

Effective Counseling: A Major Challenge of Tuberculosis Control Programme in Tackling the Dual Disease Burden of Tobacco Consumption among Tuberculosis Patients in India

Nehal, Shyamala Krishnaswamy Kothandapani¹, Bidhata Khatri², Supriya Tiwari³

Department of Physical Medicine and Rehabilitation, Swami Vivekananda National Institute of Rehabilitation Training and Research, Cuttack, Odisha, ¹Department of Pulmonary Medicine, Dr. B. R. Ambedkar Medical College, ²Department of Pathology, Vydehi Institute of Medical Sciences, ³Independent Researcher, Bengaluru, Karnataka, India

Abstract

Background: Tuberculosis (TB) and tobacco are the major public health problems with high morbidity and mortality. Tobacco consumption is the most common modifiable risk factor associated with TB infection, relapse, and recurrence. This study aimed at estimating the prevalence of tobacco consumption patterns among patients with TB and assessing effectiveness of counseling and tobacco cessation intervention. **Patients and Methods:** A cross-sectional prospective study was conducted in patients with TB (pulmonary and extrapulmonary), ≥ 18 years registered under Revised National TB Control Program (RNTCP) (Directly Observed Treatment, Short-course), at a tertiary care hospital, South India, from January 2018 to June 2018. Relevant clinical data was collected. Participants were interviewed about tobacco consumption, and counseling was offered to these patients and willingness to quit tobacco usage was assessed using 5A and 5R's approach. **Results:** Of the total 125 patients, 40 of them were tobacco users (smoking and oral tobacco) with a prevalence of 32%. Mean age was 38 ± 2 years. Tobacco consumption was significantly high (19.2%) in the 31–50 years age group ($P = 0.04$) with an increased association among pulmonary TB. Majority of the tobacco users were male (38.96%), predominantly smokers (31.16%) and female patients were oral tobacco users (20.83%). With effective counseling, 60% of tobacco users were willing to quit tobacco gradually, while 27.5% were willing to quit abruptly and avail pharmacotherapy. **Conclusion:** There is high prevalence of tobacco usage among TB patients. Majority of males were smokers. Females were predominantly oral tobacco users. Implementing strategies for effective counseling and tobacco cessation intervention, in coordination with RNTCP would have greater impact on treatment outcome.

Keywords: Cessation, counseling, Revised National Tuberculosis Control Program, smokeless, smoking, tobacco, tuberculosis

INTRODUCTION

Tuberculosis (TB) and tobacco use are major public health problems with high morbidity and mortality, worldwide.

Tobacco use is the common modifiable risk factor in thirty high-burden countries of TB.^[1] Tobacco use accounts for seven million deaths globally in the year 2017.^[2] This number is set to increase to 8 million in 2030, approximating to about 10% of the total deaths.^[3]

A model projected by Basu *et al.* shows that smoking could lead to 40 million excess TB deaths from 2010 to 2050 (from 61 to 101 million) worldwide.^[4] In India, smoking contributes to more than half of male deaths in 25–69 years age group. Mortality from TB is three to four times high in ever smokers

as compared to never smokers. Thirty-eight percent of the deaths in TB are associated with tobacco use.^[5]

Tobacco exposure increases the risk of TB infection. Smoking is associated with an approximately two-fold increase in the odds of infection with tuberculin skin test reaction.^[6] Tobacco consumption is directly correlated with recurrence

Address for correspondence: Dr. Shyamala Krishnaswamy Kothandapani, No. 58, 3rd Cross, 10th "A" Main, Indiranagar, Bengaluru - 560 038, Karnataka, India.
E-mail: shyamalakk@gmail.com

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and disability due to TB. It also has effects on the clinical manifestations, bacteriological conversion, and treatment outcome.^[7] Tobacco users are three times more likely to report a history of TB.^[8]

According to the World Health Organization (WHO), more than 20% of the people older than 15 years smoke tobacco. However, the prevalence of smoking in patients with TB is well above 20%.^[9] In South Africa, 56% of active TB cases were current smokers.^[10]

Smokers are prone twice as more than the nonsmokers to be infected with TB and acquire infective disease (relative risk [RR] of ~1.5 for latent TB infection and RR of ~2.0 for TB disease).^[11]

The National Sample Survey of 1999–2000, India, showed that the smokeless form of tobacco is used at least in one member of each household in almost one-third of households in rural area and almost one-sixth of the households in urban areas.^[12] This statistic has only been increasing ever since.

Cessation of tobacco use for a duration of more than 2 months before the initiation of TB treatment has shown to have a decreased risk of poor treatment outcome in TB patients.^[13]

Various studies from Pakistan, Bangladesh, Nepal, Brazil, China, and South Africa have shown improved treatment outcome and high quit rate from the introduction of tobacco cessation services.^[14–19]

Although the present TB Control Programme emphasizes on TB tobacco collaboration activities, implementation of an effective counseling and tobacco cessation intervention is in its infancy state. Despite the fact that a large number of TB patients use tobacco, opportunities to treat tobacco dependence in such patients are underutilized.^[20]

This study was aimed at estimating the prevalence of tobacco consumption patterns among patients with TB and assessing the effectiveness of counseling and tobacco cessation intervention.

PATIENTS AND METHODS

The study was a cross-sectional, prospective study conducted in patients diagnosed with TB (pulmonary and extrapulmonary) ≥ 18 years registered under Revised National TB Control Program (RNTCP) (Directly Observed Treatment Short-Course [DOTS]), at a tertiary care hospital in South India from January to June 2018. The study was approved by the Institutional Ethics Committee.

After obtaining consent, a total of 125 patients, of either gender participated in the study. Patients were interviewed for tobacco consumption status of all forms of tobacco (smoking and oral tobacco). Relevant clinical data was collected, which included demographic details, age, sex, new case, or previously treated, pulmonary or extrapulmonary, quit attempts in the past, whether tobacco cessation service was

offered in the past or at the time of initiation of therapy by health-care provider.

Counseling was offered to these patients regarding harmful effects, and willingness to quit tobacco usage was assessed using 5As and 5Rs model of the WHO toolkit for tobacco intervention.^[21]

The 5 ‘A’s are

1. **Ask** the patient if he/she is a tobacco user, during the course of every visit
2. Briefly **Advise** against continuing the use of tobacco and link the current condition/ailment to continued tobacco use, where possible
3. Then **Assess** readiness to quit by asking the patient whether he or she is ready to quit tobacco use at this time
4. **Assist** the tobacco user in making a quit plan
5. **Arrange** for follow-up by setting the next contact date.

The 5 ‘R’s are

1. **Relevance** of quitting
2. **Risks** of continuing
3. **Rewards** of quitting
4. **Roadblocks** to quitting
5. **Repeat** each visit.

Smokers included

Current and occasional smokers.

Oral tobacco (smokeless tobacco) users

Person who uses any of the smokeless tobacco forms or locally available forms (gutka, zarda, chaini, etc.).

Nonsmokers

Person who has never smoked or smoked < 100 cigarettes in his lifetime.

Exclusion criteria

(a) Patients < 18 years of age; (b) patients who have stopped smoking, oral tobacco consumption, 1 month prior to initiation of antitubercular therapy (ex-smokers); and (c) unwilling to participate in the study.

Statistics

Data was entered into MS Excel. Descriptive statistics was used in measures of number and frequencies. $P < 0.05$ was considered statistically significant.

RESULTS

A total of 125 patients diagnosed with TB ≥ 18 years of age participated in the study. The mean age of the study group was 38 ± 2 years. Forty of them were tobacco users (smoking and oral tobacco) with a prevalence of 32%. Majority (77) of them were male (61.6%). Pulmonary TB accounted for 59.2% of all the cases, while the rest were extrapulmonary TB. It was found that 88.8% of them were new cases and 11.2% previously treated cases [Tables 1 and 2].

Tobacco and age

Tobacco consumption was highest in the age group of 31–50 years (33.64%) followed by 18–30 years age group (14.86%) [Table 2].

Tobacco and gender

Majority of the males (38.96%) showed an increased use of tobacco. 31.16% of them were smokers only. It was found that 3.89% of them were both smokers and oral tobacco users. Oral tobacco consumption was observed predominantly among females (20.83%) [Table 3].

Tobacco consumption was significantly high among patients with pulmonary TB (50%) $P = 0.04$ than extrapulmonary TB [Tables 2 and 4].

Pattern of tobacco consumption and tuberculosis

Smoking was the major form of tobacco consumption, more significantly associated with pulmonary TB (29.72%) followed by oral tobacco (16.21%) ($P = 0.04$). Smoking (3.92%)

and oral tobacco (1.96%) consumption were less with extrapulmonary TB. Both forms of tobacco consumption were observed in 4.05% of pulmonary TB [Table 4].

Effect of counseling

On interviewing the patients with tobacco consumption, it was found that none of the patients ever attempted to quit, nor were they offered cessation services in the past or at the time of initiation of antitubercular therapy. All these TB patients with tobacco consumption ($n = 40$) were offered counseling services, and their willingness to quit tobacco and avail pharmacotherapy were assessed using 5A-5R model.

- 24 of them (60%) agreed to quit tobacco gradually and to avail pharmacotherapy
- 11 of them (27.5%) agreed to quit tobacco abruptly and to avail pharmacotherapy
- 5 of them (12.5%) were neither willing to quit smoking nor to avail pharmacotherapy.

Table 1: Demographics of patients with pulmonary and extrapulmonary tuberculosis

Parameter	Pulmonary tuberculosis (%)	Extrapulmonary tuberculosis (%)
Age (years)		
18-30	30 (24)	23 (18.4)
31-50	29 (23.2)	22 (17.6)
>50	15 (12)	6 (4.8)
Total	74	51
Gender		
Males	52 (41.6)	25 (20)
Females	22 (17.6)	26 (20.8)
Total	74	51
Type of case		
New cases	62 (49.6)	49 (39.2)
Previously treated	12 (9.6)	2 (1.6)
Total	74	51

Table 2: Tobacco consumption pattern, age, and type of tuberculosis

Age (years)	Tobacco consumption ($n=40$)	Pulmonary tuberculosis (total $n=74$), n (%)	Extrapulmonary tuberculosis (total $n=51$), n (%)
18-30	11	11 (14.87)	0
31-50	24	22 (29.73)	2 (3.92)
>50	05	4 (5.40)	1 (1.96)
Total	40	37 (50)	3 (5.88)

Table 3: Tobacco and gender

	n	Smokers (%)	Oral tobacco (%)	Both (%)
Males	77	24 (31.16)	3 (3.89)	3 (3.89)
Females	48	0 (0)	10 (20.83)	0 (0)
Total	125	24	13	3

DISCUSSION

The study included a total of 125 TB patients, 40 of them were tobacco users (smoking and oral tobacco) with a prevalence of 32%. Majority of the participants in our study were male (61.6%). The study by Safa *et al.* showed a TB prevalence of 34% with smokers, and majority were male (93.5%).^[7] Another study in Mumbai showed that 18% were current tobacco users.^[22] The WHO bulletin on the Georgian study provided a 45.9% smoking prevalence in patients with TB.^[13] A study in China showed that 59.9% of TB patients were smokers.^[23] Worldwide, there is a male predominance and a significant association of tobacco consumption with TB. Smokers are more prone to be infected with TB, progress to active disease and have increased mortality from the same.^[24] Similar results have been reported by various other studies.^[25-27]

Tobacco use was significantly highest in the 31–50 years age group ($P = 0.04$) with a mean age of 38 ± 2 years. The study conducted in Iran showed a mean age of 39 ± 1.73 years.^[13] Another study by Kanakia *et al.*, the mean age was found to be 44 years.^[28] In India, smoking contributes to more than half of male deaths in 25–69 years age group.^[5]

In the present study, it was found that oral tobacco accounted for the majority of tobacco use among female patients with TB (20.83%). The study conducted by Gupta *et al.* has also concluded that women are essentially smokeless tobacco users.^[29] A total of 3.89% of tobacco users in our study consumed both smoking and oral form of tobacco, thus giving a strong correlation between oral smokeless form of tobacco and causation of TB. Oral tobacco (smokeless form) use is also a major association with TB. One-fourth of the tobacco consumption in India is in smokeless form.^[30]

Various studies have shown cessation of tobacco has favorable treatment outcomes. With effective counseling, 60% of the

Table 4: Tobacco and tuberculosis

Age groups (years)	n	Pulmonary tuberculosis		Extrapulmonary tuberculosis	
		Smokers, n (%)	Oral tobacco, n (%)	Smokers, n (%)	Oral tobacco, n (%)
18-30	11	7 (9.46)	4 (5.40)	0	0
31-50	24	14 (18.91)	8 (10.81)	1 (1.96)	1 (1.96)
>50	05	3 (4.05)	1 (1.35)	1 (1.96)	0
P			0.04		0.6

tobacco users agreed to quit tobacco gradually, while 27.5% of them were willing to quit tobacco use abruptly. They also agreed to avail tobacco cessation services, including pharmacotherapy. In the study done in Puducherry, it was seen that 53% of the study group expressed willingness to avail cessation services.^[28] Gupte *et al.* showed improved results and effectiveness of integration of tobacco cessation at DOTS center.^[22]

This suggests that the strategies for effective counseling using WHO's 5A and 5R's approach,^[21] for which training and sensitization of health-care provider are required to strengthen the TB-Tobacco Collaborative Activities under RNTCP^[31] for a greater impact in curtailing the use of tobacco and its associated morbidity and mortality.

Limitations of the study

Postcounseling follow-up and outcome assessment were not done, as it was a cross-sectional study. The study represents a smaller sample size as study duration was shorter.

CONCLUSION

There is a high prevalence of tobacco usage among TB patients despite the guideline recommendation of TB-tobacco collaborative activities. Majority of the males were smokers. Females were predominantly oral tobacco users. Strategies for continuous education, effective counseling, and tobacco cessation intervention during the course of treatment, are major challenges to the health-care provider under RNTCP. Implementation in routine clinical practice would have greater impact on TB treatment outcome, recurrence, morbidity, and mortality.

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Conflicts of interest

There are no conflicts of interest.

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