



ORIGINAL ARTICLE

# High Tobacco Use among Presumptive Tuberculosis Patients, South India: Time to Integrate Control of Two Epidemics

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**Abstract**

**Objectives:** Tobacco is an important risk factor for tuberculosis (TB) infection and TB disease. Identifying tobacco users and providing tobacco cessation services is expected to reduce the burden of TB. We assessed tobacco use among presumptive TB patients attending a tertiary hospital and their willingness to attend tobacco cessation services.

**Methods:** A cross-sectional study was conducted among presumptive TB patients attending a designated microscopy center of a tertiary hospital in South India. All presumptive TB patients aged  $\geq 18$  years attending the designated microscopy center were interviewed using a semistructured interview schedule. Data on presumptive TB patient's age, sex, tobacco use and forms of tobacco, attempts to quit tobacco since 1 year, and willingness to attend a smoking cessation clinic in tertiary hospital were captured. History of use of tobacco in the past 1 month was considered as "tobacco use."

**Results:** A total of 424 presumptive TB patients aged  $\geq 18$  years were interviewed. Tobacco use in the past 1 month was reported by 176 (41.5%, 95% confidence interval: 36.9–46.3%) presumptive TB patients. In total, 78 (18%) presumptive TB patients were eventually diagnosed with smear-positive pulmonary TB, of them 63 (80%) were tobacco users. Presumptive TB patients aged  $\geq 30$  years, male sex, and  $< 10$  years of education were significantly associated with tobacco use. Of 176, a majority of 132 (75%) used some form of smoking. Of a total of 132 smokers, 70 (53%) were willing to avail of tobacco cessation services.

**Conclusion:** Tobacco use among presumptive TB patients was high. Considering the high willingness to quit among smokers, proven brief interventions to help quit smoking can be tried.

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## 1. Introduction

The World Health Organization and the International Union Against Tuberculosis and Lung Disease recognizing the association between tuberculosis (TB) and the tobacco epidemic, recommended joint initiatives by national TB and tobacco control programs [1]. Tobacco is an important risk factor for TB infection and TB disease [2]. Identifying tobacco users and providing tobacco cessation services is expected to reduce the burden of TB [1,2]. In India, 40% of the TB burden is attributed to tobacco use and hence it is important to identify simple cost-effective strategies to combat this risk factor [3]. The World Health Organization recommends the assessment of tobacco use and tobacco cessation services routinely for all diagnosed TB patients [1]. Although this strategy improves the clinical outcomes of TB patients, its role in reducing the burden of TB seems minimal as intervention is directed only for TB patients. Efforts in tobacco control in general are expected to reduce the number of incident TB cases. Since community-based tobacco control strategies are resource intensive and India's National Tobacco Control Program is at infant stage, identifying tobacco users in a health facility will be a short-term alternate option. In this context, a national TB program (NTP) with its well established organizational setup can assist in tobacco control [4]. In a designated microscopy center (DMC) under NTP, we aimed to assess the burden of tobacco use among presumptive TB patients and their willingness to avail of tobacco cessation services at a tertiary care hospital.

## 2. Material and methods

### 2.1. Study design and setting

A cross-sectional study was conducted among presumptive TB patients attending a DMC of a tertiary hospital in South India. The tertiary hospital is part of a medical institute, which is an institute of national importance under the Ministry of Health and Family Welfare, Government of India. People from most states of South India seek care from the tertiary hospital and all the medical services are provided free of cost.

The DMC was functioning under the supervision of the Department of Pulmonary Medicine at JIPMER (Jawaharlal Institute of Postgraduate Medical Education & Research), Pondicherry, India. The presumptive TB patients (suspects) from all the departments in the hospital were referred to DMC for diagnosis of TB. On average, 30 presumptive TB patients were referred each day. DMC functions on all the working days from 9.00 AM to 12.30 PM. The presumptive TB patients referred to DMC were tested for TB using Revised National Tuberculosis Control Program guidelines.

### 2.2. Study population and sample size

All presumptive TB patients aged  $\geq 18$  years attending the DMC during the month of July in 2014 were eligible for the present study. The sample size was calculated assuming the prevalence of tobacco use among presumptive TB patients was the same as that in the adult population of the neighboring state of Tamil Nadu. The sample size was calculated using OpenEpi software (Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version 3.01), with a 16% prevalence of tobacco use as per the NFHS-3 survey [5], with an absolute precision of 4% and a 95% confidence interval. The minimum number of presumptive TB patients to be included in the study was 336.

### 2.3. Sampling

On average, around 500 presumptive TB patients availed of DMC services. All the adult (age,  $\geq 18$  years) presumptive TB patients who attended the DMC during the month of August in 2015, were included in the study.

### 2.4. Study variables and study tool

Data on presumptive TB patient's age, sex, tobacco use and forms of tobacco, attempts to quit tobacco since 1 year, and willingness to attend the smoking cessation clinic in the tertiary hospital were captured. Tobacco use history in any form in the last month was considered as "tobacco use." A pretested, semistructured interview schedule was used to extract information. After obtaining informed consent from the presumptive TB patients, the interview was conducted by a Bachelor of Medicine/Bachelor of Surgery student.

### 2.5. Data entry and analysis

Data were entered and analyzed using EpiData (EpiData Association, Odense, Denmark). Frequencies and percentages were used to summarize tobacco use. Relative risk with 95% confidence interval was calculated to assess the possible association of age, sex, and education with tobacco use. The number needed to identify a presumptive TB patient with tobacco use was calculated for the above mentioned variables.

### 2.6. Ethical consideration

The study was approved by the Human Institute Ethics Committee of Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India. After completing the interview, presumptive TB patients with "tobacco use" were given a brief intervention by the interviewer to quit tobacco.

## 3. Results

A total of 424 presumptive TB patients were interviewed. The mean (standard deviation) age of

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