

TB case notification by private health-sector; retrospective study in 13 metro districts of Pakistan

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Abstract

Objective: To evaluate the impact of structured engagement of private providers in tuberculosis case notification and to investigate demographic profile, disease pattern and treatment outcome of tuberculosis patients seeking care from private care providers.

Methods: This retrospective study was carried out in 13 districts of Pakistan with the data of tuberculosis patients registered and diagnosed from July 2015 to June 2016 at directly observed treatment, short-course trained private providers. These facilities in collaboration with Greenstar Social Marketing Pakistan, a private organisation and the National Tuberculosis Control Programme, Pakistan, provided free anti-tuberculosis drugs and sputum smear microscopy. Study variables included socio-demographic character, disease patterns and treatment outcomes of patients along with details of the registering facility. Data was analysed using SPSS 23.

Results: There were 1317 directly observed treatment, short-course trained private health facilities and 123 private laboratories. Of the health facilities, 880(67%) reported 13769 tuberculosis patients. Of them, 7388(53.65%) were females and 6381(46.34%) were males. Overall, 10232(74.31%) were diagnosed with pulmonary tuberculosis and 3537(25.68%) were extra pulmonary tuberculosis patients. Among the pulmonary patients, 4195(41%) were diagnosed through sputum smear microscopy as bacteriologically confirmed (B+ve), while the remaining 6037(59%) were diagnosed through X-ray or other tests. Out of all the diagnosed patients 13218(96%) were treated successfully.

Conclusion: Private healthcare sector has great potential of supporting tuberculosis control. Gender and age had critical implications in service utilisation.

Keywords: Tuberculosis, Public private mix, Successfully treated, Private facilities, Directly observed treatment short course. (JPMA 68: 1666; 2018)

Introduction

Tuberculosis (TB) is an airborne disease infecting one third of the global population. People with vulnerable immune systems are more likely to develop this disease. In 2016, 10.4 million people developed disease out of which 64% resided in seven high TB burden countries, including India, Indonesia, China, Philippines, Pakistan, Nigeria and South Africa.¹ Pakistan has high disease burden with low case notification; Out of 518,000 (335,000 - 741,000) cases in 2016, only 69% (48-110) were notified, while the remaining 31% were missed cases.² These missed TB patients are the source of spreading this disease in community; if one positive TB patient remained untreated, it can potentially spread TB

to 10 to 15 more people in one year.³

TB was realised and declared as a global emergency in 1993 by World Health Organisation (WHO), but in Pakistan it remained a gross neglect until 2001 when TB was declared a national health emergency. Afterward, National TB Control Programme, Pakistan, strived for nationwide directly observed treatment-short course (DOTS) coverage in public sector with the support of health infrastructure.⁴ In 2005, health experts established the need to engage private sector for TB control as around 80% of the patients had first healthcare contact with private sector.⁵ DOTS implementation was started in private sector through public-private mix (PPM); a general practitioner (GP)-led model. Since the collaboration, free sputum smear microscopy (SSM) diagnostic testing and anti-TB drugs are being provided

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at all public and selected private facilities. Greenstar Social Marketing (GSM) Pakistan, pioneer of TB control in the private sector, is a national non-governmental organisation (NGO) which launched GP Model under PPM for TB control in 2005. Since then, the private sector has made significant contribution towards TB control through identification, management and reporting of missed TB cases according to standard protocol. GSM field team follows these patients till the completion of treatment and records the disease and treatment history of patients in the database. Socio-demographic characters and disease trends of these TB patients who accessed private facilities for their ailment indicates the patterns of health seeking behaviour of TB patients in a community.^{6,7} Analysis of these patterns is mandatory to expand the PPM intervention with the vision to focus the resources and efforts at places where it is most needed. The follow-up of patients till the completion of the treatment provides evidence on the level of treatment adherence at private clinics under DOTS strategy. The current study was planned to evaluate the impact of structured collaboration with the private facilities for TB cases notification and standardised treatment.

Patients and Method

This retrospective study was carried out in 13 districts of Pakistan and comprised data of TB patients registered and diagnosed between July 2015 and June 2016 at DOTS-trained private providers, GSM centres in Lahore, Rawalpindi, Faisalabad, Gujrat, Sheikhopura, Bahawalpur, Bahawalnagar, Rahim Yar Khan, Muzaffargarh, Peshawar, Karachi, Sukkur and Hyderabad districts were included. Ethical approval for the study was taken from Greenstar Social Marketing.

Study variables included socio-demographic character, disease patterns and treatment outcomes of TB patients along with details of the registering facility. Engaging private clinics for TB control involved a series of events including mapping, interview through structured questionnaire, selection, training, signing of memorandum of understanding (MOU), provision of free medications and reporting and recording tools at clinics and follow-up visits by field staff.

In the geographical reach of 6 -10 clinics, a lab was also taken on board for SSM. Laboratory was also engaged

through mapping, interview with the owner through pretested questionnaire, scoring and selection, 10-day training of laboratory technicians on SSM, signing of MOU with the owner of the lab, provision of appropriate microscope along with certain consumable and non-consumable laboratory items, tools for reporting and recording and visits of the field staff.

Patients who presented with signs and symptoms of TB at the networking facility with trained doctors were clinically evaluated for TB. Pulmonary patients were sent for free SSM at one of the networking laboratories. Pulmonary patients with SSM-positive results were registered as bacteriologically-positive (B+), while SSM-negative patients evaluated through other tests, including X-ray, and if diagnosed as TB patients, were registered as bacteriologically-negative (B-) (Figure-1). Extra-pulmonary (EP) presumptive patients were referred for other relevant test, which were not financially supported by the programme. Childhood TB (1-14 years) was diagnosed as per the national criterion set by Pakistan Paediatric Association.⁸ Diagnostic services for childhood TB patients were provided free of cost to patients through the project.

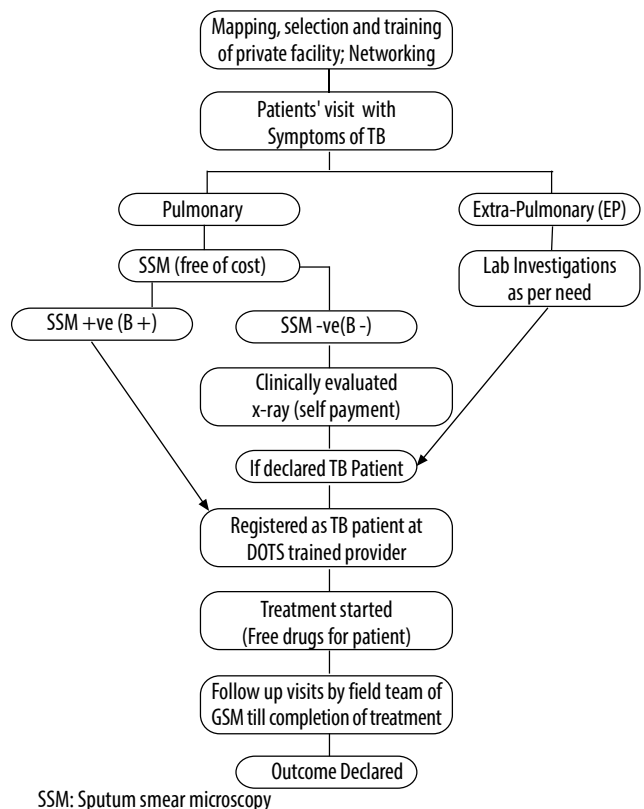


Figure-1: TB Patient flow at private healthcare facility.

All patients diagnosed as TB cases were registered at networking facility with treatment initiation. Drugs for registered patients were provided at facility, honorarium of Rs 400 per registered TB case was given to the doctor and Rs 50 per slide to the networking lab under the operational guidelines of the project. GSM field team visited each networking facility at least once a week, supported the facility staff in completion of record and provided drugs for new and on-treatment patients. The field teams talked to patients and counselled them for contact tracing and treatment completion. B+ patients had second SSM after the end of intensive phase i.e., 2 months for new patients and 3 months for retreatment cases. Second follow-up sputum examination was done at the end of 5th month and the last SSM testing was done at the end of treatment. B+ result at 5th month follow-up or later was considered failure of the treatment as per national guidelines.⁹ All patients who had completed the treatment without any evidence of failure were considered as having been successfully treated. Such patients included cured patients who completed treatment with SSM-negative result at end of the treatment and on one follow-up microscopy, and patients who completed the course without evidence of failure. Data was analysed using SPSS 23.

Results

There were 1317 DOTS-trained private health facilities and 123 private laboratories in the survey. TB patients were registered at 880(67%) of the centres. Of the total, 7388(53.65%) registered patients were females and 6381(46.34%) were males. Overall, 804(6%) patients were aged 1-14 years, 1928(14%) were in the 60+ age group, while the remaining 11015(80%) belonged to economically productive age group of 15-59 years (Figure-2). Also, 12255(89%) were new patients, 1377(10%) were relapse cases and 137(1%) were retreatment cases with previous history of loss to follow-up, treatment failure and unknown history or outcome (Table-1).

Cases per reporting provider is highest in Khyber Pakhtunkhwa (KPK) and lowest in Sindh. A total of 123 labs collaborated in the study, 12(9.75%) in KPK, 82(66.66%) in Punjab and 29(23.57%) in Sindh.

Pulmonary TB was diagnosed in 10232(74.31%) patients while 3537(25.68%) cases were of EPTB (Table-2). Among the pulmonary patients 4195(41%) were diagnosed through SSM as B+, while 6037(59%) were diagnosed through X-ray or other tests. Out of all the diagnosed patients 13218(96%) were treated successfully, while 220(1.6%) patients died.

Table-1 : Registered TB Patients' age, gender, site and type of disease.

Age Years	Total patients n (% of total patients)	Gender		Site of disease		Type of patient		
		Male %	Female %	Pulmonary %	Extra Pulmonary EP %	New %	Relapse %	Other retreatment %
1-14	804 (6)	30	70	57	43	94	5	1
15-29	5581 (41)	42	58	71	29	90	9	1
30-44	2989(22)	48	52	74	26	87	12	1
45-59	2414(18)	51	49	80	20	88	11	2
60+	1981(14)	57	43	84	16	87	12	1
Total	13769 (100)	46	54	74	26	89	10	1

TB: Tuberculosis

Table-2: Province wise registered TB cases and their Treatment outcome

Province	Networking facilities			Cases Registered			Successfully treated (% of total registered)		
	Providers on board - n	Reporting providers - %	Cases per reporting provider in 1 year	Pulmonary		EP (% among total registered)	Pulmonary		EP
				B + (% among pulmonary)	B - (% among pulmonary)		B+	B-	
Khyber Pakhtunkhwa	57	88	40	639 (57)	487 (43)	865 (43)	588 (92)	460 (94)	852 (98)
Punjab	834	67	15	2440 (37)	4223 (63)	1943 (23)	2281 (93)	4039 (96)	1870 (96)
Sindh	426	64	12	1083 (44)	1360 (56)	729 (23)	931 (86)	1261 (93)	711 (98)
Total	1317	67	16	4162 (41)	6070 (59)	3537 (26)	3800 (91)	5760 (95)	3433 (97)

EP: Extra-pulmonary

TB: Tuberculosis

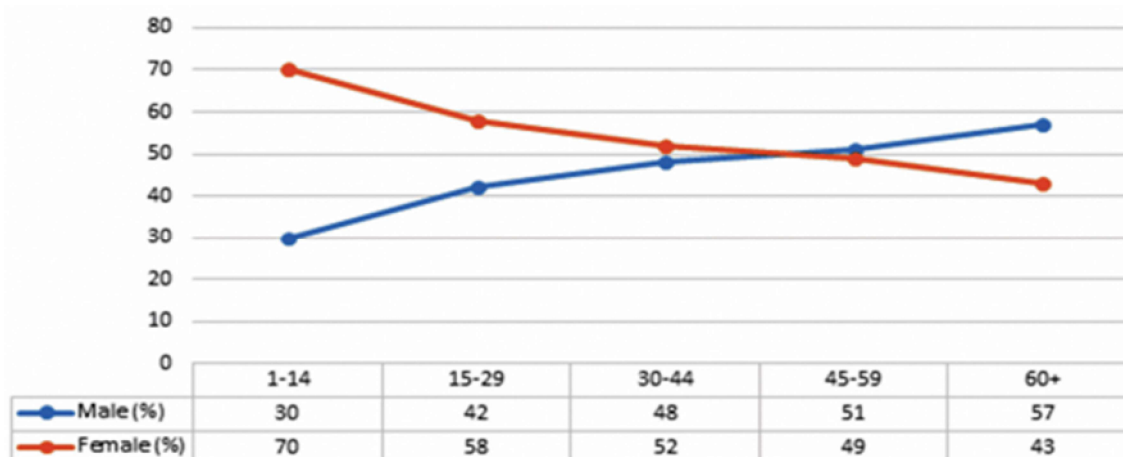


Figure-2: Age and gender of registered TB patients

Discussion

Meaningful involvement of private sector for standardised TB care is the needed intervention for halting the TB epidemic.^{10,11} However, private providers have limited interest in collaborating with the programme due to multiple reasons, including limited understanding of national guidelines for TB management and drug combinations and preference of using X-ray as the first diagnostic tool etc.^{12,13} The current study found that despite of all the challenges, 67% of the doctors reported or registered at least one TB case.

Amongst the 13769 patients registered, male-to-female ratio (%) among all ages was 46:54. Further, a unique finding in the data set was that as the age increased male-to-female ratio increased till the 60+ years age group where the ratio was at maximum. In 2015, national data indicated that male-to-female ratio of registered TB cases was 50:50.¹⁴ National data comprised more than 80% contribution from the public sector. Visiting public hospitals is not only time-consuming, but also need family and financial support to commute a long distance which is a barrier in health-seeking behaviour of women.^{15,16} Visiting a private clinic in the neighbourhood seems to be an easy option. This might be the rationale behind high female percentage in the private sector.

In the current study, 63% of the total registered patients were aged 15-44 years, the financially productive age group in Pakistan. Pulmonary cases were greater than EP cases across all age groups and gender. The data indicated

that as age increased, the ratio of pulmonary-to-EP cases increased.

As the age increased, the percentage of new cases decreased while the percentage of relapse increased (Figure-3). Among all cases, 88.9% were new cases, 10% were relapse cases and 1% were other retreatment cases. Overall, 98.9% of the total registered TB patients in the private sector were declared as new and relapse (indicating new infection) cases compared to 97.6% at the national level in 2015.

In the current study, 74% of the total registered cases had been diagnosed as having lung parenchymal disease in pulmonary TB patients. In the same year, national data indicated 81% pulmonary cases.¹⁴ Percentage of EP cases varied across provinces; with the maximum being reported in Khyber Pakhtunkhwa (KP) (43%).

Among the cases reported in the private sector, 41% of the pulmonary cases were B+ whereas in the national data for the same year, 51% of the pulmonary cases were found B+. It is believed that in the public sector Xpert testing had also been in practice which might have played a significant role in the detection of B+ cases.⁹

Treatment success rate (TSR) for all type in the study was 96% which is above the national trend which is 92%.^[14] TSR included the cured with evidence of recovery from the disease i.e., bacteriological evidence of sputum conversion as well as treatment completed. It was observed during the implementation of the project that the cure rate was very low compared to the completion

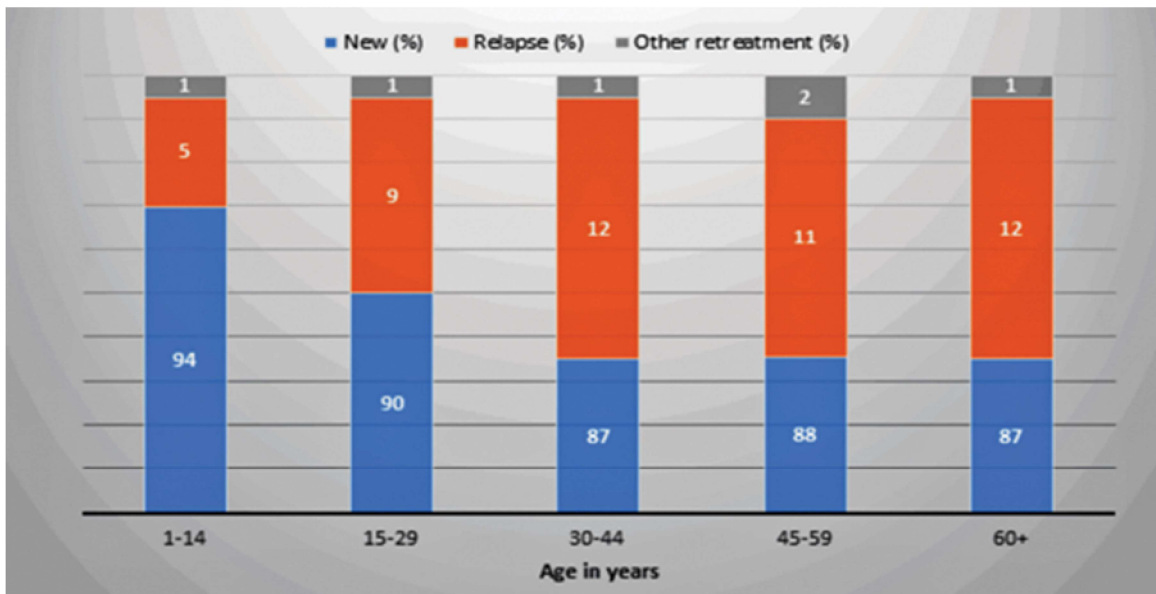


Figure-3: Association between age of patients and type of disease.

rate. One of the probable causes is that the patients completed the set course of treatment, but could not give sputum sample in the absence of cough at the end of treatment and, hence, could not be declared cured. An important consideration is the possibility that the TB patients might not be disease-free at the end of treatment but, based on the outcome definition by national and international standards,⁹ they were declared successfully treated because they completed the treatment course without any evidence of failure.

As this programme was implemented by a private sector organisation with intensive field operations, all the patients who were registered with the providers were regularly being followed up telephonically as well as physically till they completed the treatment with minimum loss to follow-up.

Death rate of the registered group declared after one year of registration had been 1.6%. By definition, if a patient is registered for TB treatment and dies during the treatment it is included in this death rate.⁹ Vital registry for TB is a required step for the identification of actual TB mortality in Pakistan.

In terms of limitations, the study could not find the number of TB symptomatic patients who visited health facilities involved in the study during the year and out of them how many were diagnosed as TB patients. It only documented the number of registered TB cases who

started treatment at the facilities so there was no record of primary defaults available.

It is recommended that private doctors should be engaged in a structured way where providers should be trained and sign MOU followed by regular visit of field team to have high yield. There should be modification in the definition of "successful treatment" to ensure that all those declared "successfully treated" should be disease-free. There is a need to create evidence on relapse in successfully-treated patients after time intervals

Conclusion

Private facilities were found to have great potential to support TB control efforts in Pakistan and that too free of cost. Geographically accessible healthcare services are more needed for females and young adults. Regular follow up of patient till the completion of treatment along with un-interrupted supply of drugs to networking private facility can ensure high treatment success rate for TB.

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