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Study on the Demographical Profile of Chronic Obstructive Pulmonary Disease in Central India, New Delhi

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Abstract
Background: *The Global Initiative for Chronic Obstructive Lung Disease (GOLD) defines chronic obstructive pulmonary disease (COPD) as "a disease state characterized by airflow limitation that is not fully reversible. Due to progressive airflow limitation, the patients become increasingly symptomatic leading to worsening in their health-related quality of life (HRQOL). Therefore we undertook the present study is to examine associations between COPD and four measures of HRQOL using Saint George Respiratory Questionnaire (SJRQ) in hospital-based COPD patients without co-morbid conditions.*
Method
Sample: *One hundred twenty consecutive stable COPD patients (diagnosed as per GOLD guidelines) , >40 years of age, without any co-morbid conditions (diabetes, congestive heart failure, coronary artery disease, hypertension) were recruited in this study after intuitional ethical clearance and informed consents. A proper history and demographic details and routine clinical examination were recorded.*
Tools: *The health-related quality of life (HRQOL) was assessed using Hindi SGRQ-C. Forced expiratory volume in first one second (FEV1), forced vital capacity (FVC) and FEV1/FVC% and reversibility were measured using Spirolab III (Medical International Research USA, Inc.).*
Statistical analysis: *The descriptive analysis was done in the data treatment with the SPSS version 20.*
Result: *The mean age of the COPD patients was (mean±SD) 53.38±8.0 (range 45-83) years. Most of the patients (93.30%) were current or past heavy smokers. Most of these patients were concentrated in GOLD stage 3(36.7%) and stage 4(40.8%). Age, BMI, pack years and GOLD staging were not significantly associated with HRQOL.*
Conclusion: *Indian patients with COPD show significantly reduced HRQOL as measured by disease specific questionnaire SGRQ, similar to COPD patients in other countries. In our study, only FEV1 % predicted was significantly correlated with HRQOL, all other measures including GOLD staging were not significantly associated with HRQOL*
Keyword: *pulmonary obstructive.*

Introduction

Chronic obstructive pulmonary disease (COPD) is the most common chronic lung disease in the world and is a major cause of morbidity and mortality worldwide[16]. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) defines chronic obstructive pulmonary disease (COPD) as "a disease state characterized by airflow limitation that is not fully reversible''. Diagnosis of COPD should be considered in any patient who has symptoms of cough, sputum production, or dyspnea, and/or a history of exposure to risk factors for the disease. The presence of a post bronchodilator forced expiratory volume in one second (FEV1) < 80% of the predicted value in combination with an FEV1/FVC < 70% confirms the presence of airflow limitation that is not fully reversible[7].

The prevalence of COPD in India according to the Indian study on epidemiology of asthma, respiratory symptoms and chronic bronchitis in adults I and II (INSEARCH I and II) study was 3.67% (4.46 and 2.86% among males and females, respectively) [9]. With the increasing prevalence of smoking in developing countries, it is projected that COPD-related mortality and morbidity will dramatically impact Asian and African countries[2]. As the condition progresses, patients with COPD experience a progressive deterioration and disability, which lead to a worsening in their health-related quality of life (HRQOL). However, it has been confirmed that the evaluation alone of the severity of COPD, measured by the degree of reduction of the FEV1, does not provide sufficient information to establish the health condition perceived by the patients. The interest for HRQOL measurement in patients with COPD has grown in recent years. HRQOL encompasses the physical, functional, emotional, and social well-being of the patient[1]. The HRQOL can be quantified through various health evaluation questionnaires, both general and specific, widely validated[12]. The former covers a broad range of dimensions, enable the comparison between groups of patients with different diseases, and

facilitate the detection of problems or unexpected effects[5].

It is generally agreed that improving the health of subjects is an important goal of a therapeutic intervention in COPD[11]. It is also widely accepted that medical interventions should aim to improve not only objective clinical outcomes, but also patient-reported outcomes such as HRQOL[3].

Objective

To investigated that demographical profile of chronic obstructive pulmonary disease suffering patients.

Materials and Methods

Sample

One hundred twenty consecutive stable COPD patients (diagnosed as per GOLD guidelines), without any co-morbid conditions (diabetes, congestive heart failure, coronary artery disease, hypertension) were recruited in this study after intuitional ethical clearance and informed consents.

Inclusion Criteria

This study will include confirmed cases of COPD who have been

a. without any episode of acute exacerbation for past 2 months,
b. >40 years of age,
c. Current and past smokers and nonsmokers.

Exclusion Criteria

a. Patient who are in acute exacerbation during investigation,
b. Patients of asthma,
c. Patients with any other comorbid condition(Diabetes, Congestive heart failure, Coronary artery disease, Hypertension)
d. Patients having other respiratory diseases like bronchiectasis, tuberculosis.

Sampling process

One hundred twenty patients of confirmed cases of stable COPD (Diagnosed as per GOLD guidelines), aged >40 years and undergoing

treatment at the Chest Clinic and Medicine Outpatient Department of the Lok Nayak Hospital, were included in the study. Patients with any other comorbid condition (Diabetes, Congestive heart failure, Coronary artery disease, Hypertension), with any other respiratory disease (Asthma, Bronchiectasis, Past tuberculosis) and patients with acute exacerbation during study or with any episode of acute exacerbation for past two months were excluded from the study. Informed consent was taken from all the participants. These patients were completed history taking and physical examination on deportment of medicine. Particulars of the patients such as name, age, sex, and pack years of smoking were noted in a pre-structured Performa. Routine hematological and biochemical investigations, X-ray chest PA view and an ECG were carried out for all patients.

Spirometer was performed using Spiro lab III (Medical International Research USA, Inc.). Pre- and post-bronchodilator (salbutamol 400 mcg) maneuvers were done by qualified respiratory therapists following American Thoracic Society standards[6]. COPD was documented by airflow obstruction showing forced expiratory volume in 1 second (FEV1)/forced vital capacity (FVC),70% and less than 200 cc increases in FEV1 post bronchodilator. Disease severity was classified according to GOLD criteria.

Tools

The HRQOL was assessed using SGRQ-C. The SGRQ has been used extensively for assessing QOL in patients with COPD and several other chronic lung diseases[8, 15]. It is sensitive, valid, reliable and responsive among patients with COPD. It contains 50 items with 76 weighted responses that cover three domains: symptoms – distress due to respiratory symptoms, activity – disturbances of physical activity and impact– overall impact on daily life and well-being. In addition to the domain scores, there is also a total score. This questionnaire which was forward and back translated in Hindi language was administered to each participant. The instrument is designed to elicit a patient's own opinion about his/her health. Patients were requested to complete the questionnaire themselves without assistance, as correctly and as completely as they could, and missing data was recorded as such. Scores are expressed as a percentage of overall impairment where 100 represent the worst possible health status and 0 indicates the best possible health status. An Excel- based scoring calculator system was used in all patients, to calculate the symptoms, activity, impact, and total score.

Statistical Analysis

Statistical analysis was done using 'SPSS version 20'. We presented the descriptive data for the continuous variable as mean ± SD and for the categorical variable as frequency and percentage. The Pearson's correlation coefficient (r) was used to assess the relationships between SGRQ scores, FEV1% predicted and other variables. A P-value of < 0.05 was considered to be statistically significant.

Results

Demographic characteristics of the study population are shown in table 1. Total 120 patients were recruited in the study. Mean age of the patients was 58.38±8.0 with range from 45 to 83 years. Mean BMI of the patients was 20.09±4.24 with range from 12.5 to 37.3 and mean pack years were 31.88±22.04. Majority of the patients 113(94.2%) were males, 112(93.3%) were smoker (ex-smoker and current smoker) and 89.17% had history of bidi smoking. Out of 120 patients 71(59 %) patients were illiterate and 89(74 %) patients were unemployed.

Table 1- Demographic characteristics of COPD patients included in study (n=120)

Category	Subcategory	Mean ±SD (range) or N (%)
Age (years)		58.38±8.0 (45-83)
BMI (kg/m2)		20.09±4.24 (12.5-37.3)
Sex	Male	113 (94.2%)
	Female	7(5.8%)
Smoking history	Pack Years	31.88±22.04 (5-165)
	Current	22(18.3%)
	Ex-smoker	90(75.0%)
	Non-smoker	8(6.7%)
	Bidi Smokers	107(89.17%)
	Cigarette Smokers	3(2.5%)
	Biomass fuel exposed	5(4.12%)
	Hookah Smokers	2(1.67%)
Locality	Rural	68(56.7%)
	Urban	52(43.3%)
Education	Illiterate	71(59.16%)
	Primary and middle school	19(15.83%)
	High school	15(12.5%)
	Higher secondary school	12(10%)
	Graduate	5(4.5%)
Occupation	Unemployed	89(74.2%)
	Labourer	11(9.2%)
	Shop keeper	3(2.5%)
	Tailor	4(3.3%)
	Teacher	2(1.7%)
	Salesman	3(2.5%)
	Rickshaw driver	3(2.5%)
	Farmer	1(0.8%)
	Other	4(3.33%)
Total		120(100%)

Disease severity (as measured by GOLD guidelines), HRQOL and Lung function parameters is shown in table-2. Maximum number of the patients were in stage 4(40.8%) and 3(36.7%), while stage 1 had only 1(0.8%) cases.

Discussion

The present study was showed that 120 Indian patients with COPD had significantly impaired. In previously reported studies, older age, lesser BMI, severity of GOLD staging and greater smoking consumption resulted in lower HRQOL[14,13,4,10]. It may result from small sample size, or it may be related to a unique aspect of the Indian culture regarding aging and age expectations, appreciation for education, or social structure. This is an area that warrants further study.

This study has some limitations. It was a hospital based survey and as such, the participants included in the study may be skewed towards the very sick patients. Patients often do not access health care in low resource settings until their clinical condition becomes very severe because of the cost of care. This potentially limits the ability to generalize the results of this study to all COPD patients. Also, Majority of the patients in our study were males, therefore any generalization of our results to women with COPD could not be done. We did not include patients with comorbidities in our study, which is very important predictor of HRQOL in COPD patients. Finally, Most of the patients were illiterate in our study, patients required help from investigator to complete the SGRQ form, which might affect the results.

Conclusion

This study showed some important implications for the care of COPD in low-income settings. Spirometry remains a core investigative modality in the management of COPD however it should be complemented with measures of quality of life.

Indian patients with COPD show significantly reduced HRQOL as measured by disease specific questionnaire SGRQ, similar to COPD patients in other countries. Future long term prospective studies, with larger number of patients, are needed to validate the results of the present study.

Conflict of interest- author are declare that no conflict of interest

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