

Contribution of Community Pharmacy in Treating Tuberculosis: A Pharmacy Centric Study from Belagavi District

Abstract

Introduction: Tuberculosis (TB) is an important global health problem, which is aimed to be eradicated by 2025 from India. Community pharmacists play a significant role in treating and eradication of TB. This study aimed to understand the contribution of community pharmacy and their potential role in RNTCP (Revised National TB Control Programme) functioning. **Materials and Methods:** The study was conducted at Belagavi, Karnataka, India on 312 community pharmacies. A structured interview form was used to assess several factors such as education, knowledge, anti-TB drug dispensing patterns, willingness to be trained, and become a DOTS (Directly Observed Treatment Short course) provider. **Results:** On an overall scale, we found that the majority of licensed community pharmacy was managed by D. Pharm holders with a limited knowledge of TB. It was also noted that there was a lack of willingness to be rigorously trained for updating their knowledge, although they were interested in being trained for being recognized as a DOTS center. **Conclusion:** There is a strong need for strengthening community pharmacy services in tune with RNTCP to achieve better efficiency in treating and eradication of TB.

Keywords: Community pharmacy, DOTS, RNTCP, tuberculosis

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Introduction

Tuberculosis (TB) caused by *Mycobacterium tuberculosis* is one of the leading global focus of infectious disease.^[1] As per the statistics by the World Health Organization in the year 2017, the incidence of TB was approximately 10 million people with a mortality of 1.6 million. India accounts for 27% of the incidence and 29% of the mortality. The Government of India (GOI) has attempted to control TB for the past five decades with significant advances.^[2] More recently, GOI has declared TB as one of the infections of national interest and planned to eliminate TB before 2025.^[3]

There are several factors that play a potential role in control and elimination of TB. This includes but not limited to factors such as quality of socioeconomic status, primary health care, cooperative efforts by national programs, public awareness, support from the pharmaceutical industry, and funding for research. RNTCP (Revised National TB Control Programme), which is the national program of India, aimed at controlling and elimination of TB was reported to be not fully effective.^[4] In this view, public awareness and role of pharmacy has been suggested to

be highly important in controlling TB over a long term.^[5-11]

India has an estimated 850,000 retail drug outlets. Through a public-private partnership with various entities, approximately 9% of the outlets ($n = 75,000$) in 12 selected districts across four states of India were engaged over a 4-year period and accounted for nearly one-third of India's 1.2 billion people and one-third of its smear-positive TB cases.^[12,13]

As in a majority of scenarios, pharmacies serve as the first and sometimes as the sole point of contact for TB cases, it is important to understand the knowledge and capabilities of pharmacy especially in rural areas. With this view, we initiated this study with the primary objective of evaluating standard pharmacy practices, knowledge, and availability of anti-TB drugs used for DOTS (Directly Observed Treatment Short course) in TB patients and engaging community pharmacists to understand their relevance in fulfilling the RNTCP objectives. Currently not much-implemented pharmacy curriculum related to TB continuing pharmacy education (CPE) in India.

The rationale behind this study is to analyze how many community pharmacies dispensing anti-TB drugs, to assess knowledge of TB, to assess dispensing pattern of anti-TB drugs,

Received: 27 Jun 2019
Accepted: 13 Jun 2020
Published: 07 Oct 2020

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Access this article online

Website:
www.jrpsjournal.com

DOI: 10.4103/jrtps.JRPTPS_69_19

Quick Response Code:



How to cite this article: Rangaswamy UK, Ganachari MS. Contribution of community pharmacy in treating tuberculosis: A pharmacy centric study from Belagavi district. J Rep Pharma Sci 2020;9:246-50.

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whether community pharmacist upgrade their knowledge by CPE, and to recognize DOTS center.

Materials and Methods

Study setting and participants

The study was implemented in Belagavi, Karnataka, India with a population of approximately 5 lakh residents. The study population encompassed registered pharmacies, with the availability of anti-TB drugs and consenting to be part of RNTCP. A total of 350 pharmaceutical outlets were identified, of which 312 pharmacies were community pharmacies. A brief schematic summary of the overall methodology of the study is represented in Figure 1. At each pharmacy, an assigned interviewer explained the study to the pharmacy worker. At each pharmacy, an assigned interviewer explained the study to the community pharmacist. A structured questionnaire was used for assessment which was designed based on a previous pilot study. The questionnaire was answered independently by the practicing community pharmacist.

Questionnaire design

Community pharmacy details include name of the pharmacy, address of the pharmacy, details of qualified pharmacists, qualification of community pharmacists, dispensing of anti-TB drugs, are community pharmacists interested in CPE?, the knowledge of community pharmacists like know about TB, is TB is a communicable disease?, symptoms of TB, planning to keep anti-TB drugs, how the anti-TB drugs are dispensed like through government physician prescription, private physician prescription, or both, or don't know?, and are community pharmacists interested to become DOTS provider?.

Ethical statement

The study was approved by the KLE University ethics committee through letter number KAHER/Ethics/2019-19/D-129. An informed consent from the pharmacy worker was obtained to be included in the study.

Data collection and analysis

The data collected were based on a previously agreed data points by the authors of this study. This included demographics, accessibility of the pharmacy for anti-TB drugs, university certification, knowledge on TB, interest in being educated about TB, and willingness to be part of RNTCP. All the data obtained were tabulated using Microsoft Excel and percentage of distribution of various data points was performed for all the data collected (Microsoft Corporation, California). Descriptive statistical analysis was performed using R Statistics package 3.5.3 (The R Project for Statistical Computing).

Results

A total of 312 were community pharmacies were surveyed for this study. The pharmacy practitioners were educated in pharmacy practice with 95.8% of them holding a diploma degree, 3.84% with Bachelor's degrees, and 0.32% with

Master's degrees. On interview, 46.4% expressed an interest in being educated on pharmacy practices. 53.5% of the practitioners showed a negative interest in being educated and updated citing lack of time. On specifically questioning about knowledge on TB, a majority of the practitioner (>99%) indicated that they had a working knowledge of TB. However, only 87.8% of the workers knew about symptoms of TB, 10.2% had a partial understanding, and 1.9% of them were unaware of the symptoms [Figure 2].

In India, community pharmacists require revision and update knowledge of TB and anti-TB drugs, for example, get introduced to global and Indian TB scenario, understand basics of TB and drug-resistant TB, understand the principles and strategy of RNTCP and DOTS, understand role of pharmacist in generating community awareness on TB, identification, and referral of TB suspects, DOT provision, recording and reporting, and rational use of anti-TB drugs.

A total of 87 community pharmacies had working dispensable stock of first-line anti-TB drugs. Among the pharmacy counters that did not possess a dispensable stock of first-line anti-TB drugs ($n = 225$), 52.88% of the community pharmacist indicated that they are interested in storing anti-TB drugs in the future. Further, all the community pharmacist dispensing anti-TB drugs knew that TB was a communicable disease and 88.5% of them had a knowledge on TB clinical symptoms. We observed that there was no statistically significant difference in this knowledge between the community pharmacist currently dispensing anti-TB drugs and nondispensing anti-TB drugs ($\chi^2 = 0.053$; $P = 0.97$) [Figure 3]. Further, of the 87 community pharmacy which dispensed anti-TB drugs only one pharmacy was part of RNTCP and kept records of the patient. For all other counters, there was no record of TB patients or follow-up data.

Among the 87 community pharmacies dispensing anti-TB drugs (T. AKuriT-4 and T. AKuriT-3), 33 pharmacies declared they dispense drugs based on a valid prescription and two pharmacies indicated dispensing anti-TB drugs irrespective of prescription. The remaining 52 pharmacies did not indicate any information [Figure 4]. Further, 24/87 (27.58%) community pharmacies dispensing anti-TB drugs indicated an interest in

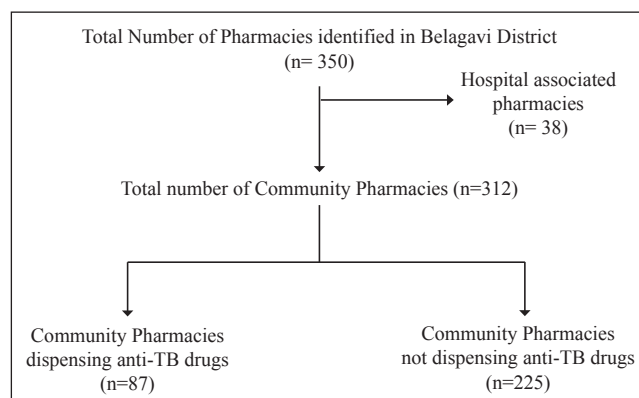


Figure 1: A brief schematic summary of the overall methodology of the study

being part of a recognized DOTS center. Similarly, 60/225 (26.66%) community pharmacies not storing or dispensing anti-TB drugs indicated an interest in being part of a recognized DOTS center [Figure 5].

Discussion

TB is primarily a respiratory infection which could be clinically treated using anti-TB drugs.^[14] Despite being a significant public health problem, a substantial population are not aware of TB and display non-compliance to therapy.^[7] Hence, the role of community pharmacies is indispensable in educating the patients about TB.^[15] However, the effectiveness of community pharmacies in acting against TB has not been well documented.

In India, practicing pharmacists are required to hold a minimum of a diploma degree and possess basic clinical and pharmaceutical understanding. In our study, a majority of the community pharmacist possessed a D. Pharm (Diploma in Pharmacy), followed by B. Pharm (Bachelor of Pharmacy) degree and M. Pharm (Master of Pharmacy) degree. It has been previously noted that most diploma holders have a minimal working clinical knowledge and rarely undergo additional training.^[13] In concurrence, we find that there is an overwhelmingly inadequate training in pharmacy practice which potentially hinders combating TB at a community level. Similar findings have also been reported by Ou *et al.*^[16] This lacunae in training has a higher impact as less than 50% of

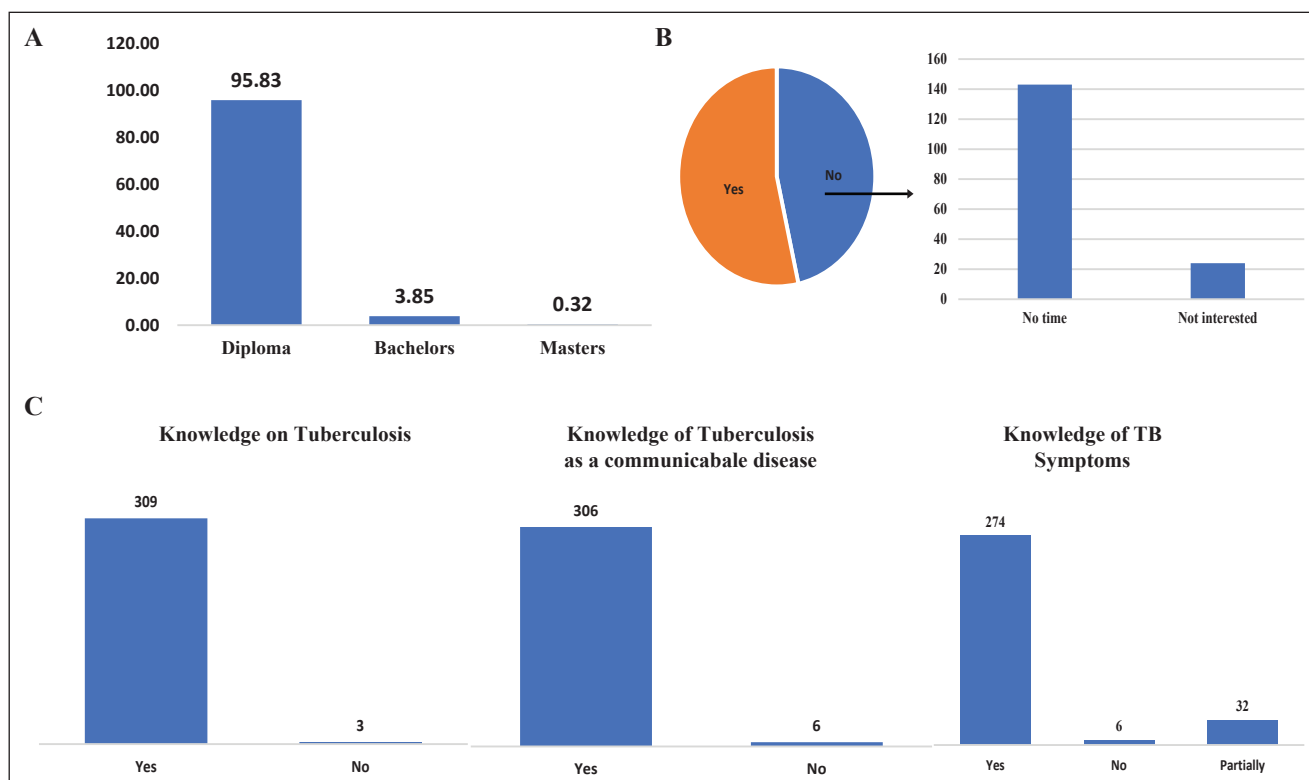


Figure 2: (A) Education qualification. (B) Interested on continuing pharmacy education. (C) Knowledge on tuberculosis

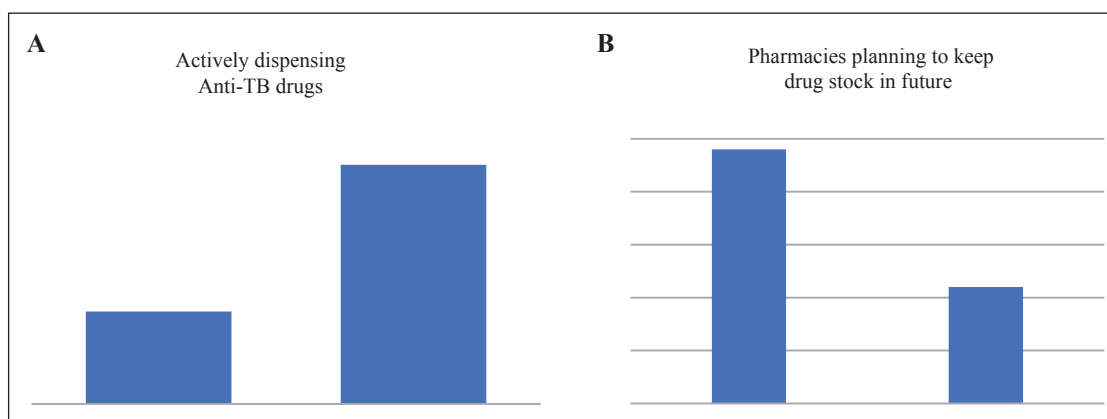


Figure 3: (A) Actively dispensing anti-TB drugs. (B) Pharmacies planning to keep anti-TB drugs in future

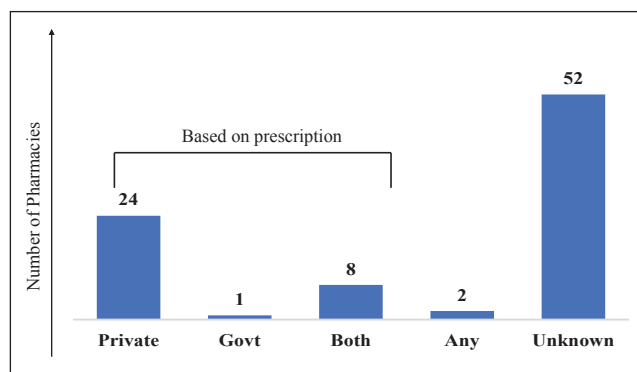


Figure 4: Dispensing anti-TB drugs based on prescription

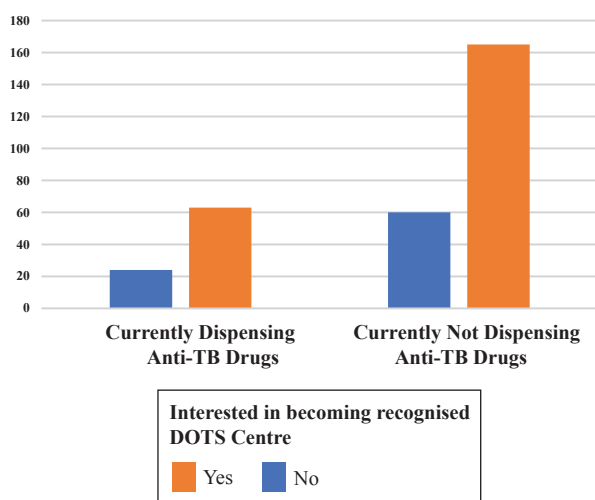


Figure 5: Dispensing anti-TB drugs and interested to become DOTS provider

the total community pharmacist expressed any interest in being trained and further educated. In this study, a lack of willingness to be educated was primarily cited due to a lack of time during business hours which could also be indirectly due to any positive incentives to be trained. Though we have not thoroughly investigated the breadth of practicing pharmacist's knowledge with reference to the TB, there was a working knowledge of transmission of disease. Nevertheless, there was a lack of understanding of TB symptomatology in the practitioners, even with those who were routinely dispensing anti-TB drugs. This indicates that there is a significant need to improvise training and knowledge of TB as noted previously.^[17,18]

Retail pharmacies form a significant component of the RNTCP.^[19] Accounting for the significant contribution offered by the privately owned pharmacies, RNTCP aims to involve them through public-private mix (PPM) strategy.^[19] In context, we observed that only 27.8% of the pharmacies dispensed anti-TB drugs with only one among them as a recognized as RNTCP store. Further, we cannot assess the quality of practice as there were no well-documented records of anti-TB drug dispensing statistics, follow-up or patient records. Hence, the possible potential effect of PPM strategy could not be realized.

In a study reported by Konduri *et al.*,^[20] the authors reported a detailed analysis indicating that though community pharmacies are an important component of TB health-care program, they have not been used, trained, and empowered as a primary point of contact. This was reflected in our study, showing that there was only one pharmacy involved with RNTCP, though a significant interest was shown by many more outlets in being a part of RNTCP by involving as a DOTS provider.

As already noted, the privately owned pharmacies function as first point of contact for several symptomatic patients with respiratory illness, to seek medical care and purchase medicines over the counter. Though theoretically, the role of pharmacists is to direct such cases to a qualified clinician, and not provide over the counter antibiotics such practice is violated in the field due to its negative effects on the business. In context, we noted that two community pharmacists agreed to providing over the counter anti-TB medication. Further, 60% of the pharmacies did not declare if they dispense anti-TB drugs based on physician prescription, which is most likely to be the case. This was probably not declared owing to the knowledge that such practice is not allowed, though the pharmacy still continues to do so to avoid loss of profit in the business.

Conclusion

The community pharmacists through the PPM strategy form an integral part of the RNTCP. Though they form an important and in a few instances the only point of contact for several TB cases, their potential has not been fully used. It is also identified that there is a lack of sufficient training and knowledge in the awareness about TB. We identify there is a significant need to educate and enable more community pharmacists' and enroll them as DOTS providers which may significantly enhance the TB control programs in the country.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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