of treatment, the cost of transportation and the opportunity and energy costs of seeking health care. Despite these cost constraints, studies have found that women tend to have better compliance records than men. The social barriers to the diagnosis of TB in women tends to filter out those who are most likely to default, therefore those who do take the initiative to get tested and begin treatment are probably motivated and committed to treatment.

Impact of TB on Female Patients:

In general, tuberculosis and TB patients are feared by the community and women

with TB are treated differently than men with TB. These differences are associated primarily with male roles and their value as breadwinner. The majority of the stigmas and fears of TB seem to be related to female roles and status in the community, specifically in relation to their marital status and their position in their extended family's household. That TB is hereditary and if a woman is sick with TB then her children will have TB as well are well-established myths. The stigmas of TB are not confined to women though, as the majority of every group stated that they disliked and wanted to avoid TB patients, regardless of their sex. The shame associated with TB both for married and unmarried women, and the related belief that TB is hereditary. Married women fear that if they acknowledge the fact that they have TB they will be rejected by their husband and his family. Similarly, unmarried women fear that if they get TB then they will have a difficult time getting married and they will shame their family. A study in Pakistan reported similar findings especially in relation to the effect TB had on marriage and the prospects of getting married.

The consequences of contracting TB are real threats to the social order of a woman in rural Bangladesh. Some beliefs associated with the disease as found seem to be based primarily on practical concerns affecting a woman's daily life, specifically the fear of losing economic productivity, the fear of endangering an existing marriage or jeopardizing a chance for marriage and the fear of passing TB on to children. In contrast, studies in other countries have encountered different types of stigmas, sometimes related to myths, belief in witchcraft, and superstitions about the power of being able to transmit the disease.

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Above article was collected by Dr. P. Kumar, Dy. Director, STC, from BRAC and NTP authorities of Bangladesh, during his study tour to Bangladesh

Survey of knowledge, attitudes and practices for tuberculosis among general practitioners in Delhi, India

Neeta Singla, P. P. Sharma, R. Singla, R. C. Jain

Summary:

Random survey of Knowledge, Attitudes and Practice (KAP) for tuberculosis among private practitioners (PPs) in Delhi, India in 1995.

Objective: To investigate the KAP of PPs for tuberculosis in Delhi where the Revised National Tuberculosis Programme (RNTP) is being field-tested.

Design: A pre-tested questionnaire survey was performed among 204 doctors attending updates / seminars on tuberculosis in various parts of Delhi.

Result: In a suspected case of tuberculosis, sputum examination was advised by only 12% of the PPs, while 89.5% would recommend chest X-ray. For treating tuberculosis 187 PPs were using 102 different regimens and only 29.4% PPs were using the regimen recommended by the RNTP, 51.3% PPs were over-treating their patients. Only 23.5% of PPs requested sputum examination before the end of treatment, while 35.5% depended on X-ray clearance with clinical improvement. Only 19.5% of PPs emphasised the importance of regular treatment for their patients.

Conclusion: Among PPs there is marked reliance on X-ray, sputum examination is being neglected for initial diagnosis, treatment monitoring and as a criterion for stopping treatment. The majorities of PPs are not aware of or are not prescribing, the treatment regimen recommended by the RNTP, and the majority of patients are being over-treated. There is a lack of emphasis on proper health education. PPs need more training, and more collaborative efforts are required between public health facilities and practicing doctors for national control of tuberculosis.

INDIA has a large number of tuberculosis patients (more than 14 million), and a large private health sector. Various studies have estimated that 60-84% of total health expenditure in India, takes place in the private health sector. Furthermore, in India over half of patients with respiratory symptoms and those with suspected tuberculosis initially consult a private doctor.

Few studies have been performed on the role of the private sector in tuberculosis control. A study of Private Practitioners (PPs) practicing in a low-income area in

India reported a gross lack of knowledge of PPs about the diagnosis and treatment of tuberculosis. The study also highlighted the lack of awareness and negative perception of PPs about the public health resources available for tuberculosis control. There was a need to conduct similar studies in other parts of the country. In Delhi, the capital of India, the Revised National Tuberculosis Programme (RNTP) has been field tested since mid- 1993. Various academic activities, including national and international conferences, seminars and updates, are regularly held in Delhi. The present study aimed to study the Knowledge, Attitudes and Practices (KAP) for tuberculosis by PPs in this part of the country.

Materials and Methods:

The study was performed between January and December 1995. For the purpose of the study, Delhi was divided into six zones according to the distribution of the PPs. The Delhi Medical Association organised a series of updates on tuberculosis for PPs in each zone. These were free of charge and at convenient times of the day. The practitioners were informed about the updates through advertisements in local newspapers and medical magazines.

In all 204 doctors attended the updates. They were requested to respond to a previously prepared, protested questionnaire on pulmonary tuberculosis before the beginning of the update. Anonymity was optional and confidentiality was guaranteed. Two hundred doctors completed and returned the questionnaire. All were allopathic qualified doctors and all saw tuberculosis patients in their clinics. Forty percent of the PPS had more than 10 years' experience in practice and 56% possessed a post-graduate qualification.

Results:

The responses given to the various questions are described below:

INVESTIGATION ADVISED FOR A SUSPECTED PULMONARY TUBERCULOSIS PATIENT: 179

(89.5%) doctors would recommend chest X-ray with/without other tests such as sputum, Erythrocyte Sedimentation Rate (ESR), etc. Only 24 (12%) doctors would recommend sputum examination

with/without other test such as chest X-ray, ESR, etc. Only 22(11%) PPs would recommend both sputum and X-ray examinations.

CONFIRMATORY TEST FOR PULMONARY TUBERCULOSIS: 105 (52.5%) said sputum was more confirmatory, 47 (23.5%) believed X-ray to be more confirmatory, and 48 (24%) were not sure.

TREATMENT / REFERRAL OF TUBERCULOSIS PATIENTS: 153 (76.5%) PPs preferred to treat patients on their own, 56 (28%) would take the help of a specialist colleague in the private sector, if required. Only 26(13%) PPs would refer their patients to a government facility. If the patient was too sick to be treated by a PP, then 76 (38%) PPs would refer to a government facility, 21 (10.5%) would refer to a private nursing home, and the rest would refer patients to a specialist in the private sector.

TREATMENT REGIMEN USED BY PPs:

13(6.5%) doctors did not specify the drug regimen. The remaining 187 (93.5%) doctors were using 102 different combinations of drugs. All were using various combinations of two or more of the five first-line drugs, namely streptomycin(S), isoniazid(H), rifampicin(R), ethambutol(E) and pyrizinamide(Z). None was using thiacetazone. Twenty-one (11%) were using all the drugs continuously for 3 to 12 months, with no intensive or contiuation phase, 160 (85.6%) doctors used an initial intensive phase, but this could last for between 1 and 6 months.

Only 55 (29.4%) PPs were using the short-course chemotherapy regimen as recommended by the RNTP, i.e., 2 months of isoniazid, rifampicin and pyrazinamide with/without ethambutol/streptomycin, followed by 4 months of isoniazid and rifampicin. Another 96 (51.3%) PPs were prescribing drugs for longer periods than necessary. Some of the regimens were not recommended by the RNTP but were acceptable in terms of their expected therapeutic efficacy, such as 2-3E(S)HRZ/6-9HR, 6EHRZ, 2EHRZ/6HER, 2-3EHRZ/6HRZ, 12HER, 2HRZ/7-9HR, 2SHRZ/6HER (the number indicate the duration, in months, of the intensive and

continuation phase). Twenty-one (11%) doctors were prescribing regimens, which were not appropriate in terms of their expected therapeutic efficacy, such as 4HR, 9RZ and 4HER.

PERCEPTIONS ABOUT INTERMITTENT CHEMOTHERAPY:

105 (52.5%) PPs believed that anti-tuberculosis drugs could be given intermittently and all thought this more advantageous than daily regimens in terms of cost, side effects and easy administration; 57 (28.5%) believed that the efficacy of an intermittent regiment was the same as that of a daily regimen, 40 (20%) would prefer to give drugs intermittently, but none of the doctors knew the drug schedule of intermittent therapy. None of them was actually prescribing the intermittent regime.

TREATMENT MONITORING:

None of the doctors was giving treatment under supervision or maintaining any record of tuberculosis patients. No doctor in the study was following any methodology for retrieval of defaulters. However, for monitoring the patients who presented on their own, 30 (15%) PPs would advise only X-ray, 6(3%) would advise only sputum, 121 (60.5%) would advise both X-ray and sputum and 24(12%) would use X-ray, sputum and ESR; 14 (7%) doctors gave no response to the question.

TREATMENT OUTCOME:

None of the doctors was recording treatment outcome in terms of cured/treatment completion/treatment failure, etc. For completion of treatment, 71 (35.5%) PPs depend on X-ray clearance with clinical improvement, 25 (12.5%) rely on clinical improvement alone, while sputum examination was advised only by 47 (23.5%) doctors, and always with chest X-ray.

FIRST PRIORITY IN PATIENT'S HEALTH EDUCATION:

39 (19.5%) PPs would emphasize regular treatment, 28 (14%) good diet, 4 (2%) would give advice on proper sputum disposal, and 20 (10%) would advise covering the mouth while coughing, 109 (54.5%) doctors did not specify their priority in health education, and 24 (12%) PPs gave advice regarding hygiene, pollution, smoking, alcohol intake, etc.

CONTACT TRACING IN PATIENT'S FAMILIES:

36 PPs (18%) would recommend X-ray for family members, 14 (7%) would rely on Mantoux testing and 32 (16%) would keep the family under surveillance, 109 (54.5%) said they would give advice to the family, but did not specify which advice, eight PPs did not answer the question and only one mentioned special care of contacts under 5 years of age.

MEANS OF UPDATING KNOWLEDGE ABOUT TUBERCULOSIS:

187 (93%) PPs claimed to try to update their knowledge by one or more means. Of these, 109 (58.3%) read journals, 46 (24.6%) read magazines, 76 (40.6%) depend on medical representative, 86 (45%) read test book, and 75 (39.5%) attend medical conferences/updates.

DISCUSSION

Historically, the private sector has neither been involved nor even deliberately excluded from the planning and management of public disease control programmes. However, patients look to the private sector for personalize services at more convenient times of the day, often tending to prefer private doctors to the free services offered by the public health sector. In India, the role of the private sector in tuberculosis control can not be over-emphasised, as a significant number of patients are being managed by PPs. In May 1994, the steering committee of the WHO also identified the role of the private sector in tuberculosis control as one of the main priorities for operational research in tuberculosis.

In Delhi the Revised National Tuberculosis Programme has been field tested since mid-1993. The present study was conducted between January and December 1995 in Delhi. Two hundred private practitioners practicing in various parts of Delhi participated in the study. All were found to be qualified allopathic doctors, and 56% also had post-graduate qualifications.

The study revealed that for diagnosis 179 (78.5%) doctors recommend chest X-ray with or without other investigations and that only 24 (12%) doctors would recommend sputum examination with or without chest X-ray or other investigation. During treatment

monitoring 90% of doctors would recommend chest X-ray with or without other investigations. Only 3% of doctors depend on sputum, and others (60%) rely on both X-ray and sputum. As a criterion for stopping treatment, 23% would use sputum examination, but almost always along with chest X-ray; 71 (35.5) PPs depend on X-ray clearance with clinical improvement for stopping treatment. This shows that there is more dependence on chest X-ray, and that sputum examination is being grossly under-used for diagnosis, treatment monitoring and as a criterion for stopping treatment. This is in complete contrast to the recommendations of the Revised National Tuberculosis Programme and could be due either to lack of awareness or to lack of faith in the results of sputum examination in local laboratories. It may also lead to over-diagnosis and over-treatment of patients.

The study also revealed that less than 13% of doctors would refer their patients to a government facility. Even if the patient were too sick to be treated by a PP, only 38% would recommend referral to a government facility. This shows apathy among private doctors and lack of faith in public facilities for management of tuberculosis. One reason could be because patients referred to public facilities by PPs are treated no differently than other out patients. It could also be due to loss of expected financial gains, as tuberculosis patients have to make repeated paid visits to their doctors. These factors should be considered when planning tuberculosis control activities at national level.

It was astonishing that as many as 102 different drug regimens were being prescribed by 187 PPs and that only 55 (29.4%) were using the short-course chemotherapy regimen recommended by the RNTP. Fifty-one percent of the PPs were over-treating their patients, using more drugs for longer periods than necessary. This not only increases the chances of side effects and drug toxicity, but also adds to the cost of total treatment. Prescribing drugs for longer periods also adversely affects the compliance of the patients. If patients do not take their drugs regularly, the chances of acquiring resistance to the first-line bactericidal drugs are increased. One study in India has already

shown that indiscriminate use of anti-TB drugs can lead to high levels of initial resistance to rifampicin, as well as multi-drug resistance. This may have serious implications I India, where short-course chemotherapy is still in a stage of implementation in the public sector.

Supervised intermittent treatment is well established in the treatment of tuberculosis, 105 (52.5%) PPs were aware that anti-tuberculosis drugs can be given intermittently. Almost 20% would prefer to use it, and almost all consider it to be more advantageous in terms of cost, side effects and ease of drug administration. Nevertheless, none of the doctors had ever prescribed intermittent drug treatment, due perhaps to their apprehension in using supervised regimens. This finding is consistent with Fox's observation in the UK that physicians rarely use intermittent regimens, even for cases for which it could have roved advantageous. More organised efforts are required to allay these apprehensions among PPs.

Under the RNTP much emphasis has been placed on educating patients about regular treatment, but this study found that only around one fifth of practicing doctors consider regular treatment as their first priority for health education. Others feel advice regarding good diet, pollution, alcohol, smoking and hygiene, etc., to be more important. This shows those doctors either is not sure of the information to be disseminated or do not have the time to give proper health education to their patients.

This study revealed that the PPs maintain no records of their tuberculosis patients, nor do they follow any methodology for retrieval of defaulters. It must be emphasized to PPs that proper record keeping, default retrieval and treatment of defaulters could help in improving treatment results. This would ultimately help tuberculosis control at the national level.

Although the study was composed of qualified allopathic doctors with a possible bias towards those who are more interested in attending updates/seminars, there was nevertheless a disturbing lack of basic knowledge as well as a lack of progress in the management of tuberculosis. The majority of PPs are not aware of, and are not following, the recommendations of

the Revised National Tuberculosis Programme. This could because most PPs are not aware of the RNTP as it is still at the field-testing stage in Delhi. Furthermore, there are no organised efforts by programme managers or by local medical associations to inform doctors. Only regular training of doctors and proper dissemination of information about the national tuberculosis programme can ensure its implementation.

Lack of awareness about the importance of sputum examination could be improved by regular interaction of practicing doctors with medical personnel involved in the RNTP, by means of training, updates and /or by providing free or subsidized diagnostic facilities. Local laboratories should also be strengthened by training paramedical personnel. Practicing doctors should be proved with health educational material, such as pamphlets, etc., to disseminate knowledge about tuberculosis. The services of social workers would also help in health education, motivation, contact tracing and default retrieval.

Ninety three percent of doctors update their knowledge about tuberculosis by more than one means, i.e., by textbooks, journals, and magazines, attending conferences or local doctor meetings. Surprisingly, almost 40% of doctors depend on medical representative to inform them of the latest developments in the field of tuberculoses. These representatives could give biased information due to the interests of their own drug companies. A significant number of the doctors read books to update their knowledge. Textbooks in the undergraduate curriculum should give more emphasis to tuberculosis so that the new graduates are better informed about this disease of great public health concern. The task of updating knowledge about tuberculosis could also be carried out by local medical associations, medical colleges and TB control programme managers, by organising on-going medical education programmes, conferences and other inter active programmes.

In India, Private doctors are widely distributed in rural and urban areas all over the country. Not only do they provide first contact care to a majority of patients, but they also provide continuous, comprehensive, on the spot services for their patients. The public health services should now make an attempt to reach out to practicing doctors and attempt collabroratives efforts. Representatives of the private sector need to be actively involved in the planning processes of tuberculosis control activities. The public and private sectors need to be integrated for national tuberculosis control. Programme managers should consider the conveniences and problems of practicing doctors. The financial gains of the PPs should also be kept in mind while planning tuberculosis control activities. Private doctors should be involved in case finding and case holding activities in their areas of practice, and be provided with free or subsidised sputum examination facilities and drugs if possible. Patients referred by PPs to the public facilities should be properly taken care of to build up faith among PPs about public facilities. There should be continuous medical education and monitoring systems to improve and evaluate knowledge, attitudes and practices of PPs about tuberculosis and other disease of public health concern.

Table 1: Drugs and treatment regimens prescribed by practicing doctors

Drugs	<6	6	7-8	9	10-11	12	13-18	>18	Total
RH	2	3							5
RZ				2					2
RHZ		2		5	3	12	3		25
RHE	1	11		2		10		1	25
RZE				1		4	1		6
SHR				1					1
RHZE	2	51	2		23	4	12	5	99
RHSZ		4	3	1		1	1		10
RHSE		1	2			2			5
SHRZE		4	1	4					9

Table 3: Treatment regimen and duration prescribed by private practitioners

Nature of regimen	Duration		Total No. of Doctors
	Appropriate	Longer	
Recommended by RNTP	55	31	86
Not recommended by RNTP but acceptable	15	65	80
Inappropriate	-	-	21
Total No. of Doctors	70	96	187*

* 13 doctors did not specify the regimen used.

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Current Status of DOTS in Member Countries of SAARC

Dr. P. Kumar, Deputy Director, SAARC TB Centre

Introduction:

South Asia Region consists seven developing countries and accounts for approximately 40% of global burden of tuberculosis. Much of the knowledge about tuberculosis had been established in SAARC Member Countries. Many of the basic principles of Directly Observed Treatment Short-course (DOTS), including diagnosis by microscopy in general health services, ambulatory treatment, intermittent therapy and supervised treatment, first established in India. All the member countries have accepted DOTS as the recommended strategy and currently implementing DOTS in different phases. Smaller countries like Bhutan, Maldives and Sri Lanka have implemented DOTS widely and Nepal expects to be able to do so by the year 2000. DOTS success in Bangladesh has been appreciated every where. A significant contributing factor to the success of DOTS in Bangladesh is very good co-operation of NGOs by providing TB control services to about one third of the population by entering into memoranda of understanding with the government of Bangladesh.

DOTS was introduced in India in 1993 following Review of NTP in 1992. DOTS now covers about 2% population of the country and has achieved over 75% cure rate. India plans to cover 271 million population with DOTS by the year 2000. In Pakistan, DOTS has been introduced as pilot project by provincial governments and needs to be expanded.

DOTS in Bangladesh:

Tuberculosis is a major public health problem in Bangladesh. The estimated Annual Risk of Infection (ARI) is

2.27%. It is also estimated that the tuberculosis infects more than 50% of the adult population. Annual incidence of smear positive cases is 111/100,000 and all form of TB is 246/100,000. At least 52,000 deaths due to TB occurred in a year. The influence of HIV infection may affect the epidemiology of tuberculosis because of rising of HIV positive cases in Bangladesh.

The curative service of tuberculosis was started in 1965. The present revised National TB Control Programme(NTP) was launched in 1991 with the specific objectives of an 85% cure rate and 70% case detection rate. The DOTS strategy is adopted to achieve the specific objective as a operational target of the NTP. The field implementation of the revised NTP was started in 1993 in four rural thans in two districts. After a pilot period, the programme expanded progressively to new areas every tow months. In January 1995 all 44 TB clinics and available NGO services were included in the programme. Since 1998, all thanas are implementing the revised NTP. The Government of Bangladesh will cover 60% and NGOs will cover 40% areas to cover the total population of 114 million.

Case-finding of the tuberculosis from 1993 to 1998 is reported as a cumulative total TB cases 235,280 of which 28.5% were detected by government thana units, 19% were detected by NGOs thana units and rest 52.5% were by government TB clinics. With the expansion of NTP at thana level, progressively fewer patients attend the TB clinics. The ratio of the smear positive and smear negative/extra pulmonary is 1:1. Male female ratio is 5:2. The case notification rate for new smear positive is 39.8/100,000 which corresponds to a case detection rate of 35.8% considering the incidence of 111/100,000 smear positive cases in a year and a catchment population of over 114 million.

In the new smear positive the NTP achieved the overall successful treatment of 79.5%. The cure rate is 74.5 and treatment completion rate is only 5%. The death rate is 5%, failure rate is 1.6%, defaulter rate is 10.7% and the transferred out is 3.1%. The successful management of TB patients is also

reflected by the overall 86% smear conversion of the new smear positive after 2-3 months of treatment.

Plan for the future:

The health sector in Bangladesh has been recently reformed with adoption of the sector-wide approach. The new five year plan for the health sector has been launched in July 1998 under the name of Health and Population Sector Progrmme(HPSP). There is communicable disease control sector where NTP is combined together with leprosy, malaria, filaria, kala-azar, intenstinal parasites, STD / RTI / HIV / AIDS, emerging and re-emerging diseases.

DOTS in Bhutan:

Bhutan is a small country with population of 600,000. The estimated ARI is 1.5%, annual prevalence of all forms of TB is estimated 3/1000 population, annual incidence is about 1.8/1000 population and annual bacillary incidence for 1994 is 0.5/1000 population. Total pulmonary case reported in 1994 is 76.4% where 39.5% is sputum positive. The registration of TB patients is categorised in three different categories according to WHO recommendation on SCC. As a matter of policy, for all those sputum is positive, they are to be admitted till they become sputum negative for which we can say very good DOTS in the treatment of tuberculosis.

The National TB Control Programme (NTCP) is fully integrated into general health services of the country from inception. Till 1990, the treatment of TB patients was left to the initiatives of the medical officer. Since then various attempts were made to re-shape the NTCP to make it effective. Short Course Chemotherapy (SCC) with blister pack of 2SHRZ/6HT was initiated in some of the trial areas. A detail analysis of the situation was carried out towards end of 1993. One of the major strategies adopted early 1994 was implementation of SCC country-wide with the following objectives:

- to achieve at least 80% case detection;
- to achieve at least 85% cure rate;
- to achieve and sustain 100% BCG coverage, and
- to reduce the prevalence of TB to 1/1000 population.

The strategies to achieve the objectives mentioned above are:

- Nation-wide SCC for all forms of TB patients.
- Early detection of cases.
- Strengthening diagnostic capabilities.
- Improvement of recording and reporting system.
- Enhanced IEC activities to raise awareness of community and health workers.

DOTS in India:

India has ¼ load of the TB patients in the world. The NTP of India was reviewed in 1992 and DOTS was introduced in 1993, which is known as Revised National Tuberculosis Control Programme (RNTCP). Many of the basic principles of DOTS including diagnosis by examination of sputum by direct microscopy within the general health facilities, ambulatory treatment, intermittent therapy, direct observation of treatment were first established in India. DOTS now covers a population of 18 million. The cure rate is over 75%. The national programme plans for a coverage of 271 million people by the year 2000, during the period most of the rest of the country would be prepared for DOTS implementation with improved sputum microscopy for diagnosis, treatment with SCC and revised recording and reporting system.

DOTS in Maldives:

At the beginning of the 19th century awareness about the infection of tuberculosis was developed in Maldives. People of Maldives were known about the droplet infection. The people gave the name of the TB disease as country disease and the diagnosis was based only upon the clinical symptoms. Till 1950s no simple microscopy test was available for the diagnosis of disease.

The first sample survey for the TB situation was carried out by WHO in 1970. The findings of the survey considered TB as one of the most important public health aspects in Maldives. The actual TB and Leprosy control programme was commenced during the 1st half of 1976 with the collaboration of WHO and TB control activities were fully integrated with that of leprosy control activities since the inception of the programme. First phase of the TB control programme was started

with the population survey for screening of the TB symptoms in the 97% of the rural populaiton of Maldives. Sputum samples were collected and examined and confirmed the cases. In 1978 the Island Chief took the responsibility of administering the treatment (DOTS ?). The method of treatment had been very effective, since there was 100% compliance, till 1980.

Currently, the National TB Control Programme (NTP) is functioning for the reduction of the prevalence rate of TB smear positive cases from 1.52/1000 to 0.3/1000. The task is not easy. So, that some very important activities were identified and carried out. Policies have been made and goals and objective have also been set-up. On the basis of the newly adopted policies and objectives, the NTP is concentrated to reduce the incidence and prevalence of TB from 0.66/1000 to 0.1/1000 by the year 2005 with set-up of diagnostic facilities at all health centres. Similarly, significant reduction in the number of TB drug resistance cases is also taken into consideration.

Although, the Maldives is a small country with less population and very few TB cases, the DOTS implementation is started. The whole population of the country is covered by DOTS with the 203 administrative units. DOT is followed during the entire treatment period with SCC. The emphasis is given to sputum microscopy to diagnose pulmonary TB. The treatment result is satisfactory and increased up to 93.69% cure rate. Under DOTS, treatment compliance is almost 100%, which is quite high. Workshop for health workers, IEC activities for school children, seminar for health sectors staff, TB manual for training are managed. Monitoring and follow-up is also strengthened in DOTS programme.

DOTS in Nepal

The review of NTP of Nepal was carried out jointly by His Majesty's Government (HMG) of Nepal and WHO in 1994. The review team found the case finding result of 30% and the cure rate of only 40%. The review team recommended HMG Nepal to change the NTP strategy to achieve better results.

In Nepal, 60% of adult population is infected with tubercle bacillus and nearly 80,000 people have infectious TB. Every year about 44,000 new cases are appearing in which 20,000 are infectious. Number of deaths is nearly 11,000 in a year.

National Tuberculosis Control Programme (NTP) is covering total population of the country. The goal of NTP is to reduce the mortality, morbidity, to cut the chain of transmission of tuberculosis until it is no longer remain a public health problem. The objectives of the NTP are 85% cure rate in new smear positive, 70% of case detection among the existing TB symptomatic and implementation of DOTS in all over the country.

DOTS strategy was adopted in Nepal by approval of 5-year development plan in 1995. Four national demonstration and training districts for DOTS were established in 1996. On the basis of encouraging results of these districts DOTS is being expanded in phased manner to cover entire population by the year 2000. So far 35 out of 75 districts with 33% of population have been covered by DOTS in Nepal.

DOTS in Pakistan:

The information regarding National Tuberculosis Control Programme (NTP) of Pakistan is very few. An old record about the sample survey shows that ARI of Pakistan is 2.3% The prevalence survey was conducted in 1978 and this has shown prevalence rate of smear positive is 0.13% i.e. 310/100,000 population.

Treatment categories of the patient are divided into four types of registration,

CAT I - 2HRZE/4HR/6HE

CAT-II 2HRZES/1HRZE/5HRE

CAT-III 2HRZ/2HR/6HE

CAT-IV life long INH

The NTP of Pakistan has set-up its objectives to achieve a cure rate upto 85% and reduce the prevalence rate of smear positive to 0.05%.

To achieve the above objectives the following activities would be carried out:

- the programme will be country wide, permanent and integrated,
- efficient case finding by enforcing/establishing network of lab facilities, microscopy cells at all levels of health facilities and referral lab at the district level.
- uniform treatment n all provinces with SCC and patients will be categorised according to the priority for treatment.
- reliable recording and reporting system.
- regular in-service training.

DOTS strategy has been adopted in NTP. Pilot projects with DOTS are being implemented by provincial TB control programme. Some of the project areas in Karachi and Peshawar are showing very encouraging results.

DOTS in Sri Lanka:

Tuberculosis control activities of Sri Lanka was started in 1916 when first chest clinic was established. In 1947 notification of pulmonary tuberculosis was made compulsory. Island-wide integration of the tuberculosis control programme was launched in the year 1970. In Sri Lanka Short Course Chemotherapy (SCC) regimen was started as a National regimen in the year 1989. To achieve expected cure rate of 85% and case detection rate 70%, the NTP Sri Lanka started DOTS in the year 1997. Treatment under the DOTS strategy is provided to new sputum positive cases by admitting the patients into hospitals for intensive phase. From 1997 DOTS is implemented on an outpatient basis in Galle district of Sri Lanka. After a year of this outpatient basis of DOTS is expanded to another two units of Gampaha district and Colombo municipality.

Treatment outcomes of the DOTS are satisfactory with overall success rate of 80%. DOTS will be expanded to 3 more districts. Kandy, Anuradhapura and Matara in 1999.

NTP Sri Lanka also facing constraints in DOTS implementation similar to other member countries. Lack of the trained staff to run the DOTS clinics, frequent transfer of staff from one place to another, Lack of transport for supervision are some of constraints in DOTS implementation.

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Wel-come News

Wel-come to New Secretary General of SAARC

The family of the SAARC TB Centre has the honour to welcome His Excellency Mr. Nihal Rodrigo, the Secretary General of SAARC.

His Excellency Mr. Nihal Rodrigo a Sri Lankan career diplomat has taken over the charge as the Secretary General of the South Asian Association for Regional Co-operation (SAARC) from January 4, 1999.

His Excellency has been involved in SAARC activities since its very inception, has coordinated activities of the Non-Aligned Movement and served the UN in New York. His Excellency's guidance is source of our inspiration.

STC Visits

- A team of members of the eighth meeting of the Governing Board of SAARC TB Centre visited STC on 25th Dec. 1998. The Board Members observed the centre and its activities along with the TB clinic & research lab of the National TB Centre.
- The participants of the training programme for regional TB co-ordinators visited the SAARC TB Centre and observed its activities during their training. The training programme was conducted at STC training building from 1st to 6th Dec. 1998.

Proposed Programmes of the Centre:

- SAARC-CIDA workshop for formulation of regional strategy of TB and HIV/AIDS control.
- SAARC Seminar on gender and sociological issues related to tuberculosis.

Letters to the Editor:

The Editor:

✉ It was a chance that I could get a copy of your publication Vol.VIII July 1998. It is quite informative and a lot of hard work has been put up in its publication. It is useful for our undergraduate and postgraduate students.

Dr. Surendra K. Ahluwalia,
Professor and Head,
Dept. of Community Medicine,
Indra Gandhi Medical College,
Shimla- 171 001, India.

✉ I had a chance to have a look at your STC Newsletter Vol VIII. You are doing a wonderful job. It is really full of latest information about the subject matter. Please accept my felicitations and good wishes.

Dr. Noor Muhammad Menon,
Hon. General Secretary,
Sindh Anti-TB Association,
Anti-TB House, Nursery Road,
Latifabad No. 6, Hyderabad, Karachi,
Pakistan.

✉ Congratulations to you for giving lot of information in the STC Newsletter. The special article and technical information given by Mr. Ibrahim Shameem is very interesting and it shows how with dedication in Maldives they have almost eradicated TB. Similary the article written by Dr. Kumar is really very interesting, informative, educative.....

Lion Dr. G. Subhram,
Medical Officer,
Gandhi TB Clinic
Anakapalle, 531 001,
A.P., India.

✉ Many thanks for sending the July, 1998 issue of STC Newsletter. I was very pleased to read the special articles and information regarding the activities carried out by the SAARC TB Centre...

Dr. Nadeem Rizvi
General Secretary,
Society of Chest Physicians
Department of Thoracic Medicine,
Jinnah Post Graduate Medical Centre,
Karachi - 75510, Pakistan.

✉ Thanks for sending STC Newsletter regularly. I have suggested some of the issues regarding treatment regimens, DOTS, IEC etc. .....

Dr. Mazharuddin Junejo,
Chest Physician
Civil Hospital, Sukkur,
Sindh Province, Pakistan.

✉ Thank you very much for STC Newsletter July 1998 issue. Articles on NTP Maldives and Women and TB in SAARC Member Countries were very interesting and informative.

Dr. D. K. Gupta,
Head of Department,
Deptt. of TB & Chest Diseases,
LLRM, Medical College,
Meerut -250 004,
India.

✉ I came across your newsletter at our library. These are informative and useful for persons working on TB in the SAARC Region.

Dr. Y.V.Murali Krishna Rao,
Deptt. of Microbiology,
GGH Campus,
Rangaraya Medical College,
Kakinada - 533088, India.

Dear Readers:

Thank you very much for sending your valuable letters and acknowledgments regarding our publications, specially the STC Newsletter.

We have got many more letters from our readers. Your suggestions and feedback are source of our inspiration. The feedback, valuable comments and suggestions from our readers are always welcome. Kindly keep on writing us for improvement of our activities and publications.

Thank you very much.

- Editor

Some Fact and Figure related to Women and TB

- 900 million women are infected with TB worldwide.
- 2.5 million women will become sick every year from TB.
- TB kills nearly one million women a year.
- More women die from TB than any other infectious disease.
- TB accounts for 9% of deaths worldwide among women aged between 15 and 44, compared with was which accounts for 4%, HIV 3%, and heart disease 3%.
- TB kills more women than all the combined causes of maternal mortality.

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