EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 6
Issue: 6
321-325
Year: 2019

PROFILE OF COPD PATIENTS ATTENDING AT ACHARYA VINOBA BHAVE RURAL HOSPITAL

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Article Received on 09/04/2019 **Article Revised on 30/04/2019** **Article Accepted on 21/05/2019**

ABSTRACT

Introduction: The World Health Organization (WHO) has estimated that COPD prevalence in population above 40 years of age is 5%-10% which nearly accounts to 600 million people all over the world. In India, prevalence has been estimated to be 17 million, which causes mortality of around half a million people every year that makes the second largest number in the world after China. There are various factors affecting incidence and profile of COPD patients. This study was conducted in AVBRH Hospital to study the pfofile of COPD patients. **Aim:** To study the profile of patients of COPD patients. **Method and Material:** The main purpose of the study was to understand the profile of COPD patients. The study included 55 patients presented with signs and symptoms suggestive of COPD and diagnosed with spirometry according to GOLD guidelines. The data was recorded for the profile of the patients including age, gender, BMI, clinical presentation and history of exposure to various risk factors. **Results and Discussion:** The maximum incidence of COPD in this study was among the age group of 50-69 years with Male: Female ratio of 5.11: 1. More than half of the patients were underweight. 6 patients (10.91%) were having past h/o tuberculosis. 40 (72.7%) patients were found to have history of smoking and all were males. Among females h/o biomass exposure was 100%. **Conclusions:** Cigarette smoking is by far the most commonly encountered risk factor for COPD among males but biomass exposure is also potent risk factor for COPD specially in females who are usually non-smokers in indian rural society.

KEYWORDS: COPD, smoking, gender, breathelessness.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is one of the major causes of chronic morbidity and mortality around the globe. The World Health Organization (WHO) has estimated that COPD prevalence in population above 40 years of age is 5%-10% which nearly accounts to 600 million people all over the world. COPD prevalence vary among different countries. In India, it has been estimated to be 17 million, which causes mortality of around half a million people every year that makes the second largest number in the world after China.[1] COPD is the fourth leading cause of death in the world but is projected to be the 3rd leading cause by 2020. More than 3 million people died of COPD in 2012 accounting for 6% of total death globally.[2] Chronic respiratory diseases, 95% of which is COPD in Indian population, have been the second biggest cause of mortality among all the non-communicable diseases in India, second only to injuries.[3] COPD was found to be the leading cause of deaths in Maharashtra followed by coronary heart disease. Mortality due to COPD was found to be almost twice that of coronary heart disease.[3] The increase in COPD prevalence and mortality is due to continued exposure to risk factors, aging of population (as longevity increases more people will express the long term effects of exposure to risk factors of COPD), Genes like α-1 Antitrypsin deficiency, and environmental exposures that include occupational dust and chemicals; indoor and outdoor air pollution; infection; socio-economic status.[2] COPD is diagnosed by spirometry which basically measures expiratory flow limitation in COPD patients. COPD shows fixed expiratory airflow limitation due to increased airway resistance

MATERIALS AND METHODS

This study was done in the Department of Pulmonary Medicine, JNMC, Sawangi, Wardha, Maharastra (India) after taking clearance from institutional ethical committee. The study included 55 indoor patients (both males and females) more than 40 years of age who presented with signs and symptoms suggestive of COPD. The written consent of the patient was taken for his/her

enrollment in the study. The data recorded for the profile of the patients including personal data such as age, gender, BMI, clinical presentation and history of exposure to various risk factors i.e. smoking (figure 1), exposure to biomass fuel (figure 2). The identity of patients was kept as secret. Diagnosis of COPD was made on the basis of history, clinical presentation and by spirometry according to GOLD guidelines (i.e. FEV1/FVC < 0.70 and also classified according to GOLD criteria (Table 1).[2]

Table 1.

$FEV_1/FVC < 0.70$:(Based on Post-Bronchodilator FEV_1)		
GOLD 1:	Mild	$FEV_1 \geq 80\%$ predicted
GOLD 2:	Moderate	$50\% \leq FEV_1 \geq 80\%$ predicted
GOLD 3:	Severe	$30\% \leq FEV_1 \geq 50\%$ predicted
GOLD 4:	Very Severe	$FEV_1 < 30\%$ predicted

Figure 1 :- Smoking.

Figure 2: Use of biomass fuel for cooking in an village.

BMI has been calculated using the formula[4]
BMI = Weight in Kilograms / (Height in Meters X Height in Meters)
Then, according the value of BMI, the patients have been categorized into following categories[4]

1. <18.5 = Underweight
2. 18.5-24.99 = Normal
3. 25-29.99 = Overweight
4. > 30 = Obese.

RESULTS AND DISCUSSION

Diagnosis of COPD was made on the basis of history, clinical examination, radiological findings and post bronchodilator spirometry findings. According to GOLD criteria among 55 patients maximum number of patients i.e. 22(40.0%) presented in stage 3, 17(30.9%) presented in stage 2, 15(27.3%) presented in stage 4 and only 1(1.8%) patient presented in stage 1 of disease.

In the study, out of 55 patients 46 (83.64%) patients were males and 9 (16.36%) were females with Male: Female ratio of 5.11: 1. These results were comparable to the study conducted by Niranjan et al (2011) in which out of 50 cases included in the study 44 were males with male: female ratio of 7.33: 1.[5] These results were also very much comparable to the study conducted by Suma et al (2006) which showed male to female ratio of 5.25:1.[6] This higher incidence of COPD in males can be attributed to tobacco smoking habits.

The mean age of the study subjects was 60.01± 10.60 years, with range of 40-85 years. The maximum incidence of COPD in this study was among the age group of 50-69 years. The results of this study were comparable to the study conducted by Keller & Shepard et al (1986), Suma et al (2006) and Mohan et al (2006), in which the mean age of the study group was 59±7 years[7], 59.94±10.37 years[6] and 62.1±9.8 years[8] respectively. The higher incidence of COPD in age group 50-69 years may be attributed to age related decline in lung function and longer duration of tobacco exposure. Also, in the study conducted by Putnik (1998), the mean age of the 60 cases of COPD included in the study was 59.25 years comparable to the present study.[9]

Among the 55 cases included in this study, 30 (54.5%) were underweight, none of our COPD patient fell into the category of obese. Montes et al observed that compared to the non-COPD group, higher proportion of COPD subjects comes in the underweight category with a lower proportion in obese category.[10]

Diagnosis of COPD was made on the basis of history, clinical examination, radiological findings and post bronchodilator spirometry findings. In the history taking, patients were asked about the symptoms. Breathlessness was the main presenting symptom in majority of the cases in the present study. 53 (96.36%) cases presented with dyspnea. Cough was present in 46 patients (83.64%), expectoration was associated in 44(80%) cases. Fever was the presenting complain in 29 (52.73%) cases, chest pain in 26 (47.27%), loss of appetite & weight in 12 (21.82%), haemoptysis in 5 (9.09%) and palpitation in only 5 (9.09%) cases. As per GOLD guidelines, breathlessness, cough and expectoration are the cardinal symptoms of COPD and majority of the

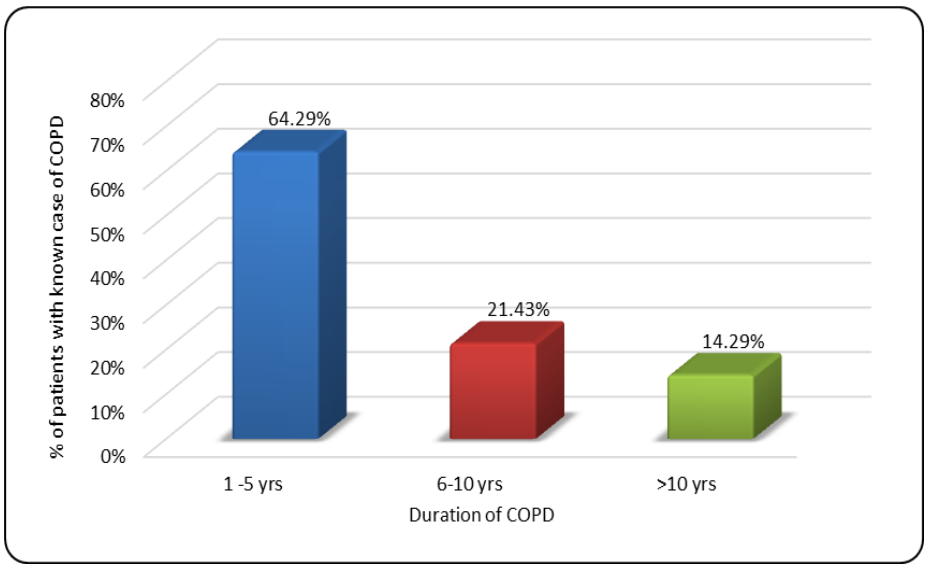
cases in the present study had these symptoms.[2] Study conducted by J.C. Banergae (1966) showed that breathlessness was present in 97.3% patients whereas cough was present in 92% patients which is comparable to our study.[124] In the research done by Mohan et al (2006), almost all cases included in their study had breathlessness and cough with expectoration on presentation.[8]

Patients were also asked about the history of any illness in the past. Among the cases included in the study, 28 (51%) had history of COPD and 6 (10.9%) cases had history of tuberculosis in the past. As per GOLD guidelines, in many developing countries like India, both pulmonary tuberculosis and COPD are common.[1] In the study conducted by Mohan A et al (2006), evidence of past pulmonary TB was present in 28.4% patients.[8]

The duration of symptoms suggestive of COPD in the 28 known cases of COPD included in the study was in the range of 1-30 years with mean of 6.92 years. Maximum number of patients i.e. 18 (64.29%) had disease of 1-5 years duration, and patients with more than 10 years of disease were only 4 (13.6%) patients while 6 (21.43%) patients had disease of 6-10 years duration (Table2)(Graph 1).This relation was statistically significant. The results of this study were comparable to the study of Suma KR (2006), in which the mean duration of symptoms was 5.71 ±4.98 years with range of 2to 20 years. Maximum number of patients (62%) had symptoms of 1-5 years of duration, and patients in more than 10 years of symptoms were only 10%.[6]

Table 2: Duration of COPD.

Duration of COPD	No of patients with H/O COPD	Percentage(%)
1 -5 yrs	18	64.29
6-10 yrs	6	21.43
>10 yrs	4	14.29
Total	28	100
χ2-value	66.30,p=0.0001,S	



Graph 1: Duration of COPD.

Among 28 previously diagnosed cases, majority of the patients i.e. 9 (32.14%) and 13 (46.43%) presented in stage 3 and 4 respectively. While 6 (21.43%) patients had stage 2 on presentation. This relation was statistically significant. As per the above results maximum patients who were diagnosed cases of COPD in the past, presented in stage 3 and 4 (Table 3) (Graph 2). This can be explained by the fact that, COPD being a progressive disease, the severity of the disease goes on increasing with each exacerbation of the disease.

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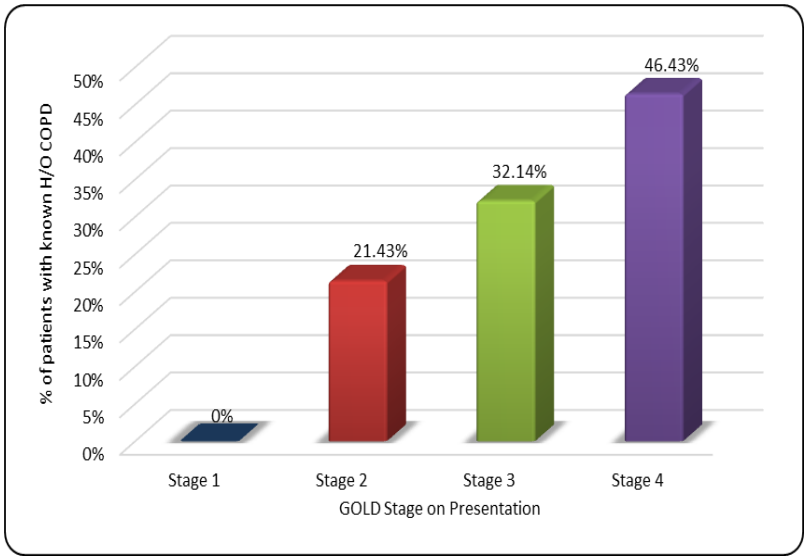
Table 3: GOLD Stage on presentation in known case of COPD.

Stage of presentation	No of patients with H/O COPD	Percentage(%)
Stage 1	0	0.00
Stage 2	6	21.43
Stage 3	9	32.14
Stage 4	13	46.43
Total	28	100
χ2-value	14.20,p=0.0002,S	



Graph 2: GOLD Stage on presentation in known case of COPD.

Patients were asked about the history of exposure to risk factors such as tobacco smoking and exposure to indoor pollution due to biomass fuel burning. 40 (72.7%) patients were smokers and all were males, which is comparable to study conducted by Suma et al (2006) which showed history of smoking in 30 (60%) patients out of 50 patients.[6] Out of 40 smoker patients, maximum number of cases i.e. 15 (37.50%) had history of tobacco exposure more than 40 pack years. 8 (20%) cases had history of tobacco use of 20-29 pack years, 7 (17.5%) had history of 10-19 pack years and 7 (17.5%) had 30-39 pack years history of tobacco use. Patients with less than 10 pack years of exposure were only 3 (7.5%). As per GOLD guidelines, the risk for COPD in smokers is dose-related.[2] In the present study, history of biomass fuel burning was found to be present in 9 (16.36%) cases and all were females and who are non-smokers. This is comparable to the study conducted by Mathew et al (2015) which shows that biomass fuel exposure is the most common etiology among non-smokers females.[11] In India, cooking is predominantly carried out by using wood and cow dung. In the study by Mishra et al (1990), it was observed that the female population had exposure to kitchen - smoke due to cooking with wood, cow dung and coal.[12] In a New Guinea household pollution, due to heating and cooking within a small space was responsible for COPD commonly in women than men.[13] In a study by Behera and Jindal (1996) respiratory symptoms in India were reported in 13 % of 3608 non-smoking women involved in domestic cooking.[14] In a study conducted by Gunen et al (2008), biomass exposure was found to be the sole reason for COPD and was significantly common among female patients living in rural areas (54.5%).[15] A study from Jindal et al (2006) showed that the exposure to solid fuel combustion is also shown to be an additive risk factor along with environmental tobacco smoke exposure in causing COPD. Hence domestic environmental factors may be of great importance in the etiology of COPD.[16]

CONCLUSION

In the present study, it can be concluded that COPD is a progressive disease whose prevalence increases with advancing of age. It showed a male predominance and common among smokers and history of biomass fuel exposure is a predominant risk factor for COPD in females. Past history of pulmonary tuberculosis is a major risk factor for development of COPD. Breathlessness is most common symptoms in COPD patients followed by cough and expectoration.

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