

## Smoking Patterns among Tuberculosis Patients: A study in a Medical College Hospital

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Tuberculosis is among the major causes of illness and death worldwide especially in Asia. Smoking is associated with recurrent tuberculosis and its related mortality. Also, it could affect clinical manifestations, bacteriological conversion and outcome of treatment. This study aimed to evaluate the pattern of tobacco smoking, history of previous quit attempts and attitude towards quitting in tuberculosis patients. It was a cross-sectional study done amongst tuberculosis patients coming to DOTS corner of Jahurul Islam Medical College Hospital. 630 patients were included in the study over the period of two years. Data was collected according to the standard questionnaires of smoking pattern. Sixty one percent (61%) patients (n=384) were smoker before the diagnosis of tuberculosis. 50.8% were current smokers at the time of interview and were continuing smoking after the diagnosis of tuberculosis. Only 10.2% discontinued smoking after diagnosis. 68.2% smokes less than 10 cigarettes per day. 53.1% was between 31-50 age group. 21-30 is the commonest age group (62%) to start smoking. To reduce stress was the most common cause to continue smoking (48.9%). 71.9% smokers showed keen interest to stop smoking. Considering the prevalence of smoking in tuberculosis patients, evaluation of tobacco smoking status in these groups of patients and motivating them to quit smoking could be considered as important steps in their treatment process.

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**Key words:** Tuberculosis, smoking pattern, DOTS-Directly Observed Therapy

### Introduction

**T**uberculosis is amongst the most common causes of morbidity and mortality in the world especially in Asia. In 2006, 9.2 million new tuberculosis cases and 1.7 million deaths due to tuberculosis were reported globally.<sup>1</sup> On the other hand, cigarette smoking is amongst the most preventable causes of mortality and the second cause of death worldwide. At present, smoking is the cause of one out of every 10 deaths that occur. According to the WHO estimates, the rate of morbidity and mortality due to tobacco consumption will reach 8

million by the year 2030.<sup>2</sup> However, the growing trend of tobacco consumption among adolescents and the youth has been worrisome.

A correlation between tobacco smoking and tuberculosis was suggested and confirmed by multiple studies and has become the center of attention during the recent years.<sup>3</sup> Current studies have highlighted several correlations between cigarette smoking and tuberculosis infection.<sup>4</sup> Tobacco consumption is directly correlated with recurrence and disability due to tuberculosis. Also, cigarette smoking

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impacts clinical manifestations, bacteriologic conversion and treatment outcome of disease.<sup>5</sup> In other words, one of every 5 deaths due to tuberculosis could have been prevented if the patient was not a smoker.<sup>6</sup> That is why tuberculosis patients should be a target of smoking cessation programs. Disease recurrence is one of the most important challenges encountered during the course of treatment in tuberculosis patients. Treatment compliance is another important factor for successful treatment of tuberculosis. Absence from work in smoker tuberculosis patients may be due to their nicotine addiction. So, By Collecting information regarding the pattern of tobacco smoking and prevalence of smoking, our knowledge can be enhanced in order to prevent and control cigarette smoking.

### Methods

This was a cross-sectional study conducted over a period of two years time from July 2014 to June 2016. All patients presented to the DOTS Corner of Jahurul Islam Medical College Hospital during this time period entered the study. Data were collected by trained technicians through face to face interview with patients. Only patients who were fully alert and conscious were included in the study after obtaining a written informed consent from them. Data regarding age of initiation of smoking, pattern of smoking, the first experience of cigarette offering, quit attempts and number of cigarettes they smoked per day was collected and entered the questionnaires.

### Statistical Analysis

Survey data were analyzed using the Statistical Package for Social Sciences (SPSS Inc, Chicago, IL, USA). The numbers of cigarettes smoked were numerically added together to obtain an aggregate score of the quantity smoked daily. Descriptive statistical

analyses were performed by using Microsoft Excell 2007 software.

### Results

Among the 630 tuberculosis patients coming to DOTS corner for taking drugs, 384 patients (61%) found as smoker before diagnosis of tuberculosis. Despite of diagnosis of tuberculosis almost half of the patients (50.8%) were continuing smoking. Only a few numbers of patients (10.2%) discontinued smoking after diagnosis of tuberculosis. 246 tuberculosis patients were found non smoker (Table I).

Table I: Current smokers among tuberculosis patients (n=630)

Current smoking status	Number	Percentage
Continuing smoking	320	50.8%
Discontinuing smoking	64	10.2%
Non smoker	246	39%
Total	630	100%

Among the 384 tuberculosis patients who were smoker before diagnosis of Tuberculosis, 68.2% (n=262) smoked less than 10 cigarettes per day. Other 21.4% smoked more than 10 cigarettes and 10.4% (n=40) smoked more than 20 cigarettes per day (Table II).

Table II: Distribution of smokers based on number of cigarettes smoked per day

Number of Cigarettes	Number of Patients	Percentage
<10	262	68.2%
10-20	82	21.4%
>20	40	10.4%
Total	384	100%

We found that, younger age group are the most vulnerable for smoking in tuberculosis. More than half (53.1%) were in the age group 31-50 years. Older age people (>50 years) had less smoking (10.9%) compared to younger age group (Table III).

Table III: Age wise distribution of number of smoker in tuberculosis

Age group	Number	Percentage
<30	138	36%
31-50	204	53.1%
>50	42	10.9%
Total	384	100%

Younger age groups are more prone to start smoking habit. 21-30 years age group were the commonest group to start smoking in tuberculosis patients. 28.1% started smoking before the age of 20. Only 14 tuberculosis started smoking after the age 40 (Table IV).

Table IV: Age distribution of smokers based on initiation of smoking

Starting Age Group	Number	Percentage
<20	108	28.1%
21-30	238	62%
31-40	24	6.3%
>40	14	3.6%
Total	384	100%

Among the 384 tuberculosis patients who were smoker before diagnosis of Tuberculosis, most of the patients smoked for a long period of time before diagnosis of tuberculosis. 66.1% smoked for at least 10 years. 118 patients smoked around 10-20 years. Only 12 patients smoked for more than 20 years (Table V).

Table V: Distribution of smokers based on number of years smoked

Years smoked	Number	Percentage
<10	254	66.1%
10-20	118	30.8%
>20	12	3.1%
Total	384	100%

This study also explored the reasons of continuing smoking after the diagnosis of tuberculosis. Patients said multiple reasons for the smoking. To reduce stress (48.9%)

were the commonest cause to continue smoking. 156 patients smoked only to get pleasure. People's influences, self confidence, enhance work performance were the other common causes (Table VI).

Table VI: Reason to continuing Smoking after tuberculosis diagnosis

Reasons	Number	Percentage
Reduce stress	188	48.9%
To get pleasure	156	40.6%
Peer pressure	108	28.1%
Self confidence	66	17.2%
Enhance work performance	62	16.1%

\*Allowed to answer multiple reasons

Among the tuberculosis patients who are smoker or continue smoking came to DOTS corner for taking drugs, a good number of patients (71.9%) showed interest to quit smoking after diagnosis of Tuberculosis. 66 (17.2%) patients showed good will to quit smoking in recent days. Only few patients (10.9%) showed no confidence to quit smoking (Table VII).

Table VII: Smokers future plan to quit smoking

Future plan to quit	Number	Percentage
Interest to quit	276	71.9%
Will attempt to quit	66	17.2%
Not confident	42	10.9%
Total	384	100%

## Discussion

Apart from HIV/AIDS, tobacco smoking is the only major cause of death that is increasing rapidly. It is estimated that smoking will cause about 10 million adult deaths from all causes in 2030 and most of the increased tobacco-related deaths will take place in Asia, Africa and South America.<sup>7</sup> Long term inhalation of tobacco smoke alters a wide range of immunological functions, resulting in significantly increased risk of heart disease, lung cancer, microbial

infections and delayed recovery from these diseases.<sup>8</sup> Though the underlying biological mechanism is unclear, strong associations between tobacco smoking and TB have been proved in several areas.<sup>5</sup>

Our study results revealed the fact that many of tuberculosis patients are active or occasional smokers. And they keep continuing smoking even after diagnosis of TB. In a study conducted by Gullón Blanco and colleagues on the impact of smoking on sputum smear of tuberculosis patients, 64% of patients were smokers.<sup>4</sup> In our study 70% of the patients are smoker and 50.8% of them continue smoking after diagnosis of TB under treatment. As a significant number of patients continue smoking, smoking cessation interventions by the medical staff implementing the DOTS seems necessary. In a study conducted in Indonesia it was shown that 72% of tuberculosis patients had tobacco consumption. By using smoking cessation interventions, this rate decreased to 11% at the time of next visit.<sup>6</sup>

The younger age group are the most vulnerable for smoking in tuberculosis in this study. 36% patients are less than 30 years age group with more than half (53.1%) are in the age group of 31-50 years. Younger age groups are more prone to start smoking habit. 21-30 years age group was the commonest group to start smoking in tuberculosis patients. This study also explored the reasons of continuing smoking after the diagnosis of tuberculosis. To reduce stress (48.9%) were the commonest cause to continue smoking. This stress factor may be the cause for starting smoking in the early age group patients as this group is more vulnerable for educational, personal and employment issues. It should be noticed that behavior of tobacco use is very difficult to change, even with medicinal aids for cessation. Only a small proportion of smokers stop smoking

successfully on their own.<sup>9</sup> In this study, the patients who are smoker or continue smoking came to DOTS corner for taking drugs, a good number of patients (71.9%) showed interest to quit smoking after diagnosis of Tuberculosis. 66 (17.2%) patients showed good will to quit smoking in recent days.

Considering the prevalence of tobacco consumption among tuberculosis patients, evaluation of the cigarette smoking status and encouraging them to quit play an important role in control and treatment of tuberculosis.<sup>10</sup> Adding behavioral studies and nicotine replacement therapies to the DOTS can result in faster recovery, shorter infectious period and prevent treatment failure.<sup>11</sup> Prevention of tobacco consumption and encouraging people to stop smoking can decrease the incidence of clinical cases of tuberculosis and related deaths.<sup>12</sup>

### *Conclusion*

Tuberculosis and tobacco smoking epidemics are continuing their growing trend in developing countries. In this respect, merging the two systems suggested by the WHO namely DOTS for tuberculosis and MPOWER<sup>2</sup> for tobacco control and enhancing each one by the other can be a great strategy for controlling these obstacles. By promoting smoking cessation in TB patients, we can increase patients compliance to treatment, improve their interpersonal and social communications, decrease their stress and control their risky behaviors.

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