



ANALYSIS AND INTERPRETATION OF SPIROMETRY OF PATIENTS ATTENDING RESPIRATORY MEDICINE OPD IN A TERTIARY CARE CENTER: A RETROSPECTIVE STUDY

Medicine

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ABSTRACT

OBJECTIVE: To study the various spirometry findings and look for its association with smoking history and use of biomass fuels.

METHODS: Spirometry findings of 375 patients who attend Respiratory medicine OPD from year 2017-2019 were studied.

RESULTS: Out of 375 patients, 95 patients were diagnosed as COPD, 62 as bronchial asthma, 149 had normal spirometry and 69 had restriction.

CONCLUSION: In this study we concluded that spirometry plays an integral role in the diagnosis of bronchial asthma, COPD and restrictive lung diseases. It gives an overview of the decline of lung function with increasing age, smokers, occupational lung exposures, family history of bronchial asthma. Restrictive patterns were most commonly seen in patients who came for pre operative evaluation.

KEYWORDS

INTRODUCTION:

Spirometry testing plays an important role in the diagnosis and management of Chronic Obstructive Pulmonary Disease (COPD) and bronchial asthma¹⁻³

It is the term given to the basic lung function tests that measure the air that is expired and inspired. There are three basic related measurements: volume, time and flow. Spirometry is objective, noninvasive, sensitive to early change and reproducible⁴

Spirometry enables measuring the effect of a disease on lung function, assessing airway responsiveness, monitoring disease course or the result of therapeutic interventions, assessing preoperative risk, and determining a prognosis for many pulmonary conditions. It is a valuable tool that provides important information to clinicians which is used together with other physical findings, symptoms, and history to reach a diagnosis.⁵

Indications for performing PFT⁶

- Patient presenting symptoms like cough, breathlessness, wheeze,
- Abnormal chest radiograph.
- Monitoring patient with known pulmonary disease for progression and response to treatment e.g. interstitial fibrosis, COPD, asthma etc
- Medical fitness for surgery.

Contraindications to performing PFT⁶

- Myocardial infarction,
- Unstable angina,
- Recent thoraco-abdominal surgery,
- Recent ophthalmic surgery,
- Current pneumothorax

Interpretation of spirometry⁷

METHODOLOGY:

This is a retrospective study conducted at MGM Medical college and hospital, Aurangabad. The study will use data collected from 375

patients who visited OPD for various respiratory symptoms, pre operative evaluation and routine medical check up.

Poorly performed spirometry was excluded from the study.

Diagnosis of COPD and bronchial asthma was done on the basis of GOLD and GINA guidelines respectively.

OBJECTIVES:

- Evaluate the association between current smokers and spirometry values.
- Evaluate the association between ex- smokers and spirometry values.
- Evaluate the association between non smokers and spirometric findings.
- See the association between exposure to biomass fuels and spirometry findings.



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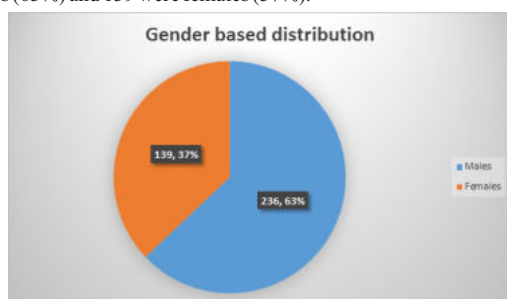
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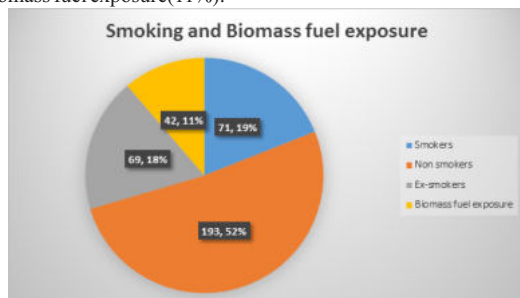
RESULTS:

It was noted that out of the 375 patients selected for the study, 236 were males (63%) and 139 were females (37%).

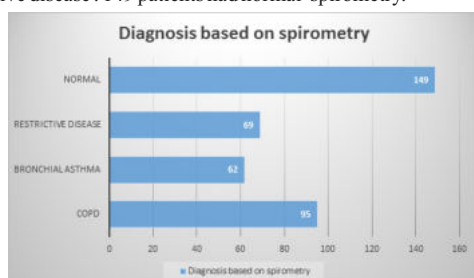
**Age wise distribution of patients:**

Age in years	Less than 18	18-25	26-35	36-45	46-55	56-65	66-75	More than 75
Number of patients	7	24	49	45	103	71	69	7

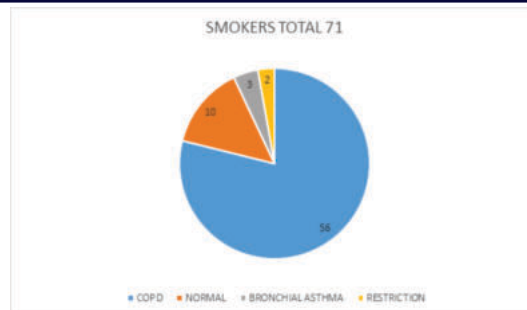
Out of the 375 patients, 71 patients were smokers (19%), 193 were non smokers (52%), 69 were ex-smokers (18%) and 42 patients had history of biomass fuel exposure (11%).



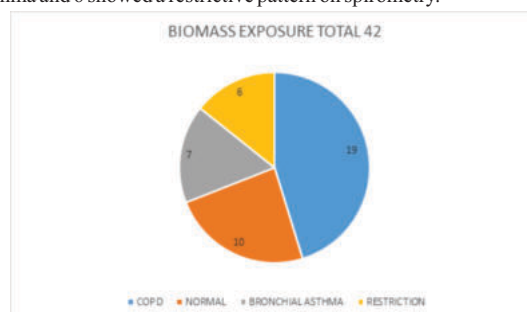
Based on the FEV1/FVC, FEV1, FVC values and the post bronchodilator reversibility- 95 patients were diagnosed as Chronic Obstructive Pulmonary Disease, 62 as Bronchial Asthma, 69 as restrictive disease. 149 patients had normal spirometry.



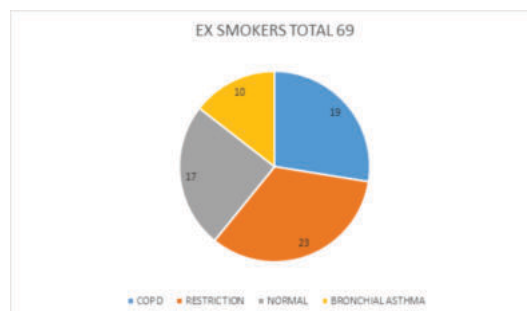
Out of the 71 smokers, 56 had COPD, 10 had normal spirometry, 3 showed features suggestive of bronchial asthma and 2 had restrictive pattern on PFT.



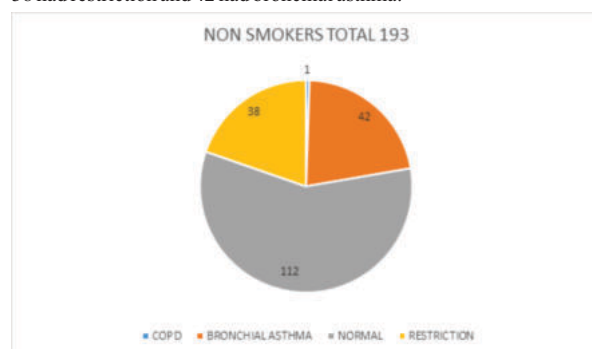
Out of the 42 patients who had history of biomass exposure, a total of 19 developed COPD, 10 had normal spirometry, 7 had bronchial asthma and 6 showed a restrictive pattern on spirometry.



Out of the 69 ex smokers, 19 developed COPD, 23 showed restriction, 17 had normal spirometry while 10 had bronchial asthma.



Out of the 193 non smokers, 1 had COPD, 112 had normal spirometry, 38 had restriction and 42 had bronchial asthma.

**SUMMARY**

	COPD	BRONCHIAL ASTHMA	NORMAL	RESTRICTIVE	TOTAL
SMOKER	56	3	10	2	71
NON SMOKER	1	42	112	38	193
EX SMOKE	19	10	17	23	69
BIOMASS EXPOSURE	19	7	10	6	42
TOTAL	95	62	149	69	375

DISCUSSION:

With the growing number of patients attending OPD with chronic

cough and breathlessness is increasing and hence the diagnosis and treatment of conditions like chronic obstructive pulmonary disease and bronchial asthma should be easily made.

Spirometry plays an important role in determining the lung function of patients. It was noted in the study that age, sex, smoking history and environmental smoke exposure play an important role in determining the lung function.

It was noted that an increase in age causes decline in lung function.

Smoking is strongly associated with decline in lung function and the development of chronic obstructive pulmonary disease.

Smokers are more likely to develop Chronic obstructive pulmonary disease as compared to non smokers. Similarly exposure to biomass fuels is also strongly associated with the development of chronic obstructive pulmonary diseases. Non smokers showed almost no incidence of COPD. Ex smokers are also at higher risk of developing COPD.

Other factors like a family history of bronchial asthma or other concomitant diseases like Ischaemic heart disease, pelvic disorders, etc. reflected changes in the spirometry of these patients. Occupational exposures also plays an important role and showed a decline in lung function of healthy young individuals.

A normal spirometry was mainly observed in young, healthy, non smokers and patients who came to OPD with complaints of cough. Smokers and ex smokers also showed a normal spirometry but there was clear evidence that these individuals had a very short smoking history.

CONCLUSION:

Through this study we conclude that Spirometry can be used for diagnosing COPD, bronchial asthma as well as restrictive lung diseases. We can guide therapies based on the spirometry findings and it can also be used as an excellent tool to monitor patients on therapy and to assess the improvement or decline in lung function for specific therapies.

Even the elderly who can perform spirometry can be assessed for respiratory diseases and thus we can exclude the notion that "certain symptoms in elderly are attributable to old age."

The impact of occupational exposures on the individual can be screened and thus many occupational lung diseases be prevented.

Environmental exposure (dust, fumes, etc) causing a decline in lung function can be assessed and a strategy to prevent the same can be prepared.

Spirometry can be used as an excellent tool to exclude obstructive airway diseases especially in patients with history of breathlessness where symptoms of other systems cannot be appreciated. Thus this study showed us different patterns of lung function based on age group and different underlying lung and airway pathologies.

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