

Socio-economic Status of Smokers Presenting to the Outpatient Service: Does Chronic Obstructive Pulmonary Disease Make A Difference?

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ABSTRACT

Background. Sparse published data are available on the impact of social and personal factors leading to tobacco smoking. Identification of social and economic motives underlying smoking can facilitate the efforts towards control of tobacco smoking.

Methods. A questionnaire was administered to 966 smokers attending the Chest Diseases Out-patient clinic at the Haseki Training and Research Hospital, Istanbul to collect demographic data from the participants. In all of them spirometry was performed.

Results. The participants with chronic obstructive pulmonary diseases (COPD) were less benefiting from social security system and they were less educated. Patients with COPD were generally living in cities. In this group the number of divorced patients were more than the other group.

Conclusions. There are many factors causing individuals to initiate smoking. By eliminating these factors, mortality and morbidity rates caused by smoking will decline dramatically. This study aims to draw attention on personal and social factors for smoking. [Indian J Chest Dis Allied Sci 2012;54:19-22]

Key words: Socio-economic status, COPD, Demographic characteristic, Smoker, Education.

INTRODUCTION

Smoking causes 90% of all lung cancer deaths in men and 80% of all lung cancer deaths in women.¹ The number of cigarette smoking individuals is gradually increasing among population, especially the women.²⁻⁴ It is important to define factors raising tendency to initiate smoking. This approach will enable to avoid the progression of important disorders associated with smoking.

Smoking affects several organs and systems mainly the heart and the lungs. Lung cancer and chronic obstructive pulmonary disease (COPD) are the most important diseases proven to be associated with cigarette smoking.^{2,5} COPD is a chronic and progressive inflammatory disease prevailed by environmental and subjective factors which continue to be an important cause of mortality and morbidity.^{6,7} The prevalence of COPD is reported variously in different age and occupational groups.^{5,8} This is mainly due to limited number of studies concerning socio-economic and demographic differences of patients, to unreliable

statistical figures and different criteria regarding diagnosis of COPD.^{9,10}

Since the prevalence of COPD is still increasing and it is one of the most important causes of mortality, we examined the demographic characteristics of smoker patients recruited from the out-patient clinic of chest diseases in Haseki Training and Research Hospital, Istanbul.

MATERIAL AND METHODS

Nine hundred and sixty-six smokers (733 males) with a history of smoking at least 10 packs per year were recruited from the Chest Diseases Out-patient Clinic at the Haseki Training and Research Hospital during the period 2004-2005. The protocol of the study was approved by the Local Ethics Committee of the hospital and all subjects had given their written informed consent. The patients then were invited to fill a questionnaire consisting of two pages. In the questionnaire, patients were asked about their demographic information (name, age, gender, occupation, marital status); smoking status (duration

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of smoking, pack/years); medical history regarding respiratory complaints; and socio-economic status (education, monthly income, the social insurance system they belong to and residential area).

The participants were excluded from the study if they had undergone thoracic, abdominal or eye surgery within the last three months, hospitalisation because of a cardiac problem, a gastrointestinal bleeding as well as obesity. Patients with active tuberculosis, pregnant women, patients with a neurologic or psychiatric disorder and those who were unable to co-operate were also excluded from the study.

Spirometry testing was performed by a well-trained clinical technologist using a Jaeger 4.0 device according to standardised guidelines. Following 6 to 8 times of forced expiration, best three readings with a difference of maximum 150mL were recorded and the highest one was accepted. The participants were asked to inhale 200µg of salbutamol according to pharmacist's instructions and to rest in a sitting position for 20 minutes after inhalation. Then the spirometry testing was repeated. All the tests were performed while the patients were sitting erect with a nose clip applied.

The subjects with forced expiratory volume in the first second (FEV₁) to forced vital capacity (FVC) ratio of 70% or less after bronchodilator administration were diagnosed to have with COPD according to Global Initiative for Obstructive Lung Disease (GOLD) criteria.¹⁰ The patients with and without COPD were compared according to demographic characteristics and spirometric parameters.

Subjects were analysed according to their monthly income and divided into three groups, namely, group 1: monthly income below 250€; group 2: monthly income between 250-500€; and group 3: monthly income above 500€. According to the residential area, they were categorised as living in a rural area or a city. As per their educational level, the subjects were divided into being either illiterate; finishing 5 years of school education or 8 years of school education, or being a graduate of high school or faculty. They were also categorised as per their marital status as single, married or widower.

Statistical analysis was performed using one-way analysis of variance (ANOVA), Chi-square tests. Independent groups were analysed using t-test and Pearson-Spearman correlation tests.

RESULTS

In patients with COPD (n=452) the number of males was significantly higher (390 *vs* 345) compared to non-COPD group (n=574). Patients with COPD were older (mean age 59.8±30.0 *vs* 49.7±13.0 years; p<0.001) and had a longer duration of smoking

(42.7±29.8 *vs* 31.7±51.9; p<0.001) in comparison with patients without COPD.

Comparison of spirometric values between patients with and without COPD is shown in table 1.

Table 1. Comparison of COPD and non-COPD groups regarding age, gender, duration of smoking and spirometric values

	Non-COPD Group (n=514)	COPD Group (n=452)	p-value
Age (years)	49.7±13.0	59.8±30.0	<0.001
Gender (Male)	n=345 (46%)	n=390 (53%)	<0.001
Cigarette smoking (pack years)	31.7±51.9	42.7±29.8	<0.001
FVC (L)	3.577±1.03	3.053±9.80	<0.001
FVC (%)	99.4±20.6	85.2±22.9	<0.001
FEV ₁ (L)	2.818±880	1.749±729	<0.001
FEV ₁ (%)	94.7±20.9	60.8±21.5	<0.001
FEV ₁ /FVC	80.3±41.1	55.9±9.5	<0.001
FEF ₂₅₋₇₅ (L)	5.351±1932	2.241±1305	<0.001
FEF _{25%-75%}	81.3±23.5	35.0±23.0	<0.001

COPD=Chronic obstructive pulmonary disease; FVC=Forced vital capacity; FEV₁=Forced expiratory volume in first second; FEF_{25%-75%}=Forced expiratory flow 25%-75%

There was a negative but statistically insignificant relationship between age and FVC (p=0.167), FEV₁ (%) (p=0.197), FEV₁/FVC (p=0.120), forced expiratory flow 25%-75% (FEF_{25%-75%}) (p=0.235); and between cigarette consumption and FVC (%) (p=0.140), FEV₁ (%) (p=0.165), FEV₁/FVC (p=0.084), FEF_{25%-75%} (p=0.167).

The relationship between smoking and education (p=0.230) and the relationship between COPD and social security status (p=0.845) were also statistically insignificant (Table 2). The educational status was lower in patients with COPD but this difference was not statistically significant (p=0.057) (Table 3). While monthly income of subjects without COPD was below 250€ per month, in COPD group the income was between 250-500€ per month. The difference was not statistically significant (p=0.09) (Table 4).

Table 2. Social security status and the residential area of subjects with and without COPD

	Non-COPD Group (n=514) No. (%)	COPD Group (n=452) No. (%)	p-value
Social security			
No	5 (1.1)	5 (1.1)	0.845
Yes	509 (98.9)	447 (98.9)	
Residential area			
Rural	115 (22.4)	91 (20.1)	0.431
City	399 (77.6)	361 (79.9)	

COPD=Chronic obstructive pulmonary disease

Table 3. Educational status of subjects with and without COPD

	Non-COPD Group (n=514) No. (%)	COPD Group (n=452) No. (%)	p-value
Illiterate	70 (13.6)	80 (17.7)	0.057
Finished 5 years of school education	166 (32.3)	163 (36.1)	
Finished 8 years of school education	126 (24.5)	110 (24.3)	
High school	116 (22.6)	74 (16.4)	
University	36 (7.0)	25 (5.5)	

COPD=Chronic obstructive pulmonary disease

There was no significant difference regarding place of domicile among patients with and without COPD ($p=0.431$) (Table 2). The number of widowers was higher in COPD group, whereas number of married patients was significantly higher in non-COPD group ($p<0.005$) (Table 4).

Table 4. Monthly income and marital status of subjects with and without COPD

	Non-COPD Group (n=514) No. (%)	COPD Group (n=452) No. (%)	p-value
Monthly income (€/month)			
≤250	305 (59.3%)	224 (49.6%)	0.09
250-500	151 (29.4%)	169 (37.4%)	
≥500	58 (11.3%)	59 (13.1%)	
Marital status			
Single	16 (0.1%)	2 (0.04%)	<0.005
Married	419 (81.5%)	317 (70.1%)	
Widower	79 (15.4%)	133 (29.4%)	

COPD=Chronic obstructive pulmonary disease

Logistic regression analysis showed significant associations between COPD risk and age, gender, and smoking status (Table 1).

DISCUSSION

Number of smoking individuals is gradually increasing.^{2,4,5} Compared with non-smokers, smoking is estimated to increase the risk of coronary heart disease by 2 to 4 times^{1,11} and stroke by 2 to 4 times.¹ Smoking is also estimated to increase the risk of developing lung cancer in men and women by 23 times and 13 times, respectively. Smoking also increases the risk of death from COPD by 12 to 13 times.¹ More deaths are caused each year by tobacco use than by all deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined.^{1,12}

Smoking is common especially among men in Turkey. In our study, number of males with COPD

were significantly higher. However, tobacco consumption is increasing among women. Even though men outnumber women in the work-force, presently, the percent of women working has steadily increased. This increase in consumption of tobacco may be partly due to gradually increasing number of women participating in the work-force. More women are choosing to continue working while also balancing the traditional parenting role. Overburdening heavy and stressful demands of routine life may explain the increase in smoking rate among women. Besides, in some regions of Turkey, smoking is an indicator of maturity among male population. We believe that all these factors are important in high smoking rates. While COPD rate in smoking population is 3.6% in Europe, it varies in different professional groups.^{2,4} We observed a COPD rate of above 40% among smokers in our study.

Life-style, economic and social conditions, rural and urban life have importance in the development of COPD and increase in hospital admission rates of patients with COPD.^{4,13-15} According to a research which has been carried out in China, the prevalence of COPD is high in people who live in rural areas, who have little education, and who have been exposed to biomass and environmental air pollution.¹⁶ In our study, education levels in COPD group were lower. While the number of individuals who earn less than 250€ per month in the group without COPD was high, the number of individuals in the COPD group with monthly income among 250-500€ was higher. This may be explained by the relatively higher monthly income which may possibly be spent more on cigarette.

Also researches made in Germany and Australia reveal the relationship between low education levels, rural and city life and lung functions. Inevitable exposure to industrialisation and environmental pollution in city life is associated with lung function disorders and COPD.^{4,13} In our study we could not demonstrate a relationship between COPD and domicile in a rural or city area. While smoking and exposure to environmental and technical pollution is a factor in COPD development in cities, smoking and exposure to indoor air pollution may be an indicator in rural areas.

Daily life-style and stress are also found to be related with lung functions.¹⁷⁻¹⁹ Family life is sacred and essential in Turkish society, so marriage is a very serious and important decision. On the other hand, lots of problems such as economic problems and personal quarrels causes serious stress in marriages. In our society like marriage, also getting divorced may also cause serious stress. We believe this social stress can create functional disorders. The number of married subjects in COPD group was significantly high in our study, but the number of widowers was significantly higher than non-COPD group.

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