

Frequency of Current Smokers and Ex-Smokers among Patients of Pulmonary Tuberculosis

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ABSTRACT

Objective: To document and investigate the frequency of current smokers and ex-smokers among patients of pulmonary tuberculosis.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Pulmonology, Nishtar hospital, Multan from November 2016 to April 2017.

Materials and Methods: A total number of 151 (100%) patients were enrolled in the study. SPSS version 23 was used to analyze patient's data, Mean and standard deviation was calculated for quantitative data and frequency (percentages) was calculated for qualitative data like gender and smoking status. Chi square test was applied to see effect modification, p value ≤ 0.05 was considered as significant.

Results: A total number of 100% (n=151) patients were diagnosed with pulmonary tuberculosis included in this study. The main outcome variable of this study was smoking status (current smoker or ex-smoker). Out of 100% (n=151) patients, in our study, it was observed that 62.9% (n=95) were current smokers and 37.1% (n= 56) were ex-smokers.

Conclusion: Smoking has strong correlation with pulmonary tuberculosis and pretreatment positive smear. Smokers had more than a 5-fold increased risk of a pretreatment positive smear than non-smokers which is significant number, indicating markable effects of smoking on the risk of TB transmission.

Key Words: Pulmonary TB, Current smokers, Ex-smokers, Positive smear

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INTRODUCTION

Pulmonary tuberculosis caused by mycobacterium tuberculosis¹. Round about 1.3 billion people are smoking cigarettes and other tobacco products in present. Among these a big strength about 250 million are women^{2,3}. Many industrialized countries were shifted from developed to developing countries due to use of tobacco and high frequency of pulmonary tuberculosis. This number of TB patients increasing with the passage of time. According to survey mortality rate of pulmonary tuberculosis was 1.7 in 1985 than 3 million in 1990 and it is expected that it may be 8.5 million in 2020⁴. WHO declared tuberculosis as a emergency in third world countries where its ratio increasing more rapidly.

poverty, malnutrition, overcrowding and homelessness⁵. It is a point of concern worldwide that with all hazards smoking accepted as a social trend in

low economic countries main risk factors of TB are community. Both smoking and tuberculosis due to smoking are major hazards to humanities well being and work up for its management is the main health concern worldwide⁶. In our state many government and non government organizations are working for the prevention of smoking and to reduce its contribution in pulmonary TB.

Small number of studies concluded that smoking is a risk factor of tuberculosis and in these studies it is also concluded that association of smoking with TB is dose dependent (number of cigarettes smoked per day)⁷. In a recent study it is reported that TB is mostly diagnosed in male subjects due to high smoking rate because of greater exposure to smoking environment, contact with already smokers and community acquired factors⁸. Pradeepkumar AS et al⁹ conducted a study on Smoking among tuberculosis patients in Kerala, India: proactive cessation efforts are urgently needed. Results of the study were, six months prior to diagnosis, 94.4% of male TB patients were ever smokers and 71.2% were current smokers. Although 87% of patients had quit smoking soon after diagnosis, 36% had relapsed by 6 months post treatment¹⁰.

Aim of our study is to evaluate the association between smokers (ex smokers and current smokers) and tuberculosis, so that magnitude of impact of smoking on tuberculosis can be calculated and study will be helpful reference for further research in south region.

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MATERIALS AND METHODS

This cross sectional study was conducted in the department of pulmonology, Nishtar hospital, Multan from November 2016 to April 2017. After approval from institutional committee of hospital study was started. Informed consent was obtained from the patients. A total number of 151 (100%) patients were enrolled in the study. Sample size was calculated with openepi.com using following values Percentage of previous study (P1)87 %,Confidence interval 95%, and power of test 80%(9). Patients with pulmonary TB as per operational definition, age 25-60 years and both genders were included in the study. Patients with lung diseases other than pulmonary tuberculosis like. COPD, asthma and ILD were excluded from the study. Patient with following clinical signs will be consider for AFB smear, if smear will be positive for AFB patient will be labeled TB positive: history of cough more than three months, fever more than three months, weight loss and shortness of breath.Once registered, these study cases diagnosed to have pulmonary TB(as defined in operational definition) will be asked for their smoking history to diagnose history of before including patient’s data in research and they will be ensured about their confidentiality. Smoking status was investigated. After clinical examination Sputum sample sent to laboratory for AFB staining and results will be collected. All the data will be entered on the Performa for each patient. (Performa attached).

Data collected was entered and analyzed using computer software SPSS (v23). Mean and standard deviation was calculated for quantitative data and frequency (percentages) was calculated for qualitative data like gender and smoking status. Chi square test was applied to see effect modification. p value ≤ 0.05 was considered as significant.

RESULTS

A total number of 100% (n=151) patients were included in this study, both genders. Gender distribution showed that there were more males than females i.e. 60.9% (n=92) and 39.1% (n=59) respectively. The mean age and of the patients was 38.56 \pm 8.50 years, 23 \pm 2.13 BMI, respectively (table-1).

The main outcome variable of this study was smoking status (current smoker or ex-smoker). Out of 100% (n=151) patients, in our study, it was observed that 62.9% (n=95) were current smokers and 37.1% (n= 56) were ex-smokers (table-1).

When patients were grouped into different categories of age and BMI, it was noted that a majority of patients i.e. 62.9% (n=95) were aged from 36 to 60 years and 37.1% (n=56) were aged from 25 to 35 years.90.1% (n=136) patients were BMI from 21 to 25 and 9.9% (n=15) were BMI from 15-20 (table-2).

When Chi-Square was applied to check the effect modification, it was noted that gender and stratified age were significantly associated with smoking status (current or ex-smoker) with p-values 0.000, 0.000. Stratified BMI was not associated with smoking status (current or ex-smoker) with p-value 0.053 (table-3,4).

Table No.1: Demographic Variables and Smoking Status in pulmonary tuberculosis

Characteristics	Frequency	Percentage (%)
Male	92	60.9
Female	59	39.1
Total	151	100.0
Current Smoker	95	62.9
Ex-Smoker	56	37.1
Total	151	100.0
Variable	Mean	S.D
Age (in years)	38.56	8.50
BMI	23	2.13

Table No.2: Association of Smoking Status (current or ex-smoker) with gender. (n = 151)

Gender	Smoking Status		P-value
	Ex-smoker	Current smoker	
Male	56	36	0.000
Female	0	59	
Total	56	95	151

Table No.3: Association of Smoking Status (current or ex-smoker) with stratified age (n = 151)

Age of Patients	Smoking Status		P-value
	Ex-smoker	Current smoker	
25-35 years	45	11	0.000
36-60 years	11	84	
Total	56	95	151

Table No.4: Association of Smoking Status (current or ex-smoker) with Stratified BMI (n = 151)

Stratified BMI	Smoking Status		P-value
	Ex-smoker	Current smoker	
15-20 BMI	09	06	0.053
21-25 BMI	47	89	
Total	56	95	151

DISCUSSION

Pulmonary tuberculosis caused by From the results of our study it was found that smoking is strongly associated with lung parenchyma diseases, pulmonary TB, cavity lesions and less effectiveness of TB treatment regimens¹¹. Smoking is a strong indicator of positive smears before treatment even in diabetic patients¹². Although results are not consistent but association of smoking with pulmonary tuberculosis was reported in many studies such as in a study conducted by Leung et al it was reported that smokers are more prone to upper

zone involvement of lungs and positive culture of sputum¹³. Results of this study a similar to results of our study and it is a authenticating reference in favor of our conclusion.

A similar study was conducted by Altez Gomez et al¹⁴ on smokers and non-smokers to find out the ratio of pulmonary tuberculosis and reported that among smokers 35.8 % patients have cavity lesions and 66.2% were with positive smear. This rate of positive smear and cavity lesions among smoking patients was significantly higher than non-smokers in diagnosed tuberculosis patients. Wang et al¹⁵ conducted a study on 523 patients and concluded that ever smokers are more prone to have positive smears and cavitation than never smokers. But according to his results pretreatment positive smears were not significantly associated in both groups.

In another study Leung et al¹⁶ reported that in Hong Kong population lung diseases (lung cavity, positive sputum culture) are more likely associated with smokers (39.6% in ex-smokers, 29.2% in non-smokers and 37.7% in smokers). Results of this study again comparable with our study and this study also favors our study.

In 1994 Busking et al¹⁷ conducted a case control study between current, former smokers and Non smokers. He found that current and former smokers have 30-50% more risk of pulmonary tuberculosis than non-smokers. Among these persons who are smoking from last 20 years is 2-3% more risk of having pulmonary tuberculosis. Many studies in past decade were conducted on this topic and almost all claimed that smoking is a provoking cause of pulmonary TB and this ratio is increasing year by year. These findings are comparable with our results.

Findings of our study were also identical to the results of Atlet et al¹⁷ who investigate the correlation of smoking and tuberculosis in 2007. This study was conducted on 13038 and found that severity of disease was five times greater in smoking TB patients than non-smoking patients. Similar results of Rodgman A¹⁸, Murin et al¹⁹ and Mihalton et al²⁰ are also comparable with our results who reported a increase in TB incidence in smokers than non-smokers.

CONCLUSION

Smoking has strong correlation with pulmonary tuberculosis and pretreatment positive smear. Smokers had more than a 5-fold increased risk of a pretreatment positive smear than non-smokers which is significant number, indicating markable effects of smoking on the risk of TB transmission.

Author's Contribution:

Concept & Design of Study: Noor Akbar, Sara Saleem
Drafting: Noor Akbar, Nargis Noor
Data Analysis: Masood Alam

Revisiting Critically: Sara Saleem
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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