

## **Public private mix model in enhancing tuberculosis case detection in District Thatta, Sindh, Pakistan**

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### **Abstract**

**Objectives:** To enhance the TB case detection through Public Private Mix (PPM) model by involving private practitioners in collaboration with National TB Control Program, (NTP) in district Thatta.

**Methods:** Private practitioners (PPs) of district Thatta involved in treatment of TB cases were requested to participate in the study. All consenting physicians were provided with training on Directly Observed Treatment Short course (DOTS) module. In addition to routine cases, TB cases diagnosed by private practitioners through sputum microscopy were also registered with the district TB control program and medicines were provided by NTP. After intervention of PPM-DOTS change in Case Detection Rate (CDR) were estimated.

**Results:** An increased number of sputum smear positive cases were found in the intervention period - the third quarter of 2007, from 188 to 211 and CDR from 69% to 77%. The improvement in case detection rate was significant as this moderately added to the total number of cases detected from the whole of the district Thatta during the study period.

**Conclusion:** Public private mix (PPM) model was effective in increasing the CDR of TB cases in district Thatta. It is recommended that the public private partnership model in Tuberculosis case detection needs to be taken on a larger scale so as to reduce the heavy TB burden in the country (JPMA 59:82; 2009).

### **Introduction**

The concept of public-private mix model (PPM) in health care has emerged in the past decade with a view that a large majority in the developing countries utilizes private sector as a source of health care. This partnership between governmental and private for-profit or not-for-profit organizations emerged as a novel approach to improve the system of health care service delivery.<sup>1,2</sup> PPM model has been successful and also received attention in terms of tuberculosis control in many developing countries.<sup>1-4</sup> Besides effectiveness as a strategy it also has financial benefits in control of tuberculosis for the country.<sup>5-8</sup> Pakistan ranks 6th among the countries of the Eastern Mediterranean Region (EMRO) of World Health Organization (WHO), in terms of TB disease burden. Every year about 250,000 new cases are included in the country's TB burden. Despite the fact that the government, with huge support from international health agencies, considered TB an emergency in 2001, given TB a priority and implemented

DOTS all over the country; the case detection rate is still low (27% in 2004).<sup>9</sup>

Majority of the population (more than 75%) of Pakistan attends private sector for their health problems which is also true for Tuberculosis.<sup>10,11</sup> The great dependence of people on the private sector is due to the relative inefficient and inadequate government health care sector. To complicate this problem, these private practitioners may not follow the standard criteria in TB case management. This is partly due to poor regulation of the practice health care sector.<sup>6,11-12</sup>

It is important to involve private practitioners in detection and treatment of tuberculosis. Also linking private practitioners with public sector would improve the practices and enhance TB control. It would standardize and improve the diagnostic techniques, decrease maltreatment, partial treatment. There is sufficient evidence that privately practicing physicians in Pakistan lack sufficient knowledge to manage a typical case of tuberculosis.<sup>13,14-16</sup> This is true for disadvantaged

communities where tuberculosis is highly prevalent especially under poor housing conditions.<sup>17,18</sup>

For the reasons cited above we designed an intervention study to determine the effectiveness of involving private practitioners in improving the CDR in district Thatta. To best of our knowledge this is first of its kind of collaborative work in Pakistan to control TB.

## Methodology

The study was done in district Thatta which is one of the coastal areas of Sindh province. It is located in the east of the Karachi and has a population of about 1.1 million; majority of which are rural.

The total number of cases in Thatta in each quarter (district results by the national TB control program) is usually below 200. It was 202 in the first quarter of the year 2007 which went down to 186 in the 2nd quarter of the same year. The intervention started after the second quarter. The results of the intervention can be perceived from the results of the third quarter of the year 2007.

The implementation of this six months duration intervention project was started in May 2007 and it ended in October of the same year. The scale of the project was of a pilot nature and the expected outcomes of the study were to see how the private physicians behaved in collaborating with the government and how do they practice the standard guidelines for the management of tuberculosis.

There were about 200 private physicians working in the Thatta city who treated all kinds of patients coming from the city and rural periphery of the district. Only those PPs who were treating TB patients at their private practice (around 50) were given invitations to attend training workshop on the Tuberculosis-Directly Observed Treatment Short course (DOTS) based on the guidelines of World Health Organization. Approximately half of them (23 practitioners) agreed to participate in the training.

Private practitioners (PPs) were given 3-day standard training on the TB-DOTS based on the TB module from national Tuberculosis Control Program (NTP) in January 2007 by the master trainer of the NTP. PPs were also given incentive of Pak Rupees 1500 and a copy of TB module, refreshments and certificates at the end of the workshop. Their knowledge of the TB-DOTS prior to and after the training was assessed through a questionnaire which addressed the key issues in the management of TB.

At the end of the training a written consent of voluntary participation in the study was taken from all the participants and an introduction about the project was provided. The PPs were also informed that they should refer suspected TB cases for sputum microscopy and register the patients with the NTP.

The PPs were given an incentive of Pak Rupees 50 for every adult TB diagnosed sputum smear positive patient and PPs were sent these TB patients to NTP office for registration. PPs were told that they may charge these patients routinely as standard practice. The cost of the sputum smears was borne by the project and the anti-TB drugs were provided by the NTP office at Thatta. A field coordinator monitored and facilitated the whole process. The PPs were also visited regularly by the CHS team as well as by the district NTP coordinator.

TB patients' data was collected from all participating PPs during the study period of six month regarding number of suspected TB cases, new sputum smear positive cases, and patients' demographic and socioeconomic data. On the other side for the comparison, NTP data of the study area regarding number of new sputum smear positive TB cases was collected from NTP office.

The project coordinator of the field took the TB1 forms from the physicians where patients were registered with the district TB Coordinator office of Thatta. The Anti Tuberculosis Treatment (ATT) was originally given to the physicians by the district TB coordinator office upon submitting the profile of the patients. These drugs were given for a period of two months initially for the intensive phase of the treatment and latter for six months for continuation phase. The laboratory charges for three sputum AFB smear testing were paid on a two monthly basis by the project.

The physicians were seen by the coordinator every week and data was taken from them and shared with the NTP coordinator who then visited the physicians accordingly. The role of the team of the Community Health Sciences of the Aga Khan University was to moderate this partnership between the NTP office and the physicians of Thatta.

This study was a pilot study to determine the increase in the case detection rate through implementing PPM model in Pakistan. The enhancement of new TB SS+ve cases in terms of number and percentage in the study area was compared with the previous numbers.

## Results

The results of the training in terms of gain in knowledge of DOTS is shown in Table 1. It can be seen that the mean score of physician participation before the training was  $13.05 \pm 4.79$  out of a total score of 30 based on some 30 variables/questions. The mean score in the post-test increased to almost  $19 \pm 4.4$ . Keeping this in view it can be said that a moderate improvement in the knowledge of physicians was observed after the training.

The physicians referred a total of 55 adult suspected cases of tuberculosis. All of these patients were tested for sputum smear for AFB at an assigned laboratory. The patients had agreed to go for three consecutive samples of sputum AFB. Out of the 55 suspected cases of TB, 23 cases were

**Table 1: Mean scores of the physicians participating in the training workshop.**

DOTS Training	Mean Score (Out of 30)	Number of Participants	Standard Deviation
Pre-Test	13.05	22	4.796
Post-Test	18.59	22	4.490

positive for the sputum smear.

The total SS+ve TB cases, in the third quarter notified to the NTP office of the district Thatta, were 188 or 55/100,000 population and CDR was 69% which showed that the case detection in this district still needed improvement. On the other hand, by adding the 23 SS+ve TB cases, detected by the physicians who participated in our study, the number of SS+ve TB cases in the third quarter increased from 188 to 211 or 62/100,000 population with a CDR of 77% (Fig 1). The CDR increase would be better

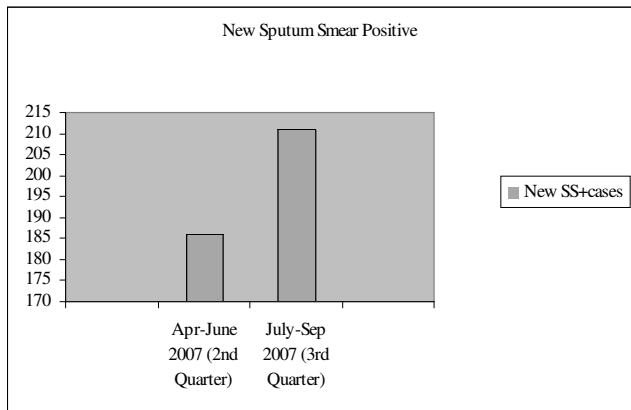


Fig 1: New Sputum Smear cases in Thatta during three Quarters of 2007 (Data Source: NTP Pakistan 2007).

when extrapolated on all the 55 physicians who saw TB cases in their clinics.

The sociodemographic and socioeconomic characteristics of the sputum smear positive cases revealed that out of 23 diagnosed TB cases, 12 (52%) were males and 11 (48 %) were females. Mean age of the patients was 34 ± 11.0 years. Most of these patients, 91%, were illiterate. A large number of patients, 43.5%, were unemployed. Just less than a half, (43.5%) of the patients were manual workers or labourers.

Those who belonged to urban areas were in majority (47.8 %), with the semi urban being (34.8 %) and the rural 17.2%. Only 26.1 % of the patients had a family contact of tuberculosis whereas a great majority, (73.9 %) had no family contact of tuberculosis. The monthly income of all of the patients was below 3000 Rupees (US\$ 50) (Table. 2).

**Table 2: Sociodemographic variables of the Sputum Smear TB cases (n=23) detected by the private physicians.**

Sociodemographic Factors	(%) (n)
<b>Sex</b>	
Male	52% (12)
Female	48% (11)
<b>Mean Age</b>	34 years
<b>Education</b>	
Illiterate	91.3 % (21)
Primary	8.7% (2)
Secondary	0%
High	0%
University	0%
<b>Occupation</b>	
Salesman	0%
Blue collar worker	43.5% (10)
White collar worker	0%
Farmer	8.7% (02)
Retired	4.7% (01)
<b>Residence</b>	
Urban	47.8% (11)
Rural	17.4% (4)
Semi-urban	34.8% (8)
<b>Family History of TB</b>	
Yes	26.1% (6)
No	73.9 % (17)
<b>Household Income</b>	
< 3000 RS (<US\$ 50)	100% (23)

## Discussion

The public private mix model was a relatively newer concept in case of Pakistan so we faced initial difficulty in involving all the stakeholders but the response received was very encouraging. There was an increase in case detection rate of tuberculosis by involving private physicians in the TB control programme of District Thatta during the intervention period. This promising results is a helps in better understanding of concept of public private mix model in context to an important public health issue in Pakistan. This phenomenon was also reported from India in terms of case detection rate.<sup>1</sup>

Although a moderate increment in the CDR was observed but when seen from the physicians participation perspective, it was enormous as the total figure reported by the NTP office for the whole district including the rural as well as urban areas was 188 in the third quarter of 2007. The impact of adding 23 cases was only in one area of an urban locality, that, when extrapolated through a larger study on whole district can be considered statistically significant.

All the patients were spared from the unnecessary prescriptions of the chest x rays as the physicians were very much convinced by new TB-DOTS guidelines. They also realized that the TB burden needs to be brought down only through their cooperation with the government. The physicians were allowed to charge their patients as per their routine; above all they were given an incentive. Additionally neither they nor

their patients bore the cost. This gave the physicians a temptation to enter in the programme.

The case detection rate improved during the period of implementation of the study though the total number of the cases detected in the entire six months period was small but it was considered a great achievement.

Firstly, the 23 partner physicians were selected conveniently in the project from the city of Thatta. It was a mixture of physicians as some had low and whereas others had higher turn over of patients. This observation is important because a full scale project needs to incorporate those physicians who have a high turn over of patients.

Secondly, the intensification of NTP program in the project through its government locations has already made some improvements so the small improvement in it through our study is diluted if it is analyzed in the context of the government figures.

Thirdly the criteria for the inclusion of patient in our study were strict. Only those patients were registered in the study who were adults and were newly diagnosed on the basis of sputum smear for AFB. The physicians had diagnosed a number of patients who were smear negative for the AFB, some of them were defaulters or failure cases. These were not included in the study

Elsewhere even in neighbouring countries the partnership in DOTS implementation has proved to be very cost effective,<sup>4</sup> affordable and has also helped to reduce the economic burden of the disease.<sup>19,20</sup>

This kind of partnership needs strong governmental support, in terms of supply of consumables and liaison with the private health care providers. The ultimate goal of improvement in TB control therefore is achieved through the sincere contribution and mutual trust within the partners.<sup>21</sup>

Although a lot of difficulties were faced in running the project but the achievement of 23 patients sent for DOTS will help to develop a bigger collaboration in the context of the control of the TB in this country.

In this project the government and the private physicians, the first line of contact for majority of the population, benefited from each other. However the main advantage was for the patients who utilized the systematic and easy method of treatment. They utilized the quality treatment provided to them through this collaboration. Finally the partnership not only improved the functioning of the system but also in an informal way controlled the practice of the private practitioners.

Limitations: This study had several limitations. First, we were not able to involve all of the private physicians working in the area because some of the physicians were reluctant to join the partnership due to the fact that they may lose their patients. Secondly, the CDR was relatively low because we only included the sputum smear (SS) positive adult cases hence the

outcome would have been greater if we had included the SS negative cases as well. Thirdly, the study team was based in Karachi and it could only visit the project monthly although regularly. Therefore the importance of onsite more frequent project monitoring would have given more positive results.

Based on the study findings it is recommended that public private mix model in case of tuberculosis needs to be adopted on a wider scale with the involvement of all stakeholders including the physicians, private hospitals, patients and government as well as other Non - profit organizations.

For any public private mix model it is required that the governmental should play its due role of stewardship fulfilled with sincerity and responsibility. This enables the trust building among the partners. It was observed in the study that any shortcomings in the liaison between the partners lead to many misunderstandings among them. Finally it needs to be ensured that the patients, who are the prime beneficiaries of this partnership, are not marginalized.

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