Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 02, 2023

Study risk factors, clinical profile of bronchitis and emphysema in a tertiary care center

Bharat Anil Toshniwal[1], Chetan Bhagwat Chaudhari[2], Gunavant Narayan Mahajan[3]

[1]Associate Professor, Department of Respiratory Medicine, Dr Ulhas Patil Medical College & Hospital, Jalgaon, Maharashtra, India.
[2]Associate Professor, Department of Respiratory Medicine, Dr Ulhas Patil Medical College & Hospital, Jalgaon, Maharashtra, India.
[3]Assistant Professor, Department of Respiratory Medicine, Dr Ulhas Patil Medical College & Hospital, Jalgaon, Maharashtra, India.

Received Date: 10/10/2022 Acceptance Date: 04/01/2023

Abstract

Background: Chronic obstructive pulmonary disease (COPD) affects 210 million people worldwide and kills > 4 million people every year, accounting for around 9% of total deaths. Ninety percent of these deaths occur in low- and middle-income countries. It is projected to be the 3rd leading cause of death by 2030. Its chronic nature causes disruption of normal social roles, reduced workability, and poses massive burden on direct and indirect costs. According to the World Health Organization report, the prevalence of COPD ranges between 4% and 20% in the Indian adults. **Aim & Objective:** 1 Study risk factors, clinical profile of bronchitis and emphysema 2. Study the Association of chronic bronchitis and emphysema with various factors **Methods: Study design:** Prospective Observational Study. **Study setting:** Medicine ward tertiary care centre. **Study duration:** 2 years. **Study population:** The study population included all the cases with chronic bronchitis, emphysema admitted at a tertiary care center. **Sample size:** 200 **Results:** majority of study participants belongs to the age group of 51-60 years e.g 67 cases (33.50%) followed by 41-50 years 54 (27%), 48 (24%) cases found in 31-40 years age group and 31 (15.50%) cases was found in 18-30 years age group. majority of study participants were males contributing 138 (69%) and Females 62 (31%). majority of cases associated with HTN 61 (30.50%) followed by Asthma 47 (23.50%), 28 cases found no associated comorbidity, 27 cases had a history of DM, Anxiety found in 12 (6%) and Rhinitis found in 17 (8.50%). There is statistically highly significant association between age and Chronic Bronchitis. There is statistically significant association between Emphysema with gender. **Conclusions:** High prevalence of COPD was found in males. Majority of cases found with Chronic Bronchitis. There is statistically highly significant association between age and Chronic Bronchitis. There is statistically significant association between Emphysema with gender

Keywords: Chronic bronchitis, emphysema**,** Burden of Obstructive Lung Disease, spirometry, FEV1/FVC ratio

Corresponding Author: Dr. Chetan Bhagwat Chaudhari, Associate Professor, Department of Respiratory Medicine, Dr Ulhas Patil Medical College & Hospital, Jalgaon, Maharashtra, India.

Introduction

Chronic obstructive pulmonary disease (COPD) affects 210 million people worldwide and kills > 4 million people every year, accounting for around 9% of total deaths. Ninety percent of these deaths occur in low- and middle-income countries. It is projected to be the 3rd leading cause of death by 2030.[1] Its chronic nature causes disruption of normal social roles, reduced workability, and poses massive burden on direct and indirect costs.[2]

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 02, 2023

Different definitions used for COPD in epidemiological studies preclude getting a reliable prevalence estimate. Traditionally, in community-based studies, chronic bronchitis (CB) is used as a proxy to measure COPD owing to its relative ease of diagnosis. CB is defined as cough with expectoration occurring on most days for at least 3 months in a year for at least 2 consecutive years whereas, COPD is defined as this plus spirometric evidence of airway obstruction.[3]

According to the World Health Organization report, the prevalence of COPD ranges between 4% and 20% in the Indian adults.[1] According to a recent systematic review[4] which includes estimates from the INSEARCH and other major studies in India, the prevalence of CB seems to range between 6.5% and 7.7% in rural and up to 9.9% in urban India. The review also mentions that the included studies were mostly low quality, questionnaire-based and was conducted around 1990–2006.

These figures may underestimate the true burden of COPD since questionnaire-based prevalence estimates tend to be lower than the true spirometry-based estimates.[5] This review provides the best available estimate of COPD prevalence till date but is unlikely to reflect the current disease burden across all Indian subpopulations.[4,6]

As the current prevalence of COPD in India is unclear, rigorous estimates are required using standard epidemiological methods, to develop optimal strategies for disease control.

Aim And Objective

Objective:

1 Study risk factors, clinical profile of bronchitis and emphysema

2. Study the Association of chronic bronchitis and emphysema with various risk factors

Material And Methods

Study design: A cross sectional study

Study setting: Medicine ward tertiary care centre

Study population: The study population included all the cases with chronic bronchitis and emphysema cases admitted at a tertiary care center

Inclusion Criteria

1. Patients diagnosed to have chronic bronchitis, emphysema
2. Adult patients more than 18 years of age

Exclusion Criteria

1. All the patients <18 and more than 60 years of age
2. All patients not willing to participate in the study
3. Patients who do not undergo radiological investigations

Approval for the study

Written approval from Institutional Ethics committee was obtained beforehand. Written approval of Medicine and Related department was obtained. After obtaining informed verbal consent from all patients with the definitive diagnosis of COPD admitted to Medicine ward of tertiary care centre such cases were included in the study.

Sample Size Calculation: With reference to study by **Sinha B et al (2017)[15]** He found that the Prevalence of Smoker among COPD cases was 38%

Formula for sample size = 4* P* Q / L2

Where P = 38%

Q = 100 -38 = 62

L = Allowable error = 20% (Absolute error)

Sample size = 4 * 38 * 62 / 57.76 =163.15

Sample size Rounded to = 200

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 02, 2023

Sampling technique: Convenient sampling technique used for data collection. All patients admitted in the Medicine department of tertiary care center with COPD were included in the study.

Methods of Data Collection and Questionnaire

Predesigned and pretested questionnaire was used to record the necessary information. Questionnaires included general information, such as age, sex, religion, occupation of parents, residential address, and date of admission. Medical history- chief complain, past history, general examination, systemic examination

Data on demographic profile, Radiological profile of chronic bronchitis and emphysema patients, investigation, personal history, medical past history, treatment modalities, and clinical outcome data collected from patients admitted in medicine ward.

Data entry and analysis

The data were entered in Microsoft Excel and data analysis was done by using SPSS demo version no 21 for windows. The analysis was performed by using percentages in frequency tables and correlation of chronic bronchitis, emphysema. $p<0.05$ was considered as level of significance using the Chi-square test

Results And Observations

The present cross-sectional study was done among 200 cases of chronic bronchitis and emphysema admitted to tertiary care centre during study period.

Table 1: Distribution of cases according to Age (N=200)

Age	Frequency	Percentage
18-30	31	15.50%
31-40	48	24%
41- 50	54	27%
51-60	67	33.50%
Total	**200**	**200 (100%)**

Above table shows that Distribution of cases according to Age (N=200) majority of study participants belongs to the age group of 51-60 years e.g 67 cases (33.50%) followed by 41-50 years 54 (27%), 48 (24%) cases found in 31-40 years age group and 31 (15.50%) cases was found in 18-30 years age group.

Table 2: Distribution of cases according to Gender (N=200)

Gender	Frequency	Percentage
Male	**138**	**69%**
Female	**62**	**31%**
Total	**200**	**200 (100%)**

Above table shows that Distribution of cases according to Gender (N=200) majority of study participants were males contributing 138 (69%) and Females 62 (31%)

Table 3: Distribution of cases according to associated Comorbidity (N=200)

Associated Comorbidity	Frequency	Percentage
HTN	61	30.50%
DM	27	13.50%
Asthma	47	23.50%
Rhinitis	17	8.50%
Depression	8	4%
Anxiety	12	6%
Not associated with comorbidity	28	14%
Total	**200**	**200 (100%)**

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 02, 2023

The above table shows Distribution of cases according to associated Comorbidity (N=200) majority of cases associated with HTN 61 (30.50%) followed by Asthma 47 (23.50%), 28 cases found no associated comorbidity, 27 cases had a history of DM, Anxiety found in 12 (6%) and Rhinitis found in 17 (8.50%)

Table 4: Association of cases with age

Age in years	**Chronic Bronchitis**				
	Present	**Percentage**	**Absent**	**Percentage**	**Total**
18-30	15	48.38%	16	51.62%	31(28.57%)
31-40	20	41.66%	28	58.33%	48(26.42%)
41-50	34	62.96%	20	37.03%	54(33.58%)
51-60	48	71.64%	19	28.35%	67(11.43%)
Total	**117**	**58.50**	**83**	**41.50**	**140(100%)**

Chi square-10.8396, p-value-0.000994, (Row 1,2 vs Row 3 and 4 Merged)
The result is highly significant at $p < .05$.
Inference: There is statistically highly significant association between age and Chronic Bronchitis.

Table 5: Association of Emphysema cases with gender

Gender	**Emphysema cases**				
	Present	**Percentage**	**Absent**	**Percentage**	**Total**
Male	31	22.46%	107	77.54%	138(69%)
Female	52	83.87%	10	16.13%	62(31%)
Total	**83**	**41.50%**	**117**	**58.50%**	**200 (100%)**

Chi-square statistic-66.447, df-1, p-value-0.00001
The result is significant at $p < .05$.
Inference: There is statistically significant association between Emphysema with gender

Discussion

Present cross-sectional study was done among 200 cases of chronic bronchitis and emphysema admitted to tertiary care centre during study period

Table No. 1: Distribution of cases according to Age (N=200) majority of study participants belongs to the age group of 51-60 years e.g 67 cases (33.50%) followed by 41-50 years 54 (27%), 48 (24%) cases found in 31-40 years age group and 31 (15.50%) cases was found in 18-30 years age group. similar result found in the study conducted by Dickinson JA et al (1999).[7] Lange P et al (1989).[8] Isoaho R et al (1994)[9] Another study conducted by Sinha B et al (2017)[10] Similar result reported.

Table No. 2: Distribution of cases according to Gender (N=200) majority of study participants were males contributing 138 (69%) and Females 62 (31%). Similar result observed in the study by Peña VS et al (2000)[11] He reported high prevalence of male than female. Similar result observed in the study conducted by Sinha B et al (2017)[10] Another study reported similar result conducted by Al Ghobain M et al (2015)[12] He observed that the High prevalence of male among COPD cases. Contrast result found in the study by Ntritsos G et al (2018)[13] He observed that the high incidence of COPD in female.

Table No. 3: Distribution of cases according to associated Comorbidity (N=200)

Majority of cases associated with HTN 61 (30.50%) followed by Asthma 47 (23.50%), 28 cases found no associated comorbidity, 27 cases had a history of DM, Anxiety found in 12 (6%) and Rhinitis found in 17 (8.50%). Similar result reported by Viegi G et al (2007)[14]

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 02, 2023

Table no.4: Association of cases with age. There is statistically highly significant association between age and Chronic Bronchitis. Similar result observed in the study conducted by Al Ghobain M et al (2015)[12]. Another study reported similar result Ntritsos G et al (2018)[13]
Table no. 5: Association of Emphysema cases with gender. There is statistically significant association between Emphysema with gender. Similar result found in the study by Sinha B et al (2017)[14] Another study reported Similar result by Al Ghobain M et al (2015)[12]

Conclusions

majority of study participants belongs to the age group of 51-60 years High prevalence of COPD was found in males. Majority of cases found with Chronic Bronchitis. There is statistically highly significant association between age and Chronic Bronchitis. There is statistically significant association between Emphysema with gender

References

1. World Health Organization. Global Surveillance, Prevention and Control of Chronic Respiratory Diseases: A Comprehensive Approach. Geneva, Switzerland: World Health Organization; 2007. [Google Scholar]
2. Johnson JL, Campbell AC, Bowers M, Nichol AM. Understanding the social consequences of chronic obstructive pulmonary disease: The effects of stigma and gender. Proc Am Thorac Soc. 2007;4:680–2. [PubMed] [Google Scholar]
3. Global Initiative for Chronic Obstructive Lung Disease. Global Strategy for Diagnosis, Management and Prevention of Chronic Obstructive Pulmonary Disease. Updated. 2015. [Last accessed on 2016 Aug 30]. Available from: http://www.goldcopd.it/materiale/2015/GOLD_Report_2015.pdf .
4. McKay AJ, Mahesh PA, Fordham JZ, Majeed A. Prevalence of COPD in India: A systematic review. Prim Care Respir J. 2012;21:313–21. [PMC free article] [PubMed] [Google Scholar]
5. European Respiratory Society/European Lung Foundation. European Lung White Book. The First Comprehensive Survey on Respiratory Health in Europe. Loddenkemper R, Gibson GJ, Sibille Y, eds. Sheffield, ERSJ, 2003.
6. Niu SR, Yang GH, Chen ZM, et al. Emerging tobacco hazards in China: 2. Early mortality results from a prospective study. BMJ 1998; 317: 1423–1424.
7. Dickinson JA, Meaker M, Searle M, Ratcliffe G. Screening older patients for obstructive airways disease in a semi-rural practice. Thorax 1999;54:501-5.
8. Lange P, Groth S, Nyboe J, Appleyard M, Mortensen J, Jensen G, et al. Chronic obstructive lung disease in Copenhagen: Cross-sectional epidemiological aspects. J Intern Med 1989;226:25-32.
9. Isoaho R, Puolijoki H, Huhti E, Kivelä SL, Laippala P, Tala E. Prevalence of chronic obstructive pulmonary disease in elderly Finns. Respir Med 1994;88:571-80.
10. Sinha B; Vibha, Singla R, Chowdhury R. An epidemiological profile of chronic obstructive pulmonary disease: A community-based study in Delhi. J Postgrad Med. 2017 Jan-Mar;63(1):29-35. doi: 10.4103/0022-3859.194200. PMID: 27853040; PMCID: PMC5394814.
11. Peña VS, Miravitlles M, Gabriel R, Jiménez- Ruiz CA, Villasante C, Masa JF, et al. Geographic variations in prevalence and underdiagnosis of COPD: Results of the IBERPOC multicentre epidemiological study. Chest 2000;118:981-9
12. Al Ghobain M, Alhamad EH, Alorainy HS, Al Kassimi F, Lababidi H, Al-Hajjaj MS. The prevalence of chronic obstructive pulmonary disease in Riyadh, Saudi Arabia: a BOLD study. Int J Tuberc Lung Dis. 2015 Oct;19(10):1252-7. doi: 10.5588/ijtld.14.0939. PMID: 26459542.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 02, 2023

13. Ntritsos G, Franek J, Belbasis L, Christou MA, Markozannes G, Altman P, Fogel R, Sayre T, Ntzani EE, Evangelou E. Gender-specific estimates of COPD prevalence: a systematic review and meta-analysis. Int J Chron Obstruct Pulmon Dis. 2018 May 10;13:1507-1514. doi: 10.2147/COPD.S146390. PMID: 29785100; PMCID: PMC5953270.
14. Viegi G, Pistelli F, Sherrill DL, et al. Definition, epidemiology and natural history of COPD. Eur Respir J 2007; 30: 993–1013.
15. Sinha B; Vibha, Singla R, Chowdhury R. An epidemiological profile of chronic obstructive pulmonary disease: A community-based study in Delhi. J Postgrad Med. 2017 Jan-Mar;63(1):29-35. doi: 10.4103/0022-3859.194200. PMID: 27853040; PMCID: PMC5394814.