

Assessment of Knowledge, Attitude and Perception of Pharmacist's Role in the Management of Tuberculosis Disease in the Belagavi District of Karnataka, India

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ABSTRACT

Background: In India, implementing the pharmacy education among the pharmacists takes a difficult challenge. Pharmacist role in the eradication of tuberculosis in India has not been evaluated in terms of its challenges and constraints. There is a need to take action about awareness of eradication of tuberculosis among pharmacists. Therefore, our study aims to assess the knowledge, attitude and perception among pharmacists in treating tuberculosis disease. **Materials and Methods:** A cross sectional study was conducted on 25th September 2022 as a one-day training programme in Belagavi, Karnataka state, India. A group of selected stake holders were invited. The training programme was conducted by the department of Pharmacy Practice, KLE college of Pharmacy, Belagavi in association with District Tuberculosis office and regional office of Deputy Drugs Controller, Belagavi, India. **Results:** A total of 237 pharmacists are responded. There was a lesser number of pharmacists were trained for TB infection prevention (30%), and aware about Nikshay portal (40%). Most pharmacists were aware about anti-TB drugs comes under schedule H (80%). TB Patients complaint about their treatment to pharmacists (06%), only few pharmacists are trained to treat TB patient's treatment complaints (40%) and aware about National Strategic Plan 2017-2025 for elimination of TB (80%). **Conclusion:** In our survey, it was observed that there is a moderate gap difference in knowledge, attitude and perception in management of TB infection among the pharmacists. There is a need of implementing the training programmes to educate the pharmacists about the management and elimination of TB from India by 2025.

Keywords: Tuberculosis, Pharmacists, Antitubercular drugs, Awareness, Questionnaires.

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INTRODUCTION

Tuberculosis (TB) still remains a significant global public health issue.¹ It is estimated that mycobacterium tuberculosis infects around one-third of the world's population and it is considered as one of the most transmittable diseases, causing approximately two million deaths annually.^{2,3} According to World Health Organisation (WHO) statistics in 2016 India has the highest TB burden cases an estimated 2.79 million cases of TB worldwide, out of a total of 10 million cases.⁴ TB is an airborne disease which spreads by inhalation from infected person to common healthy person.⁵ The common signs and symptoms for active tuberculosis are weakness, weight loss, fever, chills, loss of appetite, night sweats, severe cough that lasts for more than three weeks, chest pain and blood stain in sputum.⁶

Most form of TB occurs in the lungs known as pulmonary TB but it may infect any part of the body like kidney, lymph nodes, bones, joints.⁷ In treating tuberculosis, the anti-TB medications have been used for the decades and the resistance arises when the anti-TB medicines were not used appropriately.⁸ Through inappropriate following the treatment guidelines of the WHO, prescription, education by healthcare providers, non-adherence to the medication by patients, lack of adequate patient counselling were some of the factors are associated to cause with the Multi Drug-Resistance Tuberculosis (MDR-TB).^{9,10}

Pharmacists are an integral part of the health care system and work to improve the standard of pharmaceutical care by offering supportive services to both patients and medical professionals.^{11,12} Due to their accessibility, pharmacists are in distinct position to provide appropriate interaction and collaboration with patient and physicians to ensure successful treatment.^{13,14} One of the key players in the healthcare team are the pharmacists who are focused on achieving optimal use of medications, emphasizing dosing, monitoring, identification of adverse effects, and economic efficiency to achieve optimal patient outcomes.^{15,16}



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Pharmacists work in all types of healthcare facilities and manage drug therapy as a member of a multidisciplinary team using their in-depth knowledge of medications and illness situations.^{12,17} Therefore, our study aims to assess the Knowledge, Attitude and Perception (KAP) regarding the role of pharmacist in managing, treating and improving the pharmacist's awareness about tuberculosis disease according to the National Tuberculosis Elimination Program (NTEP) to end TB strategy by 2025.

MATERIALS AND METHODS

Study design

A cross sectional study was conducted on the event of World Pharmacist Day, 25th September 2022 with the theme of "Pharmacy united in action for a healthier world" as a one-day training programme in 500 seated hall of KLE Centenary Convention Center, KLE Academy of Higher Education and Research, at Belagavi city, Karnataka. Registered License Pharmacists under Karnataka State Pharmacy Council from various pharmaceutical outlets across the Belagavi district of Karnataka were enrolled in this study. The study was approved by human ethical committee with Institutional Ethical Clearance (IEC) number (Ref no: KAH/EC/21-22/020) from KLE Academy of Higher Education and Research, Belagavi, Karnataka state, India.

The Pharmacies dealing as wholesale distributors were excluded from the study. The pharmacist information leaflet was distributed in regional language Kannada and English. The pharmacist information leaflet includes the study objectives and role of pharmacist in the management of tuberculosis in the district. Schematic representation of methodology is presented in Figure 1.

Questionnaire

A structure interview study was conducted using self-framed and validated KAP questionnaire by the department of Pharmacy Practice, KLE college of Pharmacy among the pharmacists of Belagavi district. The questionnaire was framed with the questions of yes or no type and using five-point Likert scale. The questionnaire was divided into four sections which includes demographic details, knowledge, attitude and perception. A pilot study was conducted prior to conduct of the main study where the questionnaire was validated and reliability was found to be good (Cronbach's alpha *i.e.*, $\alpha \geq 0.8$).

Study Participants

In this study a group of selected stake holders like medical experts from the field of tuberculosis, District Tuberculosis controller Officer (DTO), Deputy Drugs Controller (DDC), Assistant Drugs Controllers (ADC) were invited. The study was conducted as a part of training programmed by Department of Pharmacy Practice, KLE college of Pharmacy, Belagavi in association with

District Tuberculosis office and regional office of Deputy Drugs Controller, Belagavi, India on various pharmacists which includes Community Pharmacists, Hospital Pharmacists and Clinical Pharmacists across the Belagavi district, Karnataka, India. Around 250 pharmacists were attended and 237 pharmacists were participated in our study. Most of the pharmacists were D.Pharm (Diploma in Pharmacy), D.Pharm with other degree, B.Pharm (Bachelor of Pharmacy), M.Pharm (Master of Pharmacy) and Pharm.D (Doctor of Pharmacy) (Figure 1). Informed consent was obtained from each of the pharmacist about the study participation, voluntary involvement and confidentiality. The pharmacists were asked to sign in both survey consent form and structured questionnaires.

Statistical analysis

The data was entered and tabulated using Microsoft Excel (Microsoft Corporation, CA, USA). Descriptive Statistics results were analysed for all the data collected using the SPSS software (version 22.0). The results were expressed in percentages, mean \pm SD and by using one-way ANOVA. The level of statistical significance was set to be less than 0.05.

RESULTS

Demographic details of the pharmacists

A total of 237 pharmacists from various pharmaceutical outlets across the Belagavi district of Karnataka were enrolled into the study. Out of 237 pharmacist's population 64.98% (154) were males and 35.02% (83) were female. The age group of pharmacist population were 28.27% (67) in between 21-30 years, 64.98% (154) in between 31-40 years and 6.75% 16 in ≥ 41 years. The most working site of the pharmacists were belonging to community pharmacy 87.76% (208), hospital pharmacy 8.44% (20) and followed by clinical pharmacy 3.80% (9). In qualification based, most of the pharmacists where D.Pharm qualified 56.54% (134), B.Pharm and D.Pharm with other degree 15.61% (37), followed by M.Pharm 8.44% (20) and Pharm.D 3.80% (09) qualified pharmacists. The education level of the majority participants were the undergraduate pharmacists 87.76% (208) and post graduate pharmacists were about 12.24% (29). The majority of the pharmacists were having working experience of more than 5 years 78.90% (187), less than 1 year were 10.12% (26) and 1-5 years 10.12% (24). The demographics profile of the pharmacist's population is characterised in Table 1.

Knowledge wise response

Based on the pharmacist's qualification the questionnaire was calculated with mean knowledge, attitude and perception. On assessment of Knowledge level, pharmacists were interviewed regarding the diagnosis, signs and symptoms, mode of transmission. About 94.94% pharmacists responses correct that earlier diagnosis will prevent in the management of TB. 54.43%

agreed and 40.08% strongly agreed that cough and chest pain are the most common symptoms of pulmonary TB. 45.15% agreed and 44.30% strongly agreed that TB is transmitted through air droplet. In our study we found that knowledge level of D Pharm graduate's pharmacists had mean score of 37.63 ± 7.07 , D Pharm with other degree had mean score of 36.42 ± 7.29 , B Pharm had mean score of 40.56 ± 5.62 , M Pharm had mean score of 41.49 ± 3.21 and Pharm D had mean score of 40.30 ± 4.12 . The total mean score average of the knowledge was found to be 39.764 ± 5.481 . The F -value found to be 6.2871 and p -value found to be 0.0001 where p value had shown statistically significant ($p < 0.05$).

Attitude wise response

On assessment of attitude level, the pharmacists were interviewed regarding the treatment, vaccination, educating and counselling the TB patients. Around 65.40% agreed that within the timeline of six months if TB patients unable to complete the first line antitubercular treatment, it might lead to multiple drug resistance tuberculosis. About 59.07% agreed and 31.22% strongly agreed that BCG vaccination is protective against the tuberculosis. About 60.34% agreed and 32.07 strongly agreed that educating and counselling the TB patients about the treatment will improve the patient medication adherence. In our study we found the attitude level of D.Pharm graduate's pharmacists had mean score of 38.50 ± 4.69 , D.Pharm with other degree had mean score of 36.00 ± 7.32 , B.Pharm had mean score of 40.77 ± 4.49 , M Pharm had mean score of 41.03 ± 3.43 and Pharm.D had mean score of 40.88 ± 4.31 . The total mean score average of the knowledge

was found to be 39.907 ± 5.249 . The F -value found to be 8.6825 and p -value found to be 0.0001 where p value had shown statistically significant ($p < 0.05$).

Perception wise response

On assessment of perception level, the pharmacists were interviewed regarding DOTS therapy by NTEP programme, education on nutrition diet and conducting training programming. Around 67.93% agreed and strongly agreed that providing DOTS therapy treatment to treat TB patients will give correct treatment timeline course. About 61.60% agreed and 29.54% strongly agreed that educating about nutrition diet intake in TB patients will help in completion of treatment. Around 51.48% agreed and 43.88% strongly agreed that conducting TB training programme will give an awareness on recent updates about NTEP programme and TB disease management. In our study we found the perception level of D.Pharm graduate's pharmacists had mean score of 20.75 ± 1.98 , D.Pharm with other degree had mean score of 18.77 ± 2.75 , B.Pharm had mean score of 20.61 ± 2.65 , M.Pharm had mean score of 21.16 ± 1.74 and Pharm.D had mean score of 20.98 ± 2.40 . The total mean score average of the perception was found to be 20.494 ± 2.560 . The F -value found to be 6.9390 and p -value found to be 0.0001, where p value had shown statistically significant ($p < 0.05$) by using one-way ANOVA test as shown in the Table 2. The comparison of professions with mean knowledge, attitude and perception scores using one-way ANOVA test summarized in Figure 2.

DISCUSSION

Tuberculosis still remains an important health issue across the world.¹⁸ WHO reported that around 10 million people every year were caused by TB and it has been ranked among the top ten causes of death globally.¹⁹ The purpose of this study is to aware about knowledge, attitude and perception of pharmacists in managing and preventing TB among Indian pharmacists. The Indian pharmacists were not been involved in any national health programs including National TB Programme.²⁰ They were been described as missing link in TB control as they have important role in elimination of TB.²¹ It is very important as

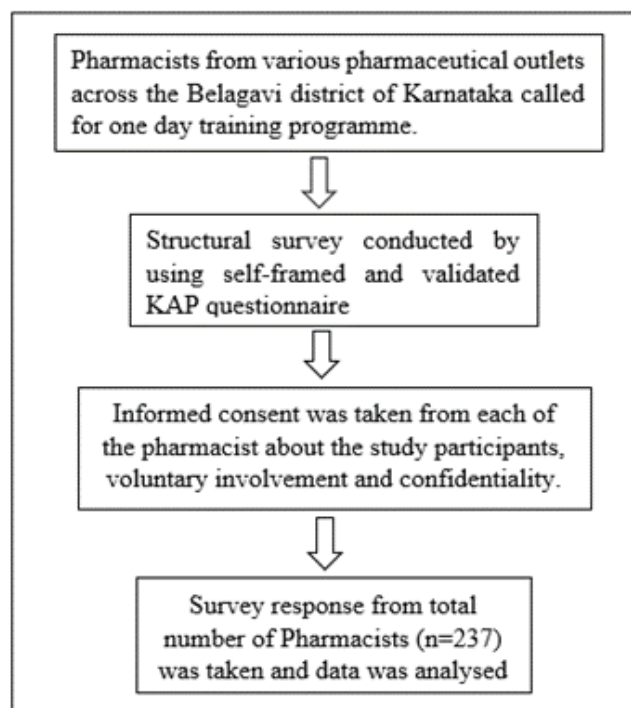


Figure 1: Schematic representation of methodology.

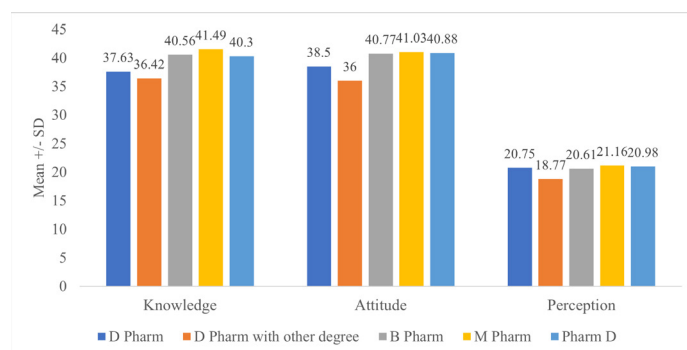


Figure 2: Comparison of professions with mean knowledge, attitude and practice scores.

Table 1: Demographic profile of the pharmacists.

Demographic profile	No of respondents (n)	Percentage of respondents (%)
Gender		
Male	154	64.98
Female	83	35.02
Age groups		
21-30	67	28.27
31-40	154	64.98
≥41	16	6.75
Working site		
Clinical Pharmacy	9	3.80
Hospital Pharmacy	20	8.44
Community Pharmacy	208	87.76
Qualification		
D.Pharm	134	56.54
B.Pharm	37	15.61
M.Pharm	20	8.44
Pharm.D	9	3.80
D.Pharm with other degree	37	15.61
Educational level		
Undergraduate	208	87.76
Postgraduate	29	12.24
Working experience		
<1year	26	10.97
1-5 years	24	10.12
>5 years	187	78.90
Total	237	100.00

India is emerging through a universal access for a quality assured diagnosis and treatment under NTEP.²²

In India, to dispense the medicines a government certified licensed pharmacists are required who holds a minimum degree of a diploma, should know basic clinical skills, clinical knowledge pharmaceutical science. In our study, a majority of the community pharmacists hold a degree of D. Pharm, followed by B. Pharm degree, M. Pharm degree and Pharm D. Some of the pharmacists are from hospital pharmacy and clinical pharmacists who were working at the site of hospitals and clinics. It has been observed from previously that most of the diploma holders have a minimal working clinical knowledge and rarely undergo Continuing Pharmacy Education (CPE) training.²³

In our study, an area with high-rate TB, most of the patients were not reporting common complaints regarding the symptoms and treatment. Pharmacists were also unable to gather the compliant reports from the patients. In similar other studies have shown that patients have reported at least 42% of their complaints about the respiratory problems who were later diagnosed with TB, and interacts for their first care with the pharmacists who are working at the pharmacies.²⁴ Additionally, pharmacy have been described as the primary point of contact for majority of the TB patients. For two thirds of TB patients in India, pharmacists serve as the initial point of contact and source of clinical guidance.²⁵ Unfortunately, additional research revealed that the failure to detect TB patients was delaying the diagnosis and treatment of the disease.²⁶

In our study it has shown that pharmacists were having good general knowledge. The involvement of the pharmacists responded on TB cause, transmission, signs and symptoms, diagnosis, standard treatment regimen and duration was found to be good and also in case detection and management of tuberculosis. In a study conducted by Malik M. *et al.*, which demonstrated a gap in knowledge of TB symptoms, diagnosis, and treatment among the surveyed pharmacists had no formal training in health or in TB management, and only few of them

Table 2: Comparison of pharmacist's qualification with mean knowledge, attitude and perception scores by one-way ANOVA test.

Qualification	Knowledge	Attitude	Perception
D.Pharm	37.63 ± 7.07	38.50 ± 4.69	20.75 ± 1.98
D.Pharm with other degree	36.42 ± 7.29	36.00 ± 7.32	18.77 ± 2.75
B.Pharm	40.56 ± 5.62	40.77 ± 4.49	20.61 ± 2.65
M.Pharm	41.49 ± 3.21	41.03 ± 3.43	21.16 ± 1.74
Pharm.D	40.30 ± 4.12	40.88 ± 4.31	20.98 ± 2.40
Total	39.764 ± 5.48	39.91 ± 5.25	20.494 ± 2.560
F-value	6.2871	8.6825	6.9390
p-value	0.0001*	0.0001*	0.0001*

All the values are Mean ± SD. *p<0.05.

were having knowledge about the symptoms, diagnosis, and mode of transmission of the TB.²⁷

The attitude and perception of pharmacists towards management of TB regarding NTEP (directly observed therapy, short course) DOTS programme, Nikshay portal and schedule H was found relatively good in our study. Few pharmacists expressed negative opinion regarding their participation in TB national programme while some others expressed neutral attitude. The neutral responses of attitude and perception of pharmacists is due to lack of adequate knowledge, lack of resources and training to update the pharmacist about the national TB programme and services in our study. Similar studies conducted by Sarker M. *et al.*, and Bell CA. *et al.*, has shown pharmacists have lack of knowledge and lack of resources which were the cause for attitude and practice because of the workload at pharmacy outlets.^{28,29}

CONCLUSION

From the findings of our study, we conclude that majority of pharmacists were not aware of the NTEP guidelines and a moderate aware about TB management. It is expected that all pharmacists should follow and aware about NTEP guidelines for the management of TB. For effective management of TB, it is necessary that all pharmacists should get updated on the national strategy plan through proper training which will help among the pharmacists in treating and management of TB.

LIMITATION

This study was conducted in short duration of time period. Further it can be carried out with longer duration of time period.

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CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

TB: Tuberculosis; **WHO:** World Health Organisation; **MDR-TB:** Multi drug-resistance tuberculosis; **KAP:** Knowledge attitude and perception; **NTEP:** National Tuberculosis Elimination Program;

IEC: Institutional Ethical Clearance; **DTO:** District Tuberculosis controller Officer; **DDC:** Deputy Drugs Controller; **ADC:** Assistant Drugs Controllers; **D Pharm:** Diploma in Pharmacy; **B Pharm:** Bachelor of Pharmacy; **M Pharm:** Master of Pharmacy; **Pharm D:** Doctor of Pharmacy; **CPE:** Continuing Pharmacy Education; **DOTS:** Directly observed therapy short course.

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