



# STC

## Newsletter

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**(His Excellency the Secretary General, SAARC addressing SAARC-CIDA Workshop held on 1-5 March 1999, in Kathmandu)**

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

.....we in the Maldives have greatly benefited from the STC. I believe that we can do even better with the pooling of our resources information and experiences.....  
- Hon'ble Minister for Health, Republic of Maldives,  
Mr. Ahmed Abdullah  
(news on page 28)

### SAARC Tuberculosis Publication

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## Report on SAARC-CIDA Workshop on HIV/AIDS/TB Control

The HIV/AIDS epidemic is spreading rapidly in all South Asian countries. While India has the single largest proportion of HIV positive cases within its borders (according to UNAIDS and WHO), similarly other South Asian countries are also exposed to the epidemic. Given this scenario, efforts to cope with the epidemic in the South Asia Region must be regional in scope and not confined to political boundaries as they currently are. In addition, tuberculosis is one of the most common complications of HIV infection and in South Asia, the prevalence of HIV/AIDS infection is increasing and rates of TB are also rising. Hence early HIV/AIDS/TB diagnosis, treatment and management is increasingly becoming a vital component in the management of the dual epidemics in South Asia.

South Asian Association for Regional Cooperation (SAARC) and Canadian International Development Agency (CIDA) signed a Memorandum of Understanding (MOU) for cooperation in July 1997. At the time of the Secretary General's visit to Ottawa, it has been agreed to develop a project to address TB and HIV/AIDS. The aim of the project would be to look at the dual epidemics in order to obtain a better understanding of the best

practices being adopted in the concerted management of TB and HIV/AIDS containment in SAARC member countries currently confronting both epidemics.

The goal of the project would be to facilitate regional cooperation through SAARC. The purpose of the project is to strengthen the capacity of SAARC to formulate regional policies that will combat the spread of TB and HIV/AIDS epidemics in SAARC member countries. The project will establish an epidemiological information network that will generate the necessary analysis to develop strategies of the monitoring, prevention and control of TB and HIV/AIDS in South Asia. The Health Canada would be Canadian implementing agency, while, as SAARC TB Centre would implement from SAARC side. The project will be implemented over four years and will included the following components:

- *Regional Epidemiological & Laboratory database and Information Network.*
- *Policy and Communications.*
- *Regional Laboratory.*

To develop a detailed project design a SAARC-CIDA workshop was

organised from 1-5 March 1999 at SAARC TB Centre, Kathmandu, Nepal. Mr. B. B. Karki, Chairman of the National Assembly of Nepal inaugurated the workshop. The function was chaired by the Secretary, Ministry of Health, His Majesty's Government of Nepal. The SAARC Secretary General addressed the participants and guests at its inaugural function.

The experts from, SAARC Member Countries, Health Canada, SAARC TB Centre along with the representative of CIDA and SAARC Secretariat participated at the workshop and held discussions for the preparation of a project document.

The project document was drafted by incorporating the major components of the project.

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## World TB Day '99

24<sup>th</sup> March is commemorated every year as World TB Day all over the world to pay tributes to **Late Dr. Robert Koch** for his path breaking discovery of TB bacillus in the year 1882. This was also commemorated in SAARC Region, where 40% of the total TB Cases reside and SAARC TB Centre (STC) is functioning in Kathmandu for coordinating the efforts of member countries for TB control. STC used this opportunity to raise public awareness about TB disease and mobilize public support by advocating, propagating, and educating the people about the disease and its control.

This year, STC organised large number of events in association with WHO, National TB Centre, NATA, JICA TB Project.

Some of the activities organised by STC are as follows:

### **Joint Function:**

A function of World TB Day '99 was organised jointly by SAARC TB Centre, HMG Nepal, WHO, NATA and JICA TB Project in Royal Nepal Academy of Kathmandu, under the chairmanship of Minister of Health, His Majesty's Government of Nepal on 24<sup>th</sup> March 1999. The function was inaugurated by the Rt. Hon'ble Chief Justice of Nepal, Mr. M. P. Sharma. Mr. T. Dorji and Mr. ALA Azeez, Directors, represented SAARC Secretariat in the function. The message from His Excellency, the Secretary General of SAARC to the people of the region on the occasion of World TB Day '99 was read out at the function by Mr. T. Dorji.

### **Exhibition:**

An exhibition on TB situation and activities being carried out for its control in the region was arranged. The activities and achievements of the STC were also displayed in exhibition, which were appreciated by the visiting authorities of government of Nepal, NGOs & INGOs, journalists, community leaders along with large number of visitors.

### **Public Awareness:**

Public awareness campaign on tuberculosis & its control and role of

community to fight against TB were organised. Banners with different messages were placed in the important places of the Kathmandu and nearby districts.

**Radio talk:**

Minister of Health, His Majesty's Government of Nepal and Dr. D. S. Bam, Director, STC/NTC gave radio messages for the public awareness on the occasion of World TB Day.

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## **Report on Eastern Regional Conference of IUATLD held at Hong Kong:**

Director and Deputy Director of STC participated in the Eastern Regional Conference held in Hong Kong from 3<sup>rd</sup> to 8<sup>th</sup> June 1999, at the invitation of International Union Against Tuberculosis and Lung Disease (IUATLD) and presented papers. The presentation of Director was on "DOTS: TB Control Breakthrough" and that of Deputy Director was on "United Efforts to Combat TB and HIV Co-epidemic in South Asia".

The papers were well received and during the course of presentation the Role of SAARC TB Centre in combating TB and HIV co-epidemic was highlighted. This was widely appreciated by the experts attending the conference who observed that the STC

was unique example of Regional Co-operation in combating the epidemic collectively.

## **Report on Presentation Made by Deputy Director, STC in 19<sup>th</sup> All Nepal Medical Conference (ANEMECON-19) held at Birgunj, Nepal.**

Deputy Director attended 19<sup>th</sup> All Nepal Medical Conference (ANEMECON -19) organised by Nepal Medical Association at Birgunj from 6<sup>th</sup> to 9<sup>th</sup> Jan. 1999, at the invitation of organising Secretary, Nepal Medical Association.

A presentation on "New Threats to TB Control, TB and HIV/AIDS" was made by the Deputy Director in the special session on "AIDS: An International Dilemma".

The presentation highlighted TB and HIV situation in South Asia and Role being played by SAARC TB Centre for prevention and control of these diseases.

A detailed interaction was held about activities of centre and its role was widely appreciated by attending experts of the field.

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# Special Articles and Technical Information on Tuberculosis

## SOCIOLOGICAL RESEARCH CONDUCTED IN THE FIELD OF TUBERCULOSIS IN INDIA

P Jagota\*

### SUMMARY

*The paper presents a comprehensive analysis of the sociological research on tuberculosis conducted in India between 1956-1998. Human suffering, health seeking behaviour, factors affecting and improving treatment compliance are the important sociological aspects of tuberculosis that have been investigated. The genesis of Directly Observed Treatment Short course (DOTS) has been traced to the long-standing efforts to try different strategies to overcome the problems associated with treatment completion for e.g., development of supervised, intermittent and short course chemotherapy regimens. Following are the salient conclusions given in this paper:*

*In the early 60s, the visionary approach of researchers to focus on the sociological and epidemiological aspects of tuberculosis ensured that the National Tuberculosis Programme (NTP), from its inception, was socially relevant and epidemiologically effective.*

*The level of knowledge of tuberculosis does not necessarily lead to patients seeking relief or taking treatment regularly. It is the physical suffering which is found to be associated with the action taking. Cough is found to be one of the most important chest*

*symptoms of tuberculosis as it prompts patients to take action for relief.*

*Organizational and administrative factors such as insufficient facilities for management of tuberculosis, inadequate & irregular supply of anti TB drugs, long distance to travel for seeking relief, drug intake or drug collection act as barriers and prevent patients to be adherent for treatment. Training of health providers is essential so that they give accurate advice to patients concerning treatment and manage the tuberculosis activities. Certain other actions to improve treatment adherence include decentralization of tuberculosis services while ensuring regular supervision of programme activities.*

*Increased research efforts in sociological aspects of tuberculosis are needed for successful implementation of DOTS programme. There is a need to explore the feasibility of including diverse groups such as private practitioners, social & leprosy workers and dais (birth attendants), as DOTS supervisor. We can also investigate the utilization of other agencies like STD booths and pan shops. The barriers to the expansion of DOTS programme should be removed.*

\* Director, National Tuberculosis Institute (NTI), 8, Bellary Road, Bangalore - 560 003.

## **Introduction**

The main objective of social sciences, which comprises of sociology, history and economics, is to study the human society. The application of social sciences to health problems is known as public health. Research in health is being done on the basis of data collected by observations made in real life-conditions or in experiments. The design of the experiment depends upon the complexity of the system under observation and on the possibility of observing one or more factors of the system under study (variables) after isolation or equalization of the other variables. Since it is not possible to isolate all variables in human beings without introducing bias, a control group is needed in which all other variables (which are not being studied) are equalized. This is being done in controlled trials – laboratory or clinical.

Sociological research is carried out mainly through interviews and observational studies. They represent a method which is closer to real life but consider only one or more aspects (sub system) of a community health problem i.e. the action taking pattern of tuberculosis (TB) patients without considering all other aspects, which play a role in determination of this trend such as economic, cultural and other factors related to the health systems<sup>1</sup>. However, the objective should be to study all or only key variables, which are involved in public health by systems analysis (operations research). National Tuberculosis Institute (NTI), Bangalore, having understood this concept, included and regarded the sociologist as an equal member of the interdisciplinary team of scientists, ensuring that the programme focused on people rather than on disease alone, making the National Tuberculosis Programme (NTP) sociologically acceptable and epidemiologically effective. A large number of studies conducted in India have shed light on various epidemiological, sociological, bacteriological and organizational aspects of the programme.

NTI has given due importance to the sociological and economic aspects of the disease in formulation of the NTP. Many breakthrough studies<sup>2,3,4</sup> (including pilot studies) in understanding human suffering have been responsible for the integration of the NTP with

the general health services and in the formulation of other important principles of the programme. Human behavior is a complex subject and it is important to learn about the sociological aspects of the disease. Extensive research carried out in India, over a period of time, on human behaviour related to TB, needs a wider dissemination among the TB workers globally. This paper presents a comprehensive view of the research on the sociological aspects of TB conducted in India between 1956 and 1998 under the following sub-headings: a) Studies on human suffering – level of human suffering and health-seeking behaviour, b) Treatment behaviour of patients - factors affecting and improving treatment compliance, c) Genesis of Directly Observed Therapy.

## **RESEARCH ON HUMAN SUFFERING & HEALTH - SEEKING BEHAVIOUR**

With regards to human suffering, the inquiry into people's awareness of TB has largely been done via two approaches. The first approach is focussed on the extent of people's knowledge regarding the most important facts about TB such as the cause of the disease, the mode of spread of infection and the frequency of occurrence of the disease. The assumption in this approach is that ignorance and partial knowledge lead to prejudices, social taboos & stigma and inadequate response by patients to fight their disease. This hypothesis is also the basis for providing health education. On utilizing the above approach, it was observed that the health behaviour of the people was independent of their level of knowledge of the disease and, even when their level of knowledge was high, prevailing negative social attitudes were strong deterrents for people to take action for relief<sup>5,6</sup>. The second approach to awareness centers on physical suffering caused by symptoms of TB. This approach has been highlighted by a series of studies done by NTI in the early sixties while formulating the programme<sup>2,3,4</sup> and subsequent studies by NTI and others to evolve it<sup>7,8,9,10</sup>. Research efforts in NTI have also been directed towards standardization of the tools of investigations for sociological aspects. For instance, the interview, as a tool has been found to be simple, accurate and amenable to use in real life situations provided the staff is trained and skilled<sup>11 & 12</sup>

Some of the studies carried out through the first approach, based on the knowledge of the patients regarding TB, are detailed here. A study conducted by Geethakrishnan et al, 1988 to assess knowledge and attitudes towards TB in a rural area indicated that literacy did not influence knowledge about the disease. The researchers found that the symptomatics in their study were unsure of the correct duration of treatment while their general knowledge of the disease was high<sup>5</sup>. Similarly, Purohit et al (1988) reported that both rural and urban groups were less knowledgeable about the preventive aspects of TB while diagnostic aspects were better known among the urban group when compared to the rural group<sup>6</sup>. In partial disagreement to Geethakrishnan's finding<sup>5</sup>, knowledge was found to be related to socio-economic class and literacy level<sup>6</sup>. Radha Narayan et al., (1982) further explored the differences in level of perception of suffering in a rural population and reported that illness perception and medical relief in rural communities varied among the people depending on cultural, ethnic and socio economic differences<sup>13</sup>. Several studies have confirmed the prevalence of misconceptions about TB and varied attitudes of patients and providers<sup>14,15</sup>. The belief that TB was caused by change of climate, unhygienic conditions, or because of smoking and consumption of alcohol were misconceptions held by symptomatics from rural, urban and metropolitan areas of Madras (Chennai) and resulted in behaviour such as denying breast milk to the baby of a TB patient<sup>5,8</sup>. In a study concerning TB management in private practice and its implications, Uplekar et al (1996) found that there was mutual distrust between public health functionaries and private medical practitioners with regards to TB control activities. Irresponsible attitudes of the health functionaries were considered an important reason for the poor opinion patients had of the primary health centres, according to private practitioners<sup>16</sup>.

Studies related to human suffering using the second approach, namely, by measuring physical suffering caused by the disease, have been carried out mainly by using two parameters – (a) level of awareness of symptoms and/or (b)

action-taking pattern to seek relief studied at the community as well as at the out-patient levels in various health institutions<sup>17,18,19,20</sup>. A seminal research study drawing attention to the aspect of human suffering caused by TB was conducted by Banerji et al<sup>2</sup> at the community level in Tumkur district in Karnataka. The sociological study was designed to measure the degree of awareness of symptoms suggestive of pulmonary TB in terms of awareness, symptoms causing worry and action taken for relief (“consciousness”, “worry” and “action”) among 2,106 persons, aged 20 years and above. Each person in the experimental and control groups was interviewed by social investigators. The findings of the study when combined with epidemiological data revealed that 95% of bacteriologically positive cases were aware of symptoms, 72% indicated “worry awareness” and 52% took action-seeking assistance from government rural health institutions. Cough was found to be the most important single symptom. The measurement of symptom suffering, taken along with the epidemiological measurements of TB in this study provided an accurate and detailed picture of the various aspects of TB<sup>2</sup>. These results indicated that a case-finding programme based on symptoms of the disease could help in diagnosing about 40% of prevalent cases in the community. The findings also resulted in NTP taking a felt-need-oriented approach, wherein primacy is given to those epidemiologically important cases who also felt the need for services. Subsequent studies carried out in different parts of the country focused mainly on two aspects measuring the extent of human suffering and the level of action-taking. Besides attempts were made by some researchers in identifying various factors influencing action-taking<sup>3,4,5,6,8,10,17,18,19,20,21</sup>.

Since the above studies were community-based, a corroboration of the above findings was needed from studies conducted at the outpatient level. Such corroboration was obtained from several investigations. Baily et al<sup>22</sup> (1967) confirmed the findings of Banerji et al<sup>2</sup> that half of the cases of TB seek relief and 80% of them can be diagnosed by simple smear examination. Subsequently, Seetha et al found that the intensity of physical suffering influenced the behaviour of patients towards action taking at

the outpatient level too<sup>23</sup>. Nagpaul et al (1970) in their study in an urban TB clinic in Bangalore city reported that a majority of the out-patients were in the age group of 20-30 years of age, were wage earners and most of them were having 2-3 symptoms. Sixty-one percent of the urban and 42% of the rural patients attended the clinic within three months from the onset of their symptoms. It was found that 20% of the outpatients came of their own, 32% had previous contact with other health institutions, 31% were actually referred by other institutions and 17% were sent by the BCG workers. The data obtained further suggested that both urban and rural patients, in seeking relief, preferred general health services as their first contact and therefore, the general health institutions should be strengthened with adequate means for diagnosis and treatment of TB<sup>7</sup>. In a sample survey in Madras (1990), 90% of symptomatics utilised the health facilities for relief despite having no knowledge of causation of TB but being aware of the symptoms, as services provided by health services were prompt and good<sup>8</sup>. Some factors that encouraged early action included social preference and accessibility of medical services<sup>13</sup>. The socio-economic value of the patient to his or her family that prompted action, for instance, wage earners and housewives sought relief early<sup>7</sup>. Similar observations have been made by other workers carrying out research in the community in different parts of the country, in rural as well as urban settings<sup>19,20</sup>. Certain other factors that were barriers to action taking included financial reason, symptoms not being considered severe, domestic reasons or pressure of work preventing them for seeking relief from the health facilities, lack of transport, dissatisfaction with facility<sup>20,21</sup>. In a study by Balasangameshwara et al on case-finding to determine the patients and providers delay, showed that 80% of chest symptomatics had taken prompt action while only 27% of them were offered sputum examination by the doctors. Thus a minimum delay of 20% by the patients and maximum delay of 73% by the providers was observed. The overall preference for health facility by patients was public health centers<sup>24</sup>. Training of providers has also been found important for case-finding. In a study conducted by Aneja et al on the average increase in case-finding as a

result of providing training to medical officers by two different methods, in four districts in Karnataka, was found to have increased case-finding from 8.5% to 17.8% and from 9.7% to 12.3% respectively<sup>25</sup>.

The measurement of human suffering by other parameters like specific mortality, sick mandays, absence from work and loss of wages, hiring alternative labour, cost of treatment etc. were observed in studies carried out by Nagpaul et al in Bangalore city. The results indicated specific mortality due to TB of 17.6% compared to 2.2% of the overall crude mortality. There was a significantly higher proportion of completely bed-ridden days among the sputum positives and, the economic hardship on those with TB was about five times greater than for those sick with other illnesses<sup>17</sup>. The findings of this study along with those from a two-year TB survey in the Philippines<sup>18</sup> have resulted in suggestion by Nagpaul et al that specific mortality could be used as a sociological parameter to assess NTP. Other measures include utilizing suffering mandays with cough as the index symptom. The third parameter is to calculate the proportion of the prevalence cases under current treatment of NTP on a routine basis, as prevalence of bacteriologically positive cases is already known in the country<sup>17</sup>. On similar lines, a re-survey conducted in Tumkur district<sup>26</sup>, after a lapse of 12 to 16 years from the initial study<sup>2</sup>, yielded similar results concerning symptom awareness and action taken, leading to the conclusion that despite the advantage of the District Tuberculosis Programme (DTP) for decades, the people's behaviour had not changed as they had not received actual and total benefits<sup>12,26</sup> implying that there has not been any change in the prevalence of cases in the community and the programme has not reduced the problem of TB in terms of both epidemiological and sociological aspects.

Based on the results of the above studies on human suffering and various related aspects, we conclude that TB causes enough physical suffering to create awareness among 95% of the patients in the community and 52% of them seek relief. Intensity of the suffering, presence of number of symptoms, their duration and quality of services provided by the government

health services lead to action-taking. An increase in action-taking at some health institutions has been observed by research workers whenever services provided by them are quick, good and free. There was no significant correlation between patients' action-taking and their knowledge, social status, education and other demographic factors. Studies have further shown that imparting health education to increase knowledge about the disease has not changed the symptomatics into an action-taking group. Making efforts to increase people's knowledge without improving the quality of TB services could be counter-productive. Some studies suggest that distance, economic realities and quality of services offered by health providers are the over-riding factors for concern. More studies are required to understand the elements that translate knowledge into appropriate health practices so as to improve the action taking level.

#### RESEARCH ON TREATMENT BEHAVIOUR OF TB PATIENTS

**Adherence to TB treatment:** In India, the low treatment efficiency achieved in the NTP has been attributed to default or non-compliance to treatment by patients. Poor case holding is recognized as the NTP's weakest component<sup>27</sup>. Earlier, patients alone were blamed for irregular or non-completion of treatment. The terms 'default' and 'non-compliance' have been in use to describe patients' behaviour in drug taking, implying that they were subservient to the providers. However, our expanded knowledge of the sociological aspects of the disease has led to the recognition that non-patient factors, namely, organizational and administrative lacunae of TB services, contribute to incomplete drug consumption. Hence, the term 'adherence' is used instead of 'compliance' in here as it reflects the active role of the patient in the self-management of treatment<sup>28</sup>. In the following section, the problem of non-adherence in India, the factors found to affect the adherence and intervention to improve it are discussed.

Long-term treatment for any disease including TB has the inherent problem of non-adherence. A review of the extent of the problem over three decades indicates that there is a wide spectrum of treatment completion rates ranging between

as low as 20% and as high as 80% both with Standard Regimen (SR) and Short Course Chemotherapy (SCC) regimens in the programme situation<sup>29,30,31,32,33,34</sup>. Baily et al<sup>35</sup> reported a completion rate of 56% with SR while Jagota et al<sup>36</sup> reported 77% with SCC, provided, the technical guidelines for the DTP are strictly followed. However, in the actual field situation, Chaudhuri et al reported only 33.7% of treatment completion rate with SCC regimen<sup>29</sup>. Similarly, TRC, Madras, in their 18 pilot district study reported a range of 22-80% of treatment completion rates with SCC regimens<sup>32</sup>.

Factors, which can influence the treatment completion rates, are related to patient, drug regimen and treatment organization. Among patient factors, misconceptions about TB, lack of knowledge about duration of treatment, loss of wages, lack of funds, being ostracized or ill-treated by family members or neighbours were responsible in discontinuing treatment<sup>7,9,33,34</sup>. Negative social attitudes of family members towards TB patients were noted by Krishnaswamy et al (1977) from selected areas in Madras<sup>9</sup>. In-laws (28%) had more of a tendency to turn hostile towards the TB patient followed by brothers or sisters (16%) and husbands (14%). Mothers overwhelmingly (97%) retained a positive and sympathetic attitude towards their ailing children. Overall, 84-91% of the patients held an optimistic attitude regarding the disease resulting in their taking early action to seek relief<sup>9</sup>. A multi-dimensional comparison between patients who took treatment regularly and those who were irregular in treatment and their households confirmed that there was no difference in symptom awareness between the two groups and, for all patients, the physical suffering, namely, pain and discomfort was the most important factor in completing the treatment<sup>10</sup>. Also, seeking multiple sources of treatment was a common practice among the patients<sup>10, 24, 34</sup>.

From comparison of the profiles of adherent and non-adherent groups in a study indicated that distance to travel was a significant reason to stop treatment<sup>34</sup>. Similar observations related to the case-finding process were reported by Nagpaul et al<sup>7</sup>. Other organizational and

administrative factors in the TB control programmes have been identified as important barriers to the continuation and completion of treatment<sup>30,34</sup>. Some typical examples of organizational and administrative factors include insufficient, irregular supply of drugs or lack of facilities to retrieve patients<sup>13,30</sup>, prescribing inappropriate regimens or appropriate regimens for incorrect duration<sup>16</sup> by both government doctors and private practitioners, incomplete addresses of patients preventing retrieval action<sup>3,34</sup>. Patients have reported that they interrupted their treatment because "Health Visitor behaved very rudely", "Was advised special diet that I could not afford, therefore thought it no use taking pills"<sup>3,34</sup>. The working hours of clinics, when not adjusted to the local life style of the patients, also contributed to non-adherence<sup>30</sup>.

### **Research on intervention to improve adherence**

#### **i) Influence of motivation on patient behaviour**

Motivation is a pre-requisite for putting any TB patient on treatment. Some essential information has to be imparted for patient to abide by the instructions by the treating doctor. Regarding the influence of motivation on treatment behaviour of patients, three studies with the different results have been detailed below. The positive influence of motivation on the treatment behaviour of patients was observed by the results of a controlled study conducted by Seetha et al (1981) at Lady Willingdon State TB Centre, Bangalore (LWC)<sup>37</sup>. A comparison of treatment behaviour between the motivated group (where patients were motivated by Clinic staff) and the control group (where patients did not receive motivation) indicated that the drug collection pattern and sputum conversion among the patients in the motivated group was better than the controlled group<sup>37</sup>. An investigation by Aneja et al (1980) examined the impact of providing three different schedules of motivation on pulmonary TB patients in terms of regularity of drug collection and pattern of non-adherence for three months at the urban TB clinic. The patients without history of previous treatment were randomly allocated to three groups based on type of motivation given. The

findings of the investigation disclosed that patients those who received simple, brief instructions only were more regular and made less number of defaults than those motivated as per the procedures of the DTP manual or those motivated with reduced contents. However, no significant differences in treatment behaviour were observed as a result of the particular type of motivation given<sup>38</sup>. Sophia et al reported the negative influence of improper motivation in drug taking. The staff at the Centre in the study placed undue emphasis on patients taking a high protein diet and tonics. As a result, the patients' had belief that taking anti-TB drugs without consuming a special nutritious, high-protein diet was futile. This reduced patients' adherence to treatment even when knowledge of the disease was high<sup>34</sup>.

#### **ii) Defaulter retrieval action**

Under the DTP, there is a provision for two defaulter retrieval actions for patients who do not report on the due date for drug collection / consumption. The first action is through a *reminder letter* while the second is preferably by a *home visit* to the patients' house'. Patients failing to collect or consume the drugs for a period of one month are referred as "LOST" under the NTP and "DEFAULTED" under the RNTCP if they absent for a period of two months. The impact of the retrieval actions were measured for the first time in the study conducted by Baily et al, wherein, it was reported that 67% of the defaulting patients were retrieved by first action and 70% of the remaining patients by taking second action in the form of home visit along with vital information about the patient being hospitalized or dead<sup>35</sup>. Jagota et al also reported similar retrieval pattern for SCC regimen<sup>36</sup>. In a retrospective study of domiciliary management of TB patients in Bangalore, Seetha et al found that the defaulter actions taken by the staff resulted in differences in patients' treatment behaviour<sup>31</sup>. They examined the interval between diagnosis and initiation of treatment, regularity in collection of drugs, role of motivation in drug collection and pattern of defaulter retrieval actions by health institutions. It was observed that in the entire district, about 94% of patients were put on treatment within 10 days of diagnosis. A total of 2479 patients were

divided into three groups (DTC, Urban PHI & Rural PHI) based on the place of treatment. The motivation was provided to all the three groups. About half of the patients lost for treatment had made only one default during second or third collections indicating loss from treatment was early. A high rate of treatment completion rate was observed among patients for whom defaulter retrieval actions were taken<sup>31</sup>. Time of default was found to be crucial to treatment. An important finding emerging from the study undertaken by Jagota et al was that there was a co-relation between the time of default and the completion pattern. Those patients who defaulted for the first time during the first month of treatment ("First Timers") had higher number of "lost" cases than the rest of the patients. They showed inferior results for all the parameters of case-holding<sup>39</sup>. These results indicated that First Timers could serve as predictors of default. Retrieval action of this target group through various means was expected to improve case-holding upto 30% for SCC regimens<sup>39</sup>. The results of another study<sup>30</sup> also indicated that 30% of the defaulters could be retrieved through defaulter actions. Chauduri et al reported that in spite of observing a high retrieval rate of 60-90% of defaulting patients during an eight month SCC regimen, only 33.7% of the patients had completed treatment because there was a continuous loss of patients every month during the treatment period due to a high default rate<sup>29</sup>. Pamra et al (1967) observed that an additional visit by a senior member of the staff could further retrieve 58% of those defaulters who were not retrieved even after three visits by the Health Visitors<sup>40</sup>. The accurate address is the first prerequisite for the successful defaulter retrieval action. An innovative methodology to increase the retrieval rate through the address card was tried by TRC, Madras in four large towns of south India with illiteracy levels of 26-40%. The aim was to overcome the problem of inaccurate addresses. Each patient was given an address card to take home and to have his/her address noted accurately on the card by a knowledgeable, literate person of the patient's choice. The card was then returned by the patient to the treatment Centre. In this manner, 98% of the patients returned the card and of them, 84% had accurate addresses in comparison to the 66% addresses obtained by

the registration clerk<sup>41</sup>. The difference between the two groups was highly significant.

#### ii) *Involvement of NGOs*

Certain other actions that would improve adherence have been identified and recommended through examination of alternative approaches utilized by two NGOs in rural and urban areas respectively<sup>42</sup>. Rural NGOs provided services to large population in one of the backward areas of rural Gujarat and the urban NGOs in the slums of Bombay. Both the organizations could ensure reasonably high levels of treatment completion and cure rates under field conditions. While the urban NGO used pre-registration screening and motivation as tools to ensure treatment completion and cure, the rural NGO successfully employed the services of the female Anganwadi Workers of the Integrated Child Development Scheme (ICDS). Rural NGOs also studied the benefits of monetary incentives. It was found that giving monetary incentives to voluntary workers contributed to the success obtained by the NGOs in achieving high treatment completion and cure rates. Where monetary incentives were not possible, it was recommended that open felicitation of the concerned staff and avenues for promotion could be considered as alternatives. The flexibility to make local changes and adaptations, for instance, allows the involvement of other health functionaries such as the Anganwadi Workers or those personnel working in leprosy programmes<sup>42</sup>. In a similar study, it was found that Dais (traditional birth attendants) were able to provide supervised regimens effectively and can be used as an alternative method of providing DOTS in the programme<sup>33</sup>.

The findings of the studies on both human suffering and treatment behaviour of patients lead to the conclusion that even with a high level of awareness, the diagnosed patients may not seek or continue treatment due to poor treatment organization, relief of symptoms, or various socio-cultural factors. Despite the NTP functioning for about 30-35 years, health seeking behaviour of chest symptomatics and TB cases have not changed significantly as shown in the studies carried out on these aspects in various parts of the country. But wherever

and whenever the quality of services was good, an improvement in utilization of services by the patients had been reported.

### ***Post Treatment Scenario***

Pulmonary TB in a large proportion of cases leads to damage of lung tissue by way of fibrosis and cavitation. Such patients are prone to get chest symptoms even when they are cured. The physical suffering and the lurking fear of relapse compel them to visit various health institutions repeatedly. Based on the radiological findings, doctors may keep on treating them with anti-TB drugs. A study was conducted by Radha Narayan et al in the urban TB clinic<sup>43</sup> to find out the proportion of smear positive patients remaining symptom free during 14 intervening years between 1961-1974. It was observed that of the 20.3% of the patients who could be followed up, 29.7% had symptoms<sup>43</sup>. Jagota et al also reported that 30% of the patients after 5 years of treatment had persistent chest symptoms<sup>44</sup>. Further analysis of the same data reported elsewhere revealed that 30% of the bacteriologically negative cases had recurrent chest symptoms<sup>45</sup>. Considering the above observations and the fact that in the DTP, 70% of the patients are treated on the basis of radiological evidence alone, there would be substantial proportion of over-diagnosis and unnecessary treatment to the patients. This would lead to undue strain on the organization, wastage of anti-TB drugs and resources apart from the financial and psychological burden on the patient and his family. It is, therefore, recommended that old TB cases should be given symptomatic treatment unless the sputum is positive by smear/culture examination.

### **GENESIS OF DIRECTLY OBSERVED TREATMENT SHORT COURSE (DOTS)**

The concept of DOTS was developed in India as demonstrated by the studies conducted in various institutions. TB Research Centre (TRC), Chennai, first established the efficacy of domiciliary treatment and found it as effective as the sanatoria treatment<sup>46</sup>. It was considered another major breakthrough after the discovery of anti TB drugs. These findings helped the NTP in offering treatment on ambulatory basis. Soon after the implementation of the NTP, Parthasarathy et al reported<sup>47</sup> a loss efficacy to

the extent of 20-30% of the regimens tried in control clinical trial mainly due to non-consumption of drugs. Fox voiced concern on general reliability of patients in the self-administration of drugs over a long period of time. It was observed during the study that at any point of time 4% of the patients were negative for presence of INH in the urine thereby confirming non-consumption of the drugs in spite of intensive supervision at home<sup>48</sup>. Research on both medical and social science was strongly recommended by him based on the above observations. In an attempt to overcome this problem, the TRC developed a supervised intermittent regimen with high doses of 650 mg INH and injection Streptomycin with usual dosage of 1.0 gm (12 SHtw) twice weekly for one year. The efficacy of 94% was reported for the above regimen<sup>49</sup>. This regimen was selected as one of the standard DTP regimen (former R<sub>2</sub>). Gothi et al in 1971 tried to measure the amount of concealed drug irregularity and reported that those who collected the drugs, 30% did not consume at any given point of time<sup>50</sup>. In a subsequent operational study to measure efficiency of two DTP regimens, i.e. (i) 12 TH (unsupervised daily), (ii) 12 SHtw (fully supervised intermittent), Baily et al (1974) reported that of 56% of the patients who made monthly collection of the TH Regimen, 60% became bacteriologically negative, with SHtw which required supervised drug intake, only 31.3% had consumed the drug of whom 68% became bacteriologically negative. The SHtw regimen was found to be robust and able to withstand the drug irregularity but compliance remained an unsolved issue<sup>35</sup>. With the advent SCC regimen of short duration it was felt that supervised administration could be possible during intensive phase of two months. This was proved in an operational study conducted by Jagota et al (1989) to evaluate the efficiency of two SCC regimens (1 SHRZ/7 TH, 2 SHR/6 TH) under field situation (strictly adhering to the DTP guidelines) with supervised drug administration during the intensive phase. High treatment completion rates of 77.7% and 77.5% respectively were observed<sup>36</sup>. In contrast to this, in another study examining the results of treatment with a SCC Regimen under actual field situations without any intervention, Chaudhuri et al (1993) reported a poor treatment

completion rate of 33.2%<sup>29</sup>. TRC, while reporting the findings of 30 pilot districts on SCC observed treatment completion rates ranging from 22% in Vidhisha to 80% in Pondicherry<sup>32</sup>. This wide range of treatment completion pattern was being observed due to variations in treatment facilities. These findings indicated that it was possible to give drugs under proper supervision and achieve high completion rates provided the existing treatment organization for TB was strengthened and further decentralized to make it convenient for patients to take the drugs from the nearest health centres. Thus, the seeds of DOTS were sown in India. The operational factors either related to treatment organization or to the patients had created a barrier in the minds of the researchers and policy makers in accepting and recommending the DOTS as a strategy. This has resulted in believing that the concept of DOTS has come from outside. After following the introduction of DOTS in the country, NTI conducted research studies to find out other suitable DOTS workers and the feasibility of using the dais for supervised administration of SCC showed successful results<sup>33</sup>.

Revised National Tuberculosis Control Programme (RNTCP), adopting the DOTS as the strategy is being implemented by the Government of India since 1993 in a phased manner. The high cure rates have been achieved so far. The quality of diagnostic services has dramatically improved and nearly 8 out of 10 patients' put on treatment in RNTCP are being cured.

The present intensity of DOTS implementation would be sustainable when the ills of existing health system are removed. The fact that these factors have persisted as barriers over time indicates apathy towards control of TB at all levels including the political, health authorities and other concerned constituent groups. There is an urgent need to address the issues concerned and facilitate prompt remedial action. It is also essential to study various sociological issues related to effective implementation of DOTS such as exploring the possibility of including the private practitioners, grass-root level functionaries, chemist and other groups of people including paan sellers, STD/ISD booths etc., as DOTS Workers. TB control requires a

long-term strategy and any intense involvement of the health staff on mass scale would not be sustainable unless the problems related to the manpower are also investigated. Hence, future sociological research should be focused on various aspects related to the health services.

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# **A Retrospective Cohort Study TB Centre Rawalpindi, Pakistan**

*De Muynek A, Hussain Khan, Mawan & R Afzal*

## **Introduction:**

Women living in a male dominated society are facing many injustices with deleterious impact on their health. The physical inaccessibility and poor functioning of the public health services make access to health care problematic specifically for women. It is therefore to expect that female TB patients will have a higher patient delay before diagnosis and be less compliant than males. Sumartojo reported an inconsistent relationship between gender and compliance of TB patients. A recent meta-analysis was carried out looking into the association "Gender – TB Compliance". The study showed also an inconsistent relationship: some studies showed a significantly better compliance among female patients, while other showed no significant difference by gender. In Nepal, e.g. adherence with chemotherapy is similar in men and women. But so single study showed a better compliance among males than among females.

For cultural reasons Pakistani women are expected to reach TB diagnosis and treatment centres less rapidly than male patients do. But studies in Sialkot, Pakistan brought evidence of the contrary: a short delay and a (slightly)

better treatment compliance among female than among male TB patients.

Based on a long experience with care of tuberculosis patients in Pakistan, we were of the opinion that in the Rawalpindi area, male TB patients should do much better than females, regarding treatment adherence. In order to verify the hypothesis of better male treatment adherence we carried out a retrospective cohort study of all TB patients diagnosed in 1996 in the TB centre, Rawalpindi.

## **Materials and Methods:**

An exhaustive survey has been made of all TB patients, registered in 1996 in the TB centre, Rawalpindi. The total number of TB patients has been established based on the patient register, laboratory register and patient records. For each patient an especially designed questionnaire has been filled out. The questionnaire considered the following variables: Patient's ID, Age, Sex, Provenance, Site of Lesion, Result of Sputum Exams, Date of Diagnosis, follow-up data, regularity of treatment and final result of the treatment. A treatment was considered to have been regular, when on average patients

presented themselves for check-up and drug recollection at monthly interval. A regularity score was developed, someone who returned in less than 36 days after the previous visit, was considered regular. A patient who was regular at all 8 follow-up visits, was given a regularity score of 8; a patient who was irregular got a score of 7; a patient who become twice irregular got a score of 6. The ones that did not return for their first follow-up visit got regularity score of 0.

The result of treatment was classified as cured, death, defaulter or unknown. The category "transfer out" was not applicable in the Rawalpindi TB centre as it is the national referral centre. The age was registered based on patients' civil ID card or when not available on interview. We accepted the case definition as handled by the TB centre: a pulmonary positive TB case is a patient with presence of AFB in the sputum or with hard evidence (X-ray, clinical picture) of tuberculosis. The associations were studied via  $X^2$ ,  $\alpha$  error was 0.05 and bilateral alternative hypotheses were tested. We used the actuarial method for the determination of the survival distribution. The log rank test was used to test equality of survival distribution by gender.

The times period between consecutive visits were plotted on a box-plot graph (figure 4). Our data could give us some evidence on primary and secondary resistance. If the initial and the second month AFB sputum exam are positive, we conclude that the results are suggestive of primary resistance, if the initial AFB result is negative and subsequent result(s) become positive, then we consider this as suggestive of secondary resistance.

## Results:

Out of total of the 5980 TB patients, 50.6% were males and 49.4% females. The age distribution shows the 15-24 years stratum to be the modal one (table 1).

There is female excess in the age group up till 44 years, while in the older age groups the sex ratio (males/females) increases with increasing age (figure 1).

Figure: 1: Age pyramid of 5980 TB patients, 1996 cohort, TB Centre, Rawalpindi.

One fourth of the TB patients were AFB positive, while 6% had no sputum results (table 2), the latter occurring mainly in the children (as it is difficult to get a sputum specimen). There was a highly statistical difference in sputum results by gender, the male/female sex ratio of the AFB+ patients being 1.23.

When we look upon the time distribution of defaulting then we observe a significant gender difference already at the start of the treatment and in the global compliance profile. At the start of the treatment 19.1% of the patients did no more return for their first check-up. For the 80.9% of the patients who return for their first check-up, the compliance profile is significantly in favour of the females ( $p=4 \times 10^{-6}$ ) (figure 2).

Figure – 2: Treatment adherence by Gender, TB centre, Rawalpindi.

The regularity, as defined in this study, refers to the strict adherence to the visit appointments. Figure 3 plots the time distribution between successive follow-up visits. This figure shows that the medium distribution varies little over

time, that the average distribution is similar for males and females, but that the spread of the time distribution increases substantially near the end of the treatment (figure 4). The mean interval between visits, by gender and regularity score. This figure shows the mean intervals to differ very little by gender, they tend to decrease when the regularity increases.

Figure 3:

Figure 4: Box-plot of mean intervals between visits (days)

There was an important and significant sex difference in the end results (table 3): more females got cured, while fewer defaulted. The global default rate was rather high (58%).

Females scored significantly higher on the regularity score under than males ( $p < 0.04$ ).

The defaulting has been modeled by Cox Regression (table 5), showing that the regularity of the follow-up visits has the biggest impact, followed by the type of case (re-treatment cases have a lessor defaulting) and gender (females having a lessor defaulting than males). Increasing age has a negative impact on patient compliance. There was also a significant interaction between regularity and age, that negative influenced the compliance.

Table 5: Cox Regression model of defaulting:

Following our operational definition of primary and secondary resistance, we found a 4.7% rate of primary resistance. There was a 1.59 times higher rate of primary resistance in males (5.7% in males, 3.6 % in females) but this

difference is not significant. There was a similar incidence of secondary resistance, a total of 10 cases were observed (0.29%) but there were no differential by sex.

### Discussion:

This study proves our initial hypothesis to be wrong. In Rawalpindi TB Centre female TB patients have a shorter delay, accept their diagnosis & treatment better, turn up more regularity for check-up and have higher treatment adherence rate than male patients. Our findings corroborate fully the data of the Sialkot study.

One of the reasons could be that women have a stronger motivation to get cured. This implies a stronger desire and motivation to reach treatment and a much better treatment adherence than male patients. Another possible explanation is selection bias. It could be that only the highly motivated women reach the health services. Our study cannot shed light on the eventuality of such a selection bias, as we have only information on those patients who present themselves, but not on those who don't. A recent study carried out in the same Rawalpindi TB Centre has shown that of the diagnosed TB patients 94% had presented themselves to other care providers also. Such a selection bias is, however, unlikely as we have a sex ratio of 1.02 while the usual male to female notification ratio is around 1.5-2.1.

It is surprising that in Rawalpindi TB centre we have a nearly negligible male excess. When we look upon the data stratified in AFB results, then a different picture emerges. In the AFB-stratum the

sex ratio, being 1.23 approaches more the expected one, and only in the 15-34 years stratum, we find important female excess. This is fully in line with studies from India, that have shown women of reproductive age to be at higher risk to progress from infection to clinical disease.

Higher rates of progression observed in women in their reproductive years have been reported elsewhere also.

In the AFB negative stratum, the sex ratio was 0.9% and a female preponderance in the age stratum 10-39 years was observed. This confirms that the male preponderance in the age stratum 10-39 years was observed. This confirms that the male predominance in TB is largely confined to the infectious form of the disease.

**Table 1: Age and Sex distribution of TB Cohort TB Centre, Rawalpindi – 1996**

Age groups	Male	Female	Total	Ratio
0-14	249(8.2)	331(11.2)	580(9.7)	0.73
15-24	750(24.8)	843(28.5)	1593(26.6)	0.87
25-34	594(19.6)	659(22.3)	1253(21.0)	0.88
35-44	414(13.7)	426(14.4)	840(14.0)	0.95
45-54	408(13.5)	331(11.2)	739(12.4)	1.20
55-64	351(11.6)	234(7.9)	585(9.8)	1.47
65+	259(8.6)	131(4.4)	390(6.5)	1.95
Total	3025(100)	2955(99.9)	5980(100)	

(Figures in the parenthesis is percentage)

**Table 2: Initial Sputum by Sex**

Sputum Result	Sex		Total	
	Male # (%)	Female # (%)	# (%)	# (%)
AFB+	825 (27.3)	669 (22.6)	1494(24.9)	
AFB-	2020 (66.8)	2094 (70.9)	4114 (68.8)	
No Sputum Result	180 (6.0)	192 (6.5)	372 (6.2)	
Total	3025 (100)	2955 (100)	5980 (99.9)	

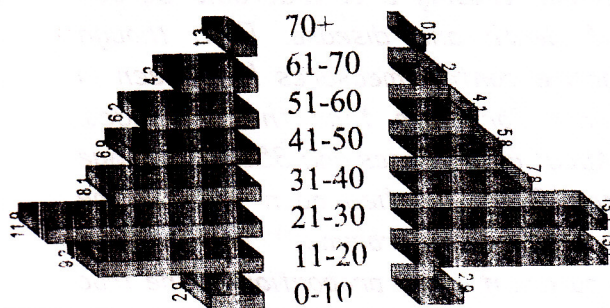
$X^2_{(2)}=17, p=0.0001$

**Table 3: Treatment results by Sex**

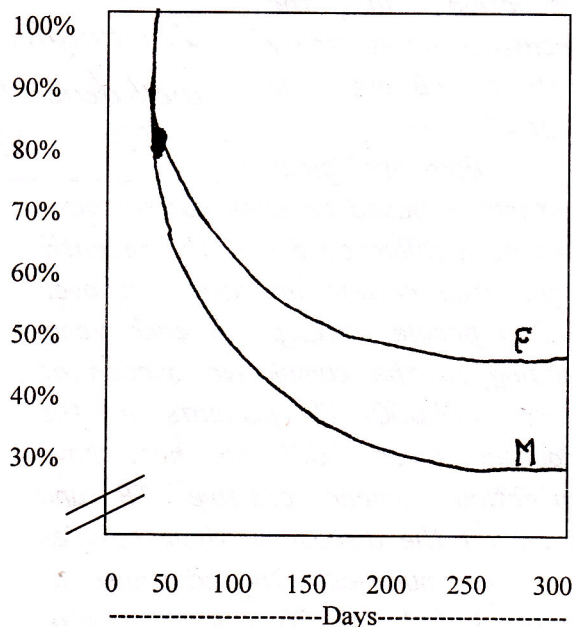
Result	Sex		Total # (%)
	Male # (%)	Female # (%)	
Cured	928(30.7)	1142(38.6)	2070(34.6)
Death	2 (0.06)	1 (0.1)	3 (0.1)
Defaulting	1898(62.7)	1589(53.8)	3487(58.3)
Unknown	197 (6.5)	223 (7.5)	420(7.1)
Total	3025(100)	2955 (100)	5980 (100)

$X^2_{(3)}=50, p<10^{-7}$

**Figure 1: Age pyramid of 5980 TB patients, 1996 cohort, TB Centre, Rawalpindi**



**Figure 2: Treatment Adherence by Gender TB Centre, Rawalpindi, 1996**



# Tuberculosis and its control in Sri Lanka

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## S u m m a r y

*Tuberculosis (TB) is a significant public health problem in Sri Lanka, causing a considerable burden of death and disease. Even though active control measures have been in place for more than three decades. About 6,000 cases and 350 deaths due to TB are notified each year to the national programme but these represent only a proportion of the true incidence of TB morbidity and mortality. There has been no significant reduction in the incidence or mortality rate of TB over the last 10 years.*

*Epidemiological estimates based on case notifications and data collected during the recently conducted review, indicate that over 9,000 people develop TB each year, adding to the cumulative burden of nearly 12,000 TB patients in the country. Over 7,000 of these have infectious smear positive TB and transmit the disease in their families and communities. In addition, an estimated 1,000 TB related deaths occur every year.*

*Tuberculosis is a notifiable disease by law in Sri Lanka. The notification system is well developed within the NTP.*

*Sri Lanka has well-developed health care infrastructure, the free supply of anti-TB medicines and the commitment of health workers and officials to implementing effective TB control measures. Chest Clinics manage the majority of TB patients diagnosed in the country. Three broad areas of their functioning, laboratory services, defaulter follow-up and the recording & reporting system have scope of strengthenin. Furthermore, an estimated 35% of patients are diagnosed and treated in the general health services and private sector. These cases are neither notified to the national programme nor managed in accordance with national policies.*

*Recognising the importance of TB control the government of Sri Lanka has adopted the strategy of DOTS (Directly Observed Treatment Short-course) for rapidly curing maximum TB patients in order to achieve objective of TB control in the country.*

## 1. Introduction:

Sri Lanka is situated off the southern coast of India and is separated from India by a 35 k.m. stretch of sea known as the Palk Strait. This tear shaped island covers a land area of 65,454 km<sup>2</sup>, with a maximum length of 435 km, and width of 225 km. A central mountainous region with peaks as high as 2,534 metres is surrounded by plains.

Sri Lanka has a Parliamentary Democratic System of government in which sovereignty of the people and legislative powers are vested in parliament with executive authority exercised by a cabinet of minister presided over by an Executive President. The President and members of the parliament are selected directly by the people. The country is divided into 8 provinces, 25 districts and 297 divisional secretary areas. The provincial administration is vested in the provincial council comprised of elected representatives of the people, headed by a governor nominated by the central government.

The estimated mid-year population of Sri-Lanka for 1996 was 18.6 million with a growth rate of 1.4%. Over 50% of the population is concentrated in the western, central and southern provinces, which together make up less than a quarter of the total land area of the country (22.7%).

One of the clearest features of Sri Lanka's population pyramid is the steady increase in older age groups. The proportions of infants (under one year), and children (1-4 years), have decreased from 2.6% and 9.6% in 1981 to 1.6% and 7.2% respectively in 1994. Similarly, a reduction is observed in the percentage of children, between the ages of 5 and 14 years and also the youth population (15-29 years). The proportion of the population age 30-59 years has increased from 29.0% in 1981, to 35.3% in 1994. The elderly population (60 and above), which was 6.7% in 1981, increased to 8.4% in 1994.

Sri Lanka's economy is mainly based on agriculture. Tea, rubber and coconut are the

main export crops and paddy the main domestic crop. In 1995, Sri Lanka continued to maintain the momentum of economic growth achieved during the last several years with progressive liberalisation of the economy. The gross domestic product (GDP) grew by 5.5 percent and the gross national product (GNP) grew by 5.9 %. The GDP was estimated to be US\$ 713 per capita in 1995, and the per capita GNP was US\$ 709.

The communication links covers the whole island, except the remote areas, through air, road and railway services. Civil was in the north and northeast has limited communication in those parts of the country, and also adversely affected economic development.

The literacy rate has increased from 57.8% in 1946 to 90.1 in 1994. Males showed a higher rate of literacy (92.5%) than females (87.9%) at all ages.

## 2. Epidemiology of TB:

Tuberculosis (TB) is a significant public health problem in Sri Lanka, causing a considerable burden of death and disease. Even though active control measures have been in place for more than three decades. About 6,000 cases and 350 deaths due to TB are notified each year to the national programme but these represent only a proportion of the true incidence of TB morbidity and mortality. There has been no significant reduction in the incidence or mortality rate of TB over the last 10 years.

Epidemiological estimates based on case notifications and data collected during the recently conducted review, indicate that over 9,000 people develop TB each year, adding to the cumulative burden of nearly 12,000 TB patients in the country. Over 7,000 of these have infectious smear positive TB and transmit the disease in their families and communities. In addition, an estimated 1,000 TB related deaths occur every year.

## 3. Structure of NTP:

The National Tuberculosis Programme was renamed as the Respiratory Disease Control

Programme (RDCP) in 1989. It comes under the Deputy Director General of Medical Services (DDGMS), who is one of the 8 Deputy Director General at the central level under the DGHS. The central unit of the RDCP is located at Welisara and is headed by a Director. Other staff of the central unit include a Medical Record Officer (MRO) and other administrative support staff. The central laboratory for tuberculosis control, which is a part of the central unit of the RDCP located at Welisara, is staffed by a visiting Microbiologist (once a week), 3 Medical Laboratory Technologists (MLT) and a Microscopist.

There are two Chest Hospitals a Welisara and Kankaseanturai and 20 Chest Clinics of which 18 are under the Provincial Directors of Health Services (PDHS) financially and administratively. However, all these chest institutions are under the technical supervision of the RDCP Director. Some of the Chest Clinics conduct branch clinics at general, base and district hospitals. There are 34 such branch clinics throughout the island. Chest Clinics do not have a budget of their own but are financed from the PDHS.

Chest Clinics have posts for a District TB Control Officer (DTCO), a Medical Officer (MO), a Medical Laboratory Technologist (MLT) or Microscopist, a radiographer, a Public Health Inspector, a Nurse and other ancillary staff.

### *I. Case-Finding*

The policy of the NTP has passive case finding from amongst the chest symptomatic reporting to the chest clinics at the district level. However, as facility for sputum smear examination is currently available at only 12 out of 20 chest clinics. Diagnosis is also being done by some hospitals, which have laboratory facilities and have been identified for this purpose. Similar situation is seen with regard to X-ray facilities, which are currently available in only 10 chest clinics.

The current NTP manual defines a TB suspect as anyone having cough for more than 3

weeks. The doctors at the chest clinics are usually aware of these criteria but most prefer to screen all patients for TB. In some major hospitals there are wide variations as far as duration of symptoms for identifying TB suspects is concerned. The majority of TB suspects presenting to the chest clinics are self-referrals and some are referred from other centres or examined as contacts of TB Patients. Referred patients are primarily from the teaching/general/base hospital where the chest clinic is located. In addition, referrals also include those from the branch clinics, which are run by the chest clinic. The general health institutions such as district hospitals, peripheral units and central dispensaries have a relatively high outpatients attendance (50-250 a day) but do not contribute much to case finding in the chest clinics.

The standard procedure for case finding is to perform 3 sputum smear over 3 consecutive days and a chest X-ray for all chest symptomatics. In doubtful cases, mantoux test is also performed. Results of these investigations are usually available by the 4<sup>th</sup> day. There is an over reliance on X-ray diagnosis and the proportion of TB patients confirmed by smear positive cases out of all new pulmonary TB patients for the country was 64% in 1995.

Contact tracing of family members of all TB patients is being undertaken with the help of the PHIs in the respective MOH areas. Contacts of all the TB patients are screened by X-ray and Mantoux test (if available) and also by sputum examination if cough is present.

### *II. Laboratory Services*

Most cases of TB are diagnosed at the chest clinics. However, eight chest clinics do not conduct smear examination due to shortage of microscopist or microscope.

The proportion of negative cases having 3 smear examinations ranged from 1.2% to 100% with median of 31.2%. The proportion of positive cases having 2 or 3 smear examinations ranged from 5.2% to 100% with median of 56.4%.

Culture examination and drug susceptibility test are available only in the central laboratory in Welisara.

**Results of cultures done in Oct. – Dec. 1996 in Central Chest Clinic Laboratory:**

Total new cases cultured	138
- Mycobacterium TB	134 (79%)
- Non-mycobacterium TB	4 (2.9%)
- Resistant to INH and R	4/134(2.9%)
- Resistant to INH only	5/134(3.7%)
- Resistant to R only	8/134(5.8%)
Total Relapse Cases cultured	61
- Mycobacterium TB	61(100%)
- Non-mycobacterium TB	0
- Resistant to INH and R	7/61(11.5%)
- Resistant to R only	9/61(14.8%)

**III. Treatment and Monitoring:**

The majority of patients with TB are treated at 20 chest clinics and 34 branch clinics in 22 out of 25 districts. Anti-TB medicines are also available at some hospitals and in the private sector. Based on case notifications from chest clinics, morbidity reports from other hospitals and reports of drug consumption from private pharmacies. It appears that about 65% of all patients diagnosed are managed in the respiratory disease control programme.

Two treatment regimens are approved within the NTP. New patents of all types category 1 is given for 6 months treatment with 2HRZE/4HR2 and re-treatment patients category 2 is given for 8 months treatment with 2SHRZE/1HRZE/5HRE3. There is one dosage schedule for all patients irrespective of body weight (other than for children) of 450mg rifampicin, 300mg isoniazid, 1500mg pyrazinamide 800mg of ethambutol and 0.75g of streptomycin, which may result in sub optimal doses for patients weighing more than 50kg. Drugs are dispensed as loose capsules and tablets in individual envelopes, with instructions for taking them written on the outside. Neither isoniazid/rifampicin combination tablets, nor blister packs are used.

Isoniazid preventive therapy is used for child contacts of TB patients, if they are aged under 6 years and mantoux test positive but symptom free. There is no recording system for such children.

**IV. DOTS:**

The policy of the NTP is Directly Observed Treatment Short-course (DOTS) in intensive phase and the majority of patients treated at chest clinics are initially hospitalised. However, the duration of stay is usually less than one month, following which patients are given unsupervised treatment for one month at a time. Hospitalised patients are not always directly observed when they take their medicines. Two chest clinics have recently introduced ambulatory DOTS for patients living nearby.

According to NTP policy, sputum smear should be repeated at 2, 5 and 6 months of treatment and patients who are smear negative at 5 and 6 months classified as cured. Chest clinics with their own laboratories generally follow this policy, but other which rely on laboratories in local hospitals find it difficult to do follow-up smears.

**V. Incentives:**

The government of Sri Lanka provides significant incentives to patients to encourage them to complete treatment. Unemployed patients are given up to Rs. 500.00 per month (approx. US\$ 9) for the duration of regular treatment (the amount to be paid is assessed by the department of social services) and those in employment are entitled to 4 months paid leave.

**VI. Defaulter Tracing:**

The NTP has a clear defaulter tracing policy. Patients who are more than one week late for treatment are sent a letter. In some instances this is followed by a second letter and the respective Medical Officer Health (MOH) is informed. According to NTP policy, the Public

Health Inspector (PHI) of the MOH area should make a home visit for defaulter retrieval.

### ***VII. Training:***

Development of skilled health staff in the NTP is a prerequisite for successful implementation of the programme and in service. Training is primarily the responsibility of the Respiratory Disease Control Programme (RDCP). Training courses and workshops for different cadres of staff are conducted by the RDCP with the assistance of District TB Control Officers (DTCOs). Presently, the WHO modular course for DTCOs and Medical Officers (MOs) in service laboratory training for MLTs, Microscopists and in-service training for statistical officers (PHI/Nurse/Clark) of the Chest Clinics are carried out at the central level. Whole orientation courses in TB for other Primary Health Care (PHC) workers, including the Medical Officer for Health (MOH) are held at the district level.

During the last 2 years the RDCP has conducted the WHO modular training course for 30 DTCOs and MOs of chest clinics, lasting 6 days and including field visits. The in-services laboratory training is for 1 day and is held once in two year. So far 25 MLTs/Microscopists have participated in the course. The in-service course for statistical officers (PHI/Nurse/Clerk) is also for 1 day and is held once in two year at the central level. The number of statistical officers trained so far is about 25. There is one day orientation training on TB control at the district level on the responsibility of DTCOs and RDCP director. The RDCP plans to expand the WHO modular course to MOs of the chest hospital and the regional epidemiologist of each district. Not all staff involved in the NTP has been trained, except the DTCOs.

### ***VIII. Supervision:***

The objective of supervision is to support health workers at all levels of the NTP. At present, the supervision of TB control activities at the district level is done from the centre, usually by the RDCP director and the MRO. Visits are made once or twice a year.

Supervision by the director is mainly on recording/reporting, drug supply and solving the problems in the clinic.

### ***IX. Logistics:***

In accordance with national policy, anti TB drugs are provided free of charge. Chest clinics, chest hospitals and some hospitals estimate their annual drug requirements based on drug consumption during the previous year and stocks remaining in hand. The provincial director of health services collates these estimates and forwards them to the medical supplies division for procurement of drugs. The RDCP is not involved in estimating requirements or procuring anti-TB medicines.

The medical supply division indents, imports and stores drugs for the whole country and distributes through the divisional drug stores. Divisional drug stores distribute these drugs to the chest clinics quarterly based on their indents. Monitoring of drug supplies is done by the deputy provincial directors of health services. The budget allocation for all chest clinics are from the provincial health budget, except for the chest hospital Walisara and chest clinics in Colombo and Gampaha, which receive their budget allocations from the RDCP budget.

Laboratory regents and other equipment (except for sputum containers) which are procured and supplied by the RDCP) are also procured and distributed in the same manner. Registers, records and reporting forms are supplied by the RDCP.

Even tough drug supplies are generally adequate.

### ***X. Recording and reporting:***

The NTP has standard formats for forms and registers to be maintained at chest clinics and for the different reports which are generated from them. The first level of recording consists of the chest clinic examination card (OPD card) and treatment card of the patient in which the basic information relating to the patient. The result of different investigations, diagnosis,

treatment regimen and the monitoring of treatment. This information gets transferred to the TB register, which is up-dated by the PHI from time to time and from which the quarterly reports on statistics and cure rates are computed. After compilation of all results from different districts the RDCP sends feedback to all chest clinics and the deputy provincial director of health services at the district level. This feedback contains information on different levels of programme efficiency achieved in the various districts and recommendations on corrective action. TB registers have been modified in order to confirm with WHO guidelines.

#### **4. Role of NGOs:**

The Ceylon National Association for the Prevention of Tuberculosis (CNAPT) is the only NGO working in TB control in the country and had played important roles in development of TB programme in the past such as building of chest clinics, publication and health education. Its activities are rather limited to such as health education for school children and adults through exhibitions in the premises.

#### **5. Advocacy:**

An advocacy effort for TB control in Sri-Lanka has been at a low for several years. Declines in case notification since the high levels of the 1970s have contributed to a sense of complacency and the impression that the TB situation is under control. Accordingly, the programme was re-designated as the RDCP with TB control forming only part of it. Presently, there is only one NGO, (CNAPT) conducting TB advocacy.

#### **6. Health Education:**

The awareness of the importance of health education in the control of TB was evident amongst all levels of staff. The various strategies have been adopted at different institutions according to the availability of resources.

The MO, PHI and the nurse are educating patients on the importance of continuity of treatment, nutrition and sputum disposal. Some clinics have made videos on aspects of TB control and sketch drawings on prevention, importance of symptoms and treatment of TB. Other has displayed poster developed by the RDCP in collaboration with the CNAPT. Some printed materials are also available for distribution among patients on anti-TB therapy, concerning side effects of drugs, importance of regular treatment etc.

#### **7. Drug Resistance:**

In 1996 a system of surveillance of resistance to anti-TB drugs was introduced in Welisara, with sputum samples systematically collected from 5% of new smear positive patients. This system has not been fully implemented and results from the samples collected are not yet available.

#### **8. HIV:**

An annual survey of HIV prevalence in new smear positive patients has been carried out since 1993. The surveys have been unlinked and anonymous at 4 chest clinics with a sample size ranging from 244 to 519. No HIV infections were detected in these surveys, which is not surprising, given the small sample sizes for the current prevalence of HIV infection in the country.

#### **9. Research:**

National Institute of Health Sciences located at Kalutara mainly conducts the research on health services in Sri Lanka.

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## Wel-come News:

### CIDA delegation visited STC:

During SAARC - CIDA Workshop on TB and HIV/AIDS control in the month of March 1999, the following members of CIDA delegation and representatives from the member countries visited STC and observed the activities and facilities available in the centre:

#### *CIDA:*

Mrs. Sarada Leclerc,

#### *Health Canada:*

Dr. Don Sutherland  
Dr. Adalbert Laszlo  
Ms. Margaret Jaques  
Dr. Chris P. Archibal  
Dr. Howard Njoo

*CCO, Kathmandu*  
Ms. Prabha Thacker

#### *Bangladesh*

Dr. Md. Atiqul Hoque  
Dr. Jahanara Begum

#### *India*

Dr. P. Joshi,

#### *Nepal*

Dr. B.B. Karki  
Dr. Yogendra Pd. Deo  
Dr. Pushpa Malla  
Mr. D. K. Khadka

#### *Sri Lanka*

Dr. Bandu Gunasena  
Dr. NNM Punchihesa

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## Letters to the Editor

### *The Editor*

Dear Sir,

..... I had a chance of reading your STC Newsletter, Jan. issue (99). It was very interesting to see the information related to TB and other related issues, The study of KAP on TB among general practitioners was wonderful and.....

- D. Edwin Rajkumar  
Christian Mission Hospital,  
Madurai - 625 001,  
Tamilnadu, India.

Dear Dr. Kumar,

My warm greeting and good wishes to you. Thank you very much for STC newsletter. It was interesting to

go through various articles published in newsletter. The articles about social belief of women with TB in rural Bangladesh is very right.....

The article DOTS is also corrects. My congratulations for bringing out the STC Newsletter in a very interesting, useful and educative manner.

Welcome to new Secretary General, SAARC.

- Dr. G. Subhram  
MO, Gandhi TB Clinic,  
Anakapalle-531 001.  
AP, India.

.....I am very happy to getting STC Newsletter. I don't have words to express my happiness, and hope for

further co-operation. This STC Newsletter is providing information and technical knowledge on the subject of tuberculosis.

- Chandra Prakash Bhatta  
Department of Microbiology  
BP Koirala Institute of Health Science  
Dharan, Nepal.

### *Dear Readers*

Thank you very much for your letters for this column. This time we could not include more letters because of some constraints. We hope, our

readers won't forget to guide us to keep the STC Newsletter more meaningful, useful and informative.

We want to thank our readers who have expressed their sincere welcome to His Excellency, Secretary General, SAARC. Similarly, we thank the readers who have send congratulations to Dr. D. S. Bam, Director, STC for the award received by him.

- *Editor*

### *Proposed Programmes of the Centre*

- ▷ SAARC Seminar on Gender and Sociological issues related to TB
- ▷ SAARC Trainers Training Course for TB Control Managers
- ▷ Operational Research on Identification of Effective Models of Supervision and different Models of Treatment Observation.

### **SAARC Conference for TB & Chest Specialists**

*SAARC Tuberculosis Centre is planning to organise a SAARC Conference of TB & Chest Specialists in 1<sup>st</sup> quarter of the year 2000. TB & Chest Specialists of SAARC Region and other countries would participate. The Scientific Sessions and Special Orations on priority areas of TB and chest diseases including TB & HIV, DOTS and Environmental Pallution would be presented by out-standing researchers and experts of the field.*

*For the detailed information please contact:*

**Conference Secretary**  
**SAARC Conference for TB & Chest Specialists**  
**SAARC TB Centre**  
**P.O.Box 9517, Kathmandu, Nepal.**  
**Ph. 977-1-631048**  
**Fax: 977-1-630061**  
**E-mail: saarctb@mos.com.np**

## *STC Visited by Hon'ble Minister of Health of Maldives.*



*(Hon'ble Minister for Health, Republic of Maldives at the SAARC TB Centre)*

The Hon'ble Minister for Health, Republic of Maldives, Mr. Ahmed Abdullah, visited SAARC TB Centre on 20 April 1999, during his three days visit to Nepal.

The Director, Deputy Director and General Services Staff of STC along with the staff working in the National TB Centre complex extended a warm welcome to the Hon'ble Minister and accompanied delegation at a special function organised in the STC meeting hall.

Addressing the officials at the function, Hon'ble Minister, Mr. Abdullah expressed appreciation regarding the role of SAARC TB Centre in support of member countries in their effort of TB control. Hon'ble Minister desired that dissemination of information, pooling of resources and the exchange of knowledge among the member countries would be instrumental

for prevention and control of tuberculosis in the region. Hon'ble Minister further advised that the member countries must promote health education in their respective countries in order to involve citizens to lead healthy lives.

### ***Dr. D. S. Bam, Director received the International Award***

***Dr. D. S. Bam, Director, SAARC TB Centre and National TB Centre has been awarded by India's most coveted International Gold Star Award recently by India International Friendship Society, New Delhi. This award is given to him for his outstanding performance in the field of TB control. Previously the same award was provided to Late Holy Mother Teresa and other prominent personnel of India, Nepal, and Sri Lanka.***

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