ORIGINAL RESEARCH PAPER

Pulmonary Medicine

PREVALENCE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND ASSOCIATED RISK FACTORS

KEY WORDS: COPD, Smoking, Risk factors, Spirometry, Cough, Prevalence

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ABSTRACT

Introduction- Chronic obstructive pulmonary disease (COPD) is one of the most prevalent diseases. A worldwide study of COPD prevalence from sites in 12 different countries found an overall prevalence of 10.1%. However, most patients with COPD remain undiagnosed in the community. **Aim and Objective -** A study, to assess the prevalence of COPD with the associated risk factors. **Methods-** A population-based cross-sectional descriptive study was conducted in department of Pulmonary medicine, Shivpuri Medical College. Most of the participants in our study were farmers and laborers by occupation. The sample size was 1032 participants aged more than 40 years. **Results-** 250 underwent post-bronchodilator spirometry. Mean±SD age of the study population was 52.19±14.45 years. 405 of the respondents were either previous or current smokers.

Most common respiratory infection was cough (561 cases) followed by phlegm (136 cases). **Conclusions-** High burden of COPD can be seen in cases. The study depicts major challenges in the diagnosis and treatment of patients with COPD, largely due to a lack of disease awareness together with a shortage of expertise and diagnostic tools

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is one of the most prevalent diseases.[1] Overall prevalence was found to be 10.1% in different countries.[2] While, most patients with COPD remain undiagnosed in the community. Furthermore, the prevalence of COPD is projected to increase over the coming decades as a result of continued exposure to risk factors, coupled with the fact that more people are now living to the age at which COPD normally develops.[3] In 2002, the World Health Organization Global Burden of Disease Project estimated that COPD will be the third leading cause of death worldwide by 2020.[4]

The chronic and progressive course of COPD is often aggravated by exacerbations and sudden worsening of symptoms, particularly cough, dyspnoea and production of sputum, which can become purulent. Most exacerbations are produced by bronchial infections, and they are the most common cause of medical visits, hospital admissions and death among patients with chronic lung disease.[5] Frequent exacerbations worsen health status and may cause permanent decline in lung function.[6,7] Chronic cough and sputum production has been suggested as a risk factor for COPD exacerbations and progression of the disease.[8,9,10] In the current study, prevalence of COPD was assessed with the associated risk factors.

METHODS

A population-based cross-sectional descriptive study was conducted in department of Pulmonary medicine, Shivpuri Medical College. COPD was assessed in all patients of age more than 40 years selected randomly. All individuals with any other severe respiratory illness and having any contraindication to performing spirometry were excluded from the study. A questionnaire was given to all eligible participants who consented to participate in the study. In addition, participants underwent spirometry testing. The study was approved by the Institutional ethics committee. The participants of the study were selected from households in nearby area of medical college, total 948 households were covered, with total participants in the study 1058. All these households were visited and questionnaire was filled up with spirometry done next day in hospital for making proper diagnosis. 26 participants refused to be part of study and had not given consent.

So the sample size was 1032 participants (798 males and 234 females) aged more than 40 years.

Data was collected from information about respiratory symptoms, exposure to potential risk factors, occupation, respiratory diagnoses, comorbidities, healthcare checkup and medication use. Smoking status was categorised as not smoker, previous smoker and current smoker. A previous smoker was defined as a person who quit smoking more than 3 months ago. All consenting participants were evaluated for airflow limitation with spirometry, which was repeated 15–20 min after inhalation of 200 g of salbutamol administered via a spacer. The spirometry measurements used for analysis included Forced Vital Capacity (FVC), forced expiratory volume in 1 s (FEV1) and total expiratory time. In addition, all basic demographic data and personal particulars were collected together with information on clinical severity and control of COPD. The diagnosis of COPD was based on the presence of airflow limitation that was not fully reversible, based on post-bronchodilator FEV1/FVC <70%, with or without the presence of symptoms. Exacerbations were defined as episodes where the individual had to be admitted to a hospital for medical care in the past 12 months. We also measured blood pressure, pulse rate and carried out standard anthropometry measurements.

Statistical analysis was done using SPSS Statistics (IBM, Armonk, NY, USA). software. The collected data were initially entered on questionnaires and lateron analysed.

RESULTS

1032 participants were in the study, 798 were males and 234 were females. Of all respondents, 250 underwent post-bronchodilator spirometry. Mean±SD age of the study population was 52.19±14.45 years. 405 of the respondents were either previous or current smokers. Study was conducted among most of the laborer or farmer population.

Table 1- Demographic Variables

Gender	Number	Percent %
Male	798	77.3%
Female	234	22.7%
Age in years	Number	Percent %
40 to 50	501	48.5%
51 to 60	353	34.2%
More than 60	178	17.3%

Table 2- Distribution According To Risk Factors And Respiratory Infections

BMI	Number	Percent
Underweight	253	24.5%
Normal	310	30%
Overweight	402	38.9%
Obese	67	6.6%
Smoking status	Number	Percent
Never	627	60.7%
Previous	193	18.7%
Current	212	20.6%
Respiratory symptoms	Number	Percent
Cough	561	48.6%
Phlegm	136	11.8%
Wheeze	261	22.6%
Shortness of breath	194	17%
Total	1152	100%

Most common respiratory infection was cough (561 cases) followed by phlegm (136 cases)

None of the study participants had a previous diagnosis of COPD. COPD was reported using post-bronchodilator FEV1/FVC <70. COPD was diagnosed in 156 participants (15.1%). It was shown that males were more affected than females. COPD patients were found to have more symptoms of wheeze and shortness of breath than those who have mild COPD based on spirometry.

Those individuals without airflow obstruction on spirometry were also found to have substantial levels of respiratory symptoms, which could be explained by the high exposure of smoke in the study population.

Table 3- Prevalence And Distribution Of COPD

COPD	Number	Percent
Mild	107	68.5%
Moderate	40	25.6%
Severe	7	4.4%
Very severe	2	1.5%

DISCUSSION

Globally, tobacco smoking is recognized as the major risk factor for developing COPD [11,12]. Intriguingly, COPD was noted in a relatively older population together with females who do not smoke had lesser risks, thus highlighting the role of risk factors other than smoking. Our study showed the prevalence of COPD to be 15.1%.

Air pollution and use of biomass fuel in poorly ventilated households are well-recognized additional risk factors [13,14,15]. In our study, 250 of respondents presented for spirometry.

A global survey by LANDIS et al. [16] showed a lower COPD prevalence of 7–12% in a panel of 12 countries. From these findings it is tempting to conclude, that the prevalence of COPD is higher than in developed countries, also is in accordance with the prevalence reported from other parts.

The prevalence of COPD exhibited increased trends with age and male sex in our study, similar to other previous studies [16]. Also similar to previous studies, cigarette smoking was an important risk factor for COPD [17,18]. The fact that 44.7% of responders were smokers could partly explain the observed predominance of COPD in males.

In the current study, cough was the major presenting respiratory symptom. In addition, a substantial proportion of females with COPD presented with dyspnoea or shortness of breath and increased frequency of exacerbations, probably indicating severity of disease and a considerably poor quality of life. Dyspnoea has been shown to be a better predictor of survival than airway limitation [19]. The influence of gender on the progression of COPD remains unknown; however, it has been reported recently that females exposed to household smoke while cooking and other activities exhibit increased bronchial hyper-responsiveness [20].

CONCLUSIONS

There is high burden of COPD in cases of our study. There are major challenges in the diagnosis and treatment of patients with COPD, due to a lack of disease awareness together with a shortage of expertise and diagnostic tools. So it is required to make a plan for the prevention and control of COPD specifically in the rural areas. The intervention should include cigarette smoking cessation programmes, and awareness of rural population about the disease. Empowerment of health facilities with skills and capacity for the diagnosis and management of COPD is also need of time.

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