

## Sale of anti-tuberculosis drugs through private pharmacies: a cross sectional study in Kerala, India

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### Abstract

**Background:** Private health care providers are largely the first point of contact for Tuberculosis (TB) patients, who either undergo treatment from private practitioners or buy medicines on their own from private pharmacies.

**Aims:** This study assessed the availability, sale and magnitude of anti-tuberculosis drugs dispensing through private pharmacies.

**Methodology:** The present cross sectional study was conducted among private pharmacies located along the national highway from Thalassery to Payyannur in the Kannur district of Kerala, India. A total of 38 private pharmacies located along the national highway were included.

**Results:** The duration that anti-TB drugs had been on sale showed that 74.3% of pharmacies had started to sell these drugs only less than ten years ago. The majority (82.9%) of the private pharmacies received up to 5 prescriptions for anti-TB drugs weekly. Out of the total of 35 pharmacies selling these drugs, 22 (62.9%) reported an increase in their sales. Nearly 82% of those pharmacies that reported an increase in the sale of anti-TB drugs were selling these drugs for less than the past ten years.

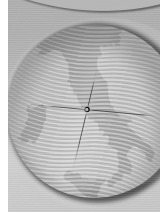
**Conclusions:** The current study shows that a large number of tuberculosis patients are still approaching private pharmacies for anti-tuberculosis drugs. This tendency has to be completely stopped and needs properly planned strategies to encourage private pharmacies to participate actively in the DOTS (Direct Observation Treatment Short course) program of the Government, by providing them attractive alternative incentives.

*Key words: tuberculosis, anti-tuberculosis drugs dispensing, pharmacies, India, Direct Observation Treatment Short course*

### Introduction

Tuberculosis threatens the health of millions in India, where we have 1.8 million cases occurring annually - thus accounting for a fifth of the world's new TB cases and 2/3rds of the cases in South-East Asia, making our country the highest TB burden country in the world [1]. In addition, notification of the disease by the private sector, that manages nearly half of these cases, is not satisfactory [2]. A major obstacle in the control of TB is the non-adherence to treatment regimens by patients. The reasons for this could be attributed to the high cost of care, the disappearance of most of the troublesome symptoms when on partial treatment and the stigma attached to the disease. The stigmatized status also leads patients to seek care in the private sector, as the

confidentiality of diagnosis is maintained. The poor case management practices in the private health sector could dilute the epidemiological impact of the DOTS program. This could contribute to the evolution and spread of Multi Drug Resistant -TB. Emerging anti-TB drug resistance in India deserves serious attention as India's rate is the highest among the 22 high-burden countries. Private drug stores and pharmacies are present in large numbers in cities and towns and also serve customers from rural areas. There are lots of pharmaceutical companies marketing anti-TB drugs, making available a variety of anti-TB drug formulations. In most places, anti-TB drugs are available over the counter and without a prescription, a dangerous situation in the control of tuberculosis. The present study is conducted



to assess the availability of anti-tubercular drugs from private pharmacies and also to determine the magnitude of anti-tuberculosis drug dispensing of these pharmacies.

### Materials and methods

The present study was conducted in Kannur district of Kerala state located in the southern part of India, with a population of 24,12,365 according to 2001 census. A total of 1891 new tuberculosis cases were reported to the Kannur District Tuberculosis Centre during 2006. This cross sectional study was conducted from March to April 2007, in the Kannur district which lies in the northern part of Kerala. The study included those private pharmacies which were situated along the national highway and were also easily accessible to the general public. All the private pharmacies located in major towns willing to participate in the study were included.

The purpose of the study was explained to the owner of the private pharmacy as well as to the pharmacist involved in dispensing the drugs. Verbal consent was obtained from them before administering the questionnaire. None of the pharmacies refused to participate in the survey. A pretested structured interviewer-administered questionnaire was used for data collection. Duration of business, duration of sale of anti-tuberculosis drugs, number of prescriptions received per day,

trend in the sale of these drugs, different brands available and their demand by the customers were asked in detail. The data collection was done with the help of a trained tuberculosis health visitor. The collected data was analyzed using PASW 17 version (IBM, Chicago, Illinois).

### Results

The 38 private pharmacies recruited for the study were all located at strategic points in the Kannur district, where Government facility for free treatment of TB was available. Table 1 shows the details of the studied pharmacies with respect to the duration of business and the sale of anti-tuberculosis drugs, as well as the magnitude and trend in the sale of these drugs. It was seen that the majority (52.6%) of pharmacies had started operating for business less than ten years previously. With regard to the sale of anti-TB drugs, it was seen that 35 (92.1%) pharmacies stocked and regularly sold the anti-tuberculosis drugs. The duration of sale of anti-TB drugs through the private pharmacies showed that 74.3% of pharmacies had started to sell these drugs only less than ten years ago. Only 5.7% of them were selling the anti-TB drugs for more than the previous twenty years. With regard to the average number of prescriptions for anti-TB medicines received by these private pharmacies weekly, we saw that the majority of them (82.9%) received

Table 1. Details of Functioning of Pharmacies and sale of anti TB drugs.

<i>Details of Pharmacies</i>		<i>No.</i>	<i>%</i>
<i>Duration of Business (in years)</i>	<i>&lt; 10</i>	20	52.6
	<i>10 – 19</i>	14	36.8
	<i>≥ 20</i>	4	10.6
<i>Duration of sale of anti-tuberculosis drugs (in years)</i>	<i>&lt; 10</i>	26	74.3
	<i>10 – 19</i>	7	20.0
	<i>≥ 20</i>	2	5.7
<i>No. of anti-TB prescriptions received per week</i>	<i>&lt; 5</i>	29	82.9
	<i>5 – 9</i>	5	14.3
	<i>≥ 10</i>	1	2.9
<i>Trend in the sale of anti-TB drugs</i>	<i>Increased</i>	22	62.9
	<i>Decreased</i>	13	37.1

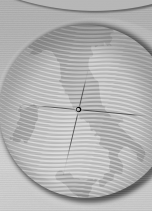


Table 2. Magnitude and trend in the sale of anti-TB drugs.

<i>Details of Pharmacies</i>		<i>Duration of sale of anti-tuberculosis drugs (in years)</i>		
		<i>&lt; 10 No. (%)</i>	<i>10 – 19 No. (%)</i>	<i>≥ 20 No. (%)</i>
<i>No. of anti-TB prescriptions received per week</i>	<i>&lt; 5</i>	23 (79.3)	5 (17.2)	1 (3.5)
	<i>5 – 9</i>	2 (40.0)	2 (40.0)	1 (20.0)
	<i>≥ 10</i>	1 (100.0)	-	-
	<i>Increased</i>	18 (81.8)	4 (18.2)	-
<i>Trend in the sale of anti-TB drugs</i>	<i>Decreased</i>	8 (61.5)	3 (23.1)	2 (15.4)

up to 5 prescriptions for anti-TB drugs weekly. The receipt of more than 10 prescriptions weekly was reported by only one pharmacy (2.9%). Out of a total of 35 pharmacies selling these drugs, 22 (62.9%) reported an increase in sales whereas 13 (37.1%) reported a decrease in the sale of these drugs through their pharmacies.

The relation between the duration of sale of anti-TB drugs by the private pharmacies and the magnitude of prescriptions received, as well as the trend in the sale of these drugs, is seen in Table 2. About 80% of pharmacies, which received less than five prescriptions per week, were selling anti-TB drugs for less than ten previous. Also, one out of the 35 pharmacies selling anti-TB drugs, which got more than ten prescriptions weekly, had started selling them less than ten years previous. Nearly 82% of those pharmacies which reported an increase in the sale of anti-TB drugs were selling these drugs for less than the past ten years. This may be suggestive of a possible increase in the trend of sale of anti-tuberculosis drugs among the pharmacies which started operating for business within the previous 10 years.

The availability of the different brands of anti-TB drugs in these private pharmacies were elicited. It was seen that Rcinex is the most common brand, stored by about 85.7% of private pharmacies. The details of the different brands of anti-tuberculosis drugs commonly available along with their composition and the number of shops selling these brands are shown in Table 3.

Four pharmacies out of the total pharmacies studied were located near Pariyaram Medical College, a tertiary care hospital. It is important

to note that 75% of these shops had reported an increase. Out of the remaining 31 shops located in other areas, 61.3% reported an increase in the sale of anti-TB drugs. So, in general, we noted an increasing trend in the sale of anti-TB drugs through the private pharmacies.

### Discussion

The study assumes much significance due to the fact that DOTS service for TB is made available to everybody by the Government, free of charge. Also, the emergence of multi-drug resistant TB is posing a serious threat to the effective control of the disease. In this context, private medical shops or pharmacies have a big role to play.

The 38 private medical shops were studied to determine the magnitude of availability and sale of anti tuberculosis drugs and also to assess the trend in the sale of these drugs. It was seen that 95% of the private pharmacies either stocked or sold anti-tuberculosis drugs. The duration of these sales ranged from one year to thirty seven years and the number of prescriptions received per week ranged from one to fifteen. This shows that people are still not fully availing of the free treatment provided by the government and are relying on drugs available through private pharmacies. The full cost of treatment is between 200 and 300 US\$. The sale of these drugs constitutes a real source of revenue for the owners of these pharmacies. This shows the financial burden that the patient bears when purchasing drugs from private pharmacies and may also be a major reason for the discontinuation of treatment by the patient before the full course of treatment regimen is completed. According to a study conducted in Maharashtra, India [3], about

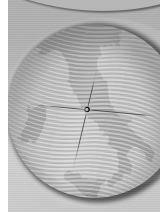


Table 3. Different brands of anti-tuberculosis drugs available.

<i>Brand name</i>	<i>Composition</i>	<i>No. of sbops</i>
<i>Rcinex</i>	Rifampicin - 600 mg., INH - 300 mg.	30
<i>AKT4</i>	Rifampicin - 450 mg., Pyrazinamide - 500 mg., Ethambutol - 800 mg., INH - 300 mg.	22
<i>CombutoI</i>	Ethambutol - 200 mg., 400 mg., 600 mg., 800 mg.	11
<i>Pyzina</i>	Pyrazinamide - 300 mg., 500 mg., 750 mg., 1000mg.	11
<i>Macox</i>	INH - 150 mg., Pyrazinamide - 750 mg., Rifampicin - 225 mg.	10
<i>AKT3</i>	Rifampicin - 450 mg., Ethambutol - 800 mg., INH - 300 mg.	2
<i>Rifacept</i>	INH - 100 mg., Pyrazinamide - 375 mg., Rifampicin - 150 mg., Pyridoxine - 3.5 mg.	2
<i>Rifa 16</i>	Ethambutol - 800 mg., INH - 300 mg., Pyridoxine - 10 mg.	2
<i>Forecox</i>	Ethambutol - 400 mg., INH - 150 mg., Pyrazinamide - 750 mg., Rifampicin - 225mg.	1
<i>Anticox</i>	INH - 300 mg., Rifampicin - 450 mg.	1
<i>Rcin</i>	Rifampicin - 150 mg., 300 mg., 450 mg., 600 mg.	1

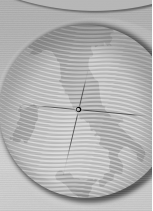
a third of the TB patients had incurred debts in order to bear the expenses of their treatment. This must be viewed seriously given the fact that the government provides treatment for tuberculosis through the DOTS program free of charge. The amount of drug dispensing without prescriptions was not investigated as it was felt that a true picture would not emerge given that this was against the interests of the private pharmacies. In addition, the treatment of TB patients by private practitioners is not satisfactory. A study [4] conducted in the urban area of Maharashtra, India showed a lack of awareness among doctors, who treated TB patients in their own clinics, about the standard drug regimens for the treatment of TB recommended by national and international agencies. These doctors prescribed eighty different regimens most of which were inappropriate and expensive.

In a study conducted in Bolivia [5], a high tuberculosis incidence country, it was found that 25 percent of pharmacies sold at least one anti-tuberculosis drug. The study documented a small market for tuberculosis drugs sales in private pharmacies and provided the opportunity to start collaboration with pharmacies. Another study [6], conducted in a city in Vietnam, estimated that between 1100 and 3400 persons buy anti-

tuberculosis drugs each month in the 1814 registered private pharmacies in the city and a quarter of them do so without a prescription and that at least 40% of all anti-tuberculosis drug dispensing occurs in the private sector. A similar result, from a study in Nepal [7], showed a substantial amount of anti-tuberculosis drugs being sold through private pharmacies. The Indian Pharmaceutical Association (IPA) has now begun efforts to integrate private pharmacies with the DOTS program, according to a report published in 'Tuberculosis News from India': May-June 2005 issue. A very remarkable achievement, seen in the Philippines, ranked 8th in 2002 among the countries with the highest burden of tuberculosis, has been the formation of the Pharmacy Dots Initiative (PDI), where pharmacies are being engaged as private sector stakeholders to promote DOTS.

### Conclusions

The efforts of the Government to control tuberculosis through the DOTS programs can be effective only if the private sector stakeholders, especially private pharmacies, are involved in the National program. The current study shows that a large number of tuberculosis patients are still approaching private pharmacies for their



treatment. This tendency has to be completely stopped and this requires well-planned strategies to encourage private pharmacies to participate actively in DOTS by providing them attractive alternative incentives. Furthermore, the public

should be made more aware of the free DOTS treatment facility provided by the Government and its benefit over other methods of treatment as well as the hazardous effects of incomplete or partially completed treatment regimens.

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