

# Cigarette Smoking: A contributory factor for pulmonary tuberculosis

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## ABSTRACT

**Background:** Pakistan is ranked 5<sup>th</sup> among high-burden countries worldwide. Among contributory factors, cigarette smoking is associated with negative prognosis of pulmonary TB.

**Aim:** To determine the active cigarette smoking as a contributory factor for pulmonary TB.

**Methods:** This cross sectional study was conducted in Mayo Hospital, Lahore from July to October 2018. The study participants were 65 confirmed cases of pulmonary TB (diagnosed by Gene Xpert) having age >15 years, and of both the genders. The questionnaire addressed age, gender, educational and socioeconomic status, contact with active case of TB and history of active cigarette smoking (at least 1 cigarette a day). Data were entered in SPSS 20 and was presented as frequency tables. Chi square was applied.

**Results:** Among 65, 20(30.8%) were active cigarette smoker. This active cigarette smoking was statistically significant contributor for TB with increasing age (p value 0.033), male gender (p value 0.000) and lower socioeconomic status (p value 0.048).

**Conclusion:** Active cigarette smoking is a significant contributory factor for development of pulmonary TB.

**Keywords** Cigarette, Smoking, Tuberculosis

## INTRODUCTION

Pakistan is ranked 5<sup>th</sup> among high-burden countries worldwide and it accounts for 61% of the tuberculosis (TB) burden in the Eastern Mediterranean Region. This constitutes an estimated burden of 5, 10,000 new annual TB cases.<sup>1</sup> There are multiple factors that play their role in developing tuberculosis. Among these, overcrowding, lack of vaccination, contact with active case of pulmonary TB, inadequate treatment and treatment failure, drug addiction, and human immunodeficiency virus are the commonly studied factors<sup>2</sup>.

Cigarette smoking is considered as negative prognostic factor of pulmonary TB. This Smoking leads to damage the lungs and impairs the body's immune system, subsequently increase susceptibility to TB<sup>3,4</sup>. Authors have reported the contribution of active smoking for development of TB association<sup>5</sup>. Pednekar et al<sup>6</sup> from India presented a strong evidence of this association in their cohort. The increasing trend of cigarette smoking - TB association in our region led to the present study with the objective to determine the active cigarette smoking as a contributory factor for pulmonary TB.

## MATERIAL & METHODS

This cross sectional study was conducted in Mayo Hospital, Lahore from July to October 2018. A structured questionnaire was used. The study participants were 65 confirmed cases of pulmonary TB (diagnosed by Gene Xpert) having age >15 years, and of both the genders. The participants were explained regarding study protocol and their consent was obtained. The study participants were interviewed according to the questionnaire, which included age, gender, educational and socioeconomic status, contact with active case of TB and history of active cigarette smoking. (An active smoker was defined as a person who currently smoked at least one cigarette a day.<sup>7</sup>)

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Data were entered in SPSS 20 and was presented as frequency tables. Chi square was applied to determine the smoking as contributory factor for pulmonary TB. P value of <0.05 was considered as significant.

## RESULTS

Table 1: Demography and active cigarette smoking in TB cases (n=65)

Variable	Active Cigarette smoking		Total (n%)	P value
	Yes(n%)	No(n%)		
<b>Age (years)</b>				
16-30	7(10.8)	3(4.6)	10(15.4)	0.033
31-45	6(9.2)	22(33.8)	28(43.1)	
46-60	6(9.2)	16(24.6)	22(33.8)	
>60	1(1.5)	4(6.2)	5(7.7)	
<b>Gender</b>				
Male	18(27.7)	18(27.7)	36 (55.4)	0.000
Female	2(3.1)	27(41.5)	29 (44.6)	
<b>Education</b>				
Illiterate	3 (4.6)	0 (0)	3(4.6)	0.068
Primary	13(20)	35(53.8)	48(73.8)	
Middle	3(4.6)	7(10.8)	10(15.4)	
Higher secondary	1(1.5)	3(4.6)	4(6.2)	
<b>Socioeconomic status</b>				
Lower	17(26.2)	44(67.7)	61(93.8)	0.048
Middle	3(4.6)	1(1.5)	4(6.2)	
<b>Contact with active TB patient</b>				
Yes	9(13.8)	16(24.6)	25(38.5)	0.47
No	11(16.9)	29(44.6)	40(61.5)	
Total	20(30.8)	45(69.2)	65 (100)	

Present study had 65 diagnosed adults of TB. Most of the cases (43.1%) were between 31-45 years of age. Among 65, 55.4% were male and 44.6% were female. Most of the cases (73.8%) were having primary school education, 93.8% cases belonged to low socioeconomic status, and 38.5% cases had history of contact with active TB patient. Among 65, 20(30.8%) were active cigarette smoker. This

active cigarette smoking was statistically significant contributor for TB with increasing age (p value 0.033), male gender (p value 0.000) and lower socioeconomic status (p value 0.048). However, it was not statistically significant for educational status (p value 0.068) and active contact with TB (p value 0.47) (Table 1).

## DISCUSSION

Present study had 65 adult cases of pulmonary TB. As demonstrated in our study, active cigarette smoking was contributory factor for development of pulmonary TB. Common associated factors related to smoking in our study were increasing age, male gender and low socioeconomic status. Smoking has been associated with TB in several studies<sup>3,5,8</sup>. Tabassum et al<sup>3</sup> from Pakistan observed smoking as significant factor not only for pulmonary TB but also for multi-drug resistant TB. Rao et al<sup>9</sup> from India also found that smoking increases the incidence of clinical TB. Bates et al<sup>10</sup> in their meta-analysis also produced evidence that smoking is a risk factor for TB infection and TB disease. The results from local and regional authors are comparable to our study. However, differences may be due to smaller sample size and lack of control group in our study.

We have found active cigarette smoking is significant contributory factor for development of pulmonary TB. Therefore, TB control policies should in the future incorporate tobacco control as a preventive intervention. Present study has certain limitations. This study had small sample size, was hospital-based and single centered. The study population was diagnosed cases of pulmonary TB. Therefore, the results from this study may not be generalized. Further cohort studies are recommended to ascertain the multiple risk factors for development of pulmonary TB.

## CONCLUSION

We found from present study that active cigarette smoking is significant contributory factor for development of pulmonary TB.

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**Conflict of interest:** None

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