International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

IJMRP

Original Research Article

Assessment of Demographic Details and Smoking Index in Chronic Obstructive Pulmonary Disease Patients and Correlation of Disease Severity with Smoking Profile

Kiranjit[1*], A.K. Janmeja[2], V. K. Saini[3], Husan Pal[4]

[1*]Associate Professor, Department of Pulmonary Medicine, GGS Medical College, Faridkot, Punjab, India.
[2]Professor and Head, [3]Professor, Department of Pulmonary Medicine,
Government Medical College and Hospital, Chandigarh, India.
[4]Junior Resident, Department of Medicine, Government Medical College and Hospital, Patiala, Punjab, India.

ABSTRACT

Background: People with COPD do not recognize that they have this condition and yet would benefit greatly from stopping smoking, it is crucial to identify the prevalence of undiagnosed COPD among smokers. Hence, the present study was undertaken to assess socioeconomic status and demographic details among smokers to identify the risk factors contributing to the prevalence of undiagnosed COPD.

Material and Methods: The present study was conducted among 400 smokers, active or ex with smoking index of 100 or more. At the outset, each case was subjected to detailed medical history including solving up of a pre-designed questionnaire on COPD, followed by general physical and systemic examination and laboratory investigations. The Chi-square Test was applied to find the statistical significance with p value of less than 0.05 was considered as statistically significant value.

Results: 135 subjects were of 40-50 years age , 113 of 60-70 years of age and 49 subjects of ≥ 70 years of age group. Maximum subjects were found in 40-50 years age group. Out of 400 subjects 283 (70%) were smoking bidi, 85(21%) cigarette, 10 (3%) hukkah, 22 (6%) were using more than one type of tobacco smoking devices. The subjects were classified according to their smoking index level into mild, moderate and heavy smoking categories. 41 (10.5%) belonged to mild category, 130 (32.5%) belonged to moderate category and 229 (57.5%) belong to heavy smoking category. A total of 225 (56%) subjects were ex-smokers and 175 (44%) are current smokers.

Conclusion: The chances of developing COPD increases with the increasing age. Relatively lesser subjects developed COPD in 4th decade of life; however prevalence increased with the 5th decade onwards. Mild and moderate smokers with lowering smoking index have lesser chances of developing COPD as compared with to heavy smokers with high smoking index.

Keywords: COPD; Smoking; Tobacco.

***Correspondence to:**

Dr. Kiranjit,
Associate Professor, Department of Pulmonary Medicine,
GGS Medical College, Faridkot, Punjab, India.

Article History:

Received: 09-04-2017, **Revised:** 02-05-2017, **Accepted:** 16-05-2017

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2017.3.3.054	

INTRODUCTION

Smoking affects several organs, mainly heart and lungs. Lung cancer and COPD are the most common diseases that affect the smokers.[1] Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality worldwide. It is projected to rank third among all causes of death by 2020.[2]

According to the 2013 updated Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines, COPD is defined as a common preventable and treatable disease, which is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. As the COPD progresses, patients experience a progressive deterioration and disability, which lead to worsening conditions in their health-related quality of life.[3,4]

People with COPD do not recognize that they have this condition and yet would benefit greatly from stopping smoking, it is crucial to identify the prevalence of undiagnosed COPD among smokers. Smoking cessation is the most effective means of appreciably reducing the rate of disease progression and minimizing acute exacerbations, but smokers need to be identified before they can be helped to stop.[5] Hence, the present study was undertaken to assess socioeconomic status and demographic details among smokers to identify the risk factors contributing to the prevalence of undiagnosed COPD.

MATERIALS AND METHODS

The present cross-sectional study was conducted among 400 smokers, active or ex with smoking index of 100 or more at Government Medical College Hospital, Chandigarh. The patients with history of smoking reporting to the hospital were randomly selected for the study. The study was conducted after obtaining ethical clearance from Ethics Committee of Government Medical College, Chandigarh and a written and verbal from subject prior to inducting him/her in the study. Acute exacerbation of COPD cases, patients with associated diseases viz. bronchiectasis, tuberculosis, pneumonia, chest deformity, neoplasia etc. and pregnant patients were excluded from the study.

At the outset, each case was subjected to detailed medical history including solving up of a pre-designed questionnaire on COPD, followed by general physical and systemic examination followed by following investigations:

a) Haemoglobin [Hb]
b) Total leukocytic count [TLC]
c) Differential leukocytic count [DLC]
d) Sputum for AFB by direct smear examination; thrice
e) Skiagram chest, postero- anterior view [CXR-PA View]
d) Electro cardiogram [ECG]
g) Spirometry
h) Bronchodilator reversibility testing; wherever applicable.

COPD was diagnosed based on an obstructive pre-bronchodilator spirometry (FEV1/FVC < 0.70) according to the GOLD guidelines. All confirmed COPD cases were further classified into stages according to the severity of obstruction as per GOLD guidelines. All patients were referred for further management including smoking cessation program. The Chi-square Test was applied to find the statistical significance with p value of less than 0.05 was considered as statistically significant value.

RESULTS

Table 1 shows that out of total 400 patients, 390 were male and 10 were female, out of them 135 subjects were of 40-50 years age, 113 of 60-70 years of age and 49 subjects of ≥ 70 years of age group. Maximum subjects were found in 40-50 years age group.

Table 1: Relation of COPD with Age and Gender

Age	COPD Cases n (%)	Non- COPD Subjects n (%)
40-50	7 (11.5%)	128 (37.8%)
50-60	19 (31.1%)	84 (24.8%)
60-70	28 (45.9%)	85 (25.1%)
>70	7 (11.5%)	42 (12.4%)
Total	**61**	**339**
P value=0.00023	**(Significant)**	
Sex		
Male	57 (93.4%)	332 (97.9%)
Female	4 (6.6%)	7 (2.1%)
Total	**61**	**339**
P value=0.12115	**(Non-significant)**	

Table 2: Relation of COPD with demographic location and occupation

Residential Area	COPD Cases n (%)	Non- COPD Subjects n (%)
Rural	12 (19.7%)	97 (28.6%)
Urban	49 (80.3%)	242 (71.4%)
Total	61	339
P value=0.19783	**(Non-significant)**	
Occupation		
Farmer	8 (13.1%)	55 (16.2%)
Laborer	15 (24.6%)	90 (26.5%)
Office Work	16 (26.2%)	60 (17.7%)
Business Man	6 (9.8%)	30 (8.9%)
Technical Skilled worker	2 (3.3%)	42 (12.4%)
Miscellaneous	14 (23.0%)	62 (18.3%)
Total	61	339
P value=0.22657	**(Non-significant)**	

Table 2 shows that out of 400 subjects, 293 belonged to urban area and 107 were from rural area. Out of 400 subjects 283 (70%) were smoking bidi, 85(21%) cigarette, 10 (3%) hukkah, 22 (6%) were using more than one type of tobacco smoking devices. The subjects were classified according to their smoking index level into mild, moderate and heavy smoking categories. 41(10.5%) belonged to mild category, 130 (32.5%) belonged to moderate category and 229 (57.5%) belong to heavy smoking category. A total of 225 (56%) subjects were ex-smokers and 175 (44%) are current smokers.

Out of 41 subjects having mild grade smoking index, 4 (9.7%) subjects were detected as COPD cases out of these 4 subject, 3(75%) were in stage I, 1(25%) was in stage IV. Out of 130 subjects having moderate grade smoking index, 17 subjects were detected as COPD cases out of these 17 subjects one was in stage I , 3 were in Stage II, 8 were in Stage III and 5 were in stage IV of 229 subjects having heavy grade smoking Index, 40 (17.5%) subjects were detected as COPD cases. Of these 40 subjects, 1 (2.5%) subject was in stage1 4(10%) were in stage II, 22 (55%) were in Stage III and 13 (32.5%) belong to stage IV COPD.

Table 3: Relationship of COPD with Smocking Index and type of Smoking Device

Smokers Index	COPD Cases n(%)	Non- COPD Subjects n(%)
Mild Smoker	4 (6.6%)	37 (10.9%)
Moderate Smoker	17 (27.7%)	113 (33.3%)
Heavy Smoker	40 (65.6%)	189 (55.8%)
Total	61	339
P value=0.05869	**(Non-significant)**	
Type of Smoking device		
Bidi	42 (68.9%)	241 (71.1%)
Cigarette	14 (23.0%)	71 (20.9%)
Hukkah`	0 (0%)	10 (3.0%)
Combination Above	5 (8.2%)	17 (5.0%)
Total	61	339
P value=0.40959	**(Non-significant)**	

Table 4: Relation of COPD with Smoking Status

Smoking Status	COPD Cases n(%)	Non- COPD Subjects n(%)
Ex-Smoker	32 (52.5%)	136 (40.1%)
Current Smoker	29 (47.5%)	203 (59.9%)
Total	61	339
P value=0.09753	**(Significant)**	

Table 5: Relationship Between stage of COPD with Smoking Index

Stage (GOLD)	Mild SI n(%)	Moderate SI n(%)	Heavy SI n(%)
At Risk	7	34	64
I	0 (0%)	1 (5.9%)	1 (2.5)%
II	0 (0%)	3 (17.6%)	4 (10%)
III	3 (75%)	8 (47%)	22 (55%)
IV	1 (25%)	5 (29.4%)	13 (32.5%)
Total COPD cases	4	17	40
P value=0.889865		**(Non-significant)**	

Table 6: Relation of Smoking status and stage of COPD

Stage (GOLD)	Ex-Smoker n(%)	Current Smoker n(%)
At Risk	50	55
I	2 (6.3%)	0 (0%)
II	5 (15.6%)	2 (6.9%)
III	12 (37.5%)	21 (72.4%)
IV	13 (40.6%)	6 (20.6%)
Total COPD cases	32	29
P value=0.05	**(Non-significant)**	

DISCUSSION

The chances of having COPD in smokers increases with the advancement of age. Though the chances of having COPD progressed up till 7th decade, significantly fewer cases were encountered in age group of ≥ 70 years there are equal chances of developing COPD in male and female smokers. IBERPOC multi center study[6] showed that individuals had a higher probability of having received a previous diagnosis of COPD if they lived in urban areas, were of male gender, were > 60 years old, had higher educational levels, had > 15 pack-year smoking history, or had symptoms of chronic bronchitis. In the present study, no significant association between urban and rural residential background was observed in development of COPD. Smokers from urban or rural development showed equal chances of developing COPD. We classified the subjects in 6 most common occupation groups each occupation group has equal chances of developing COPD. No significant relation between COPD and occupation was seen. There were chances of encountering COPD even in ex-smokers. In study by Isoaho et al,[7] the prevalence of COPD among ex-smokers was between current smokers and never smokers. In our study, the prevalence of COPD among ex-smokers was greater as compared to that in current smokers. We tried to explore this paradox and found that the majority of COPD, ex-smokers had quit their habit after reaching a very advanced stage the latter fact has been substantiated as 78.1% of the ex-smokers were found to be having stage III and IV COPD in our study. Also we found that by the time they left smoking, 63.4% had already achieved a very high smoking index i.e. 300 or more. We also observed that those patients who left smoking were belonging to much elderly age group than the current smokers. In study by Dickinson et al,[8] out of 9.9% COPD diagnosed cases, 60% were ex-smokers and 40% were current smokers. In our study, out of 15.2% of diagnosed COPD patients, 52.5% were ex-smokers and 47.5% were current smokers.

We had performed spirometric test in 400 smokers of age more than 40 years having smoking index more than 100. Out of 400 subjects, 389 (92.3%) were subjects, males and 11 (2.8%) were females. COPD was detected in 61 subjects comprising 93.4% males and 6.6% females. However, our national prevalence of COPD has been reported to be 2.7% in women and 5% in men. In IBERPOC multi centre epidemiological study,[6] conducted in seven areas of Spain, the prevalence in COPD in general population was found in 14.3% in men and 3.9% in women. Isoaho et al[7] also observed the prevalence of COPD was 12.5% in men and 3% in women in general population. In a study conducted by Zielinski MB,[9] subjects consisted of 57.3% male smokers and 42.7% female smokers.

The marked gender difference of prevalence in our study appears to some extent due to the fact that in our country prevalence of smoking is much lesser in females as compared to males.[10,11] The latter appears plausible reason for significantly low reporting of the female smoker subjects in our study as only 2.75% of the total subjects were female, the smoking amongst women is common in a few areas in our country.

In the present study, occurrence of COPD increases with smoking index and significant association was observed between two. The development of COPD is equal with bidi, cigarette, hukkah and combination of smoking types. In a study conducted by Zielinski MB,[9] the relation of smoking index and COPD prevalence of cases as well as relation of smoking index and stage of COPD (mild, moderate and severe obstruction) was established. They had compared subjects more than 40 years and with smoking index more than 10 pack year and less than 10 pack years. The statistically rising prevalence of COPD with increasing smoking index in our study make it clearly evident that there is a positive relationship between smoking index and prevalence of COPD (p=0.05869). The latter means that with continuous indulgence in smoking habit more and more people will develop COPD with the passing time. Hence, one must intervene at the earliest to interrupt the exposure to the offending cause responsible for the disease which is the tobacco smoking in this case. Therefore the study confirms that tobacco smoking cessation must be advised and attained to reduce emergence of newer COPD cases in future.

COPD is a major public health problem in subjects over 40 years of age and will remain a challenge for the future. It is a major cause of chronic morbidity and mortality worldwide and is projected to rank seventh in 2030 as a worldwide burden of disease. The rise in morbidity and mortality from COPD will be most dramatic in Asian and African countries over the next two decades, mostly as a result of a progressive increase in the prevalence of smoking. Even if risk factors were avoided today, the toll of COPD would continue for several decades because of the slow development of the disease. However, a recent critical analysis of methods to estimate projections of the burden of diseases, by using extrapolation or by using risk factors, has called attention to the difficulties in having a precise definition of global trends on COPD burden.[12] The Lung Health Study has shown that, with aggressive and prolonged intervention, smokers with mild to moderate COPD can be helped to stop and that this has a beneficial effect on lung function and mortality.[5]

CONCLUSION

The chances of developing COPD increases with the increasing age. Relatively lesser subjects developed COPD in 4th decade of life; however prevalence increased with the 5th decade onwards. Equal chances of developing COPD were observed in male and female smokers and also equal chances among rural and urban area. Mild and moderate smokers with lowering smoking index have lesser chances of developing COPD as compared with to heavy smokers with high smoking index. The development of COPD was equal with all types of smoking devices employed by the subjects i.e. bidi, cigarette, hukkah as well as combination of these.

REFERENCES

1. Cakmak G, Saglam ZA, Saler T, Yenigun M, Temiz U. Socio-economic Status of smokers presenting to the outpatient service: Does chronic obstructive pulmonary disease make a difference. The Indian Journal of Chest Diseases and Allied Sciences. 2012, 54; 19-22.

2. Mahmood T, Singh RK, Kant S, Shukla AD, Chandra A, Srivastava RK. Prevalence and etiological profile of chronic obstructive pulmonary disease in nonsmokers. Lung India : Official Organ of Indian Chest Society. 2017; 34(2):122-126.

3. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2013. Available at: http://www.goldcopd.org

4. Agrawal SR, Joshi R, Jain A. Correlation of severity of chronic obstructive pulmonary disease with health-related quality of life and six-minute walk test in a rural hospital of central India. Lung India: Official Organ of Indian Chest Society. 2015;32(3):233-240.
5. Shahab L, Jarvis MJ, Britton J, West R. Prevalence, diagnosis and relation to tobacco dependence of chronic obstructive pulmonary disease in a nationally representative population sample. Thorax. 2006 Dec 1;61(12):1043-7.
6. Pena VS, Miravitlles M, Gabriel R, Jimenez-Ruiz CA, Villasante C, Masa JF, Viejo JL, Fernandez-Fau L. Geographic variations in prevalence and underdiagnosis of COPD: results of the IBERPOC multicentre epidemiological study. Chest Journal. 2000 Oct 1;118(4):981-9.
7. Isoaho R, Puolijoki H, Huhti E, Kivelä SL, Laippala P, Tala E. Prevalence of chronic obstructive pulmonary disease in elderly Finns. Respiratory medicine. 1994 Sep 1;88(8):571-80.
8. Dickinson JA, Meaker M, Searle M, Ratcliffe G. Screening older patients for obstructive airways disease in a semi-rural practice. Thorax. 1999 Jun 1;54(6):501-5.
9. Zieliński J, Bednarek M. Know the Age of Your Lung Study Group. Early detection of COPD in a high-risk population using spirometric screening. CHEST Journal. 2001 Mar 1;119(3):731-6.
10. Jindal SK, Malik SK. Tobacco smoking and non-neoplastic respiratory diseases. Tobacco and Health: The Indian Scene. Bombay: Tata Memorial Centre. 1983;30.
11. Bhonsle RB, Murti PR, Gupta PC. Tobacco habits in India. Control of tobacco-related cancers & other diseases.1992:25-46.
12.http://www.who.int/gard/publications/chronic_respiratory_diseases.pdf [Accessed on 21 March 2017]

Source of Support: Nil. **Conflict of Interest:** None Declared.

Cite this article as: Kiranjit, A.K. Janmeja, V. K. Saini, Husan Pal. Assessment of Demographic Details and Smoking Index in Chronic Obstructive Pulmonary Disease Patients and Correlation of Disease Severity with Smoking Profile. Int J Med Res Prof. 2017; 3(3):276-80. DOI:10.21276/ijmrp.2017.3.3.054