



PREVALENCE OF CHRONIC LUNG DISEASE AMONG NON-SMOKERS ATTENDING NIMS HOSPITAL

Epidemiology

Sanil Kumar C

PG Radiation & Imaging Technology, NIMS University

Wilson

Assistant Professor & Clinical Head, Dept. of Radiation & Imaging Technology, NIMS University, Jaipur *Corresponding Author

Hrangkhawl*

Dr. Rajesh Yadav

Assistant Professor, Dept. of Radiodiagnosis, National Institute of Medical Sciences & Hospital, NIMS University, Jaipur

ABSTRACT

Introduction: Chronic pulmonary disease is currently the 4th leading cause of death all over the world. An estimated 25–40% of patients with chronic obstructive pulmonary disease (COPD) have never smoked. We investigate the prevalence of different respiratory disease with HRCT among non smokers in Rajasthan. **Methodology:** A total of 190 patients referred for HRCT scan attending NIMS Hospital Rajasthan participated in the cross sectional study. The participants were screened for non smoking with questionnaire and HRCT thorax scan was performed to look for possible respiratory disease. **Results:** It was observed that the mean age of the participants was 52.43 with SD 17.822. 123. The highest prevalence of respiratory disease was observed among the elderly population. The percentage of respiratory disease among the male was 49.47% and 28.42% in female. COPD percentage among the population was 21.05%, tuberculosis 12.11%, ILD 4.21%, Cystic Bronchiectasis 4.21%, Aspergilloma 2.11%. **Conclusion:** Respiratory disease among non smoking population is prevalent, on both the genders but slightly higher in male populations.

KEYWORDS

Chronic Respiratory disease, Non Smokers, Rajasthan, Prevalence of respiratory disease

INTRODUCTION

Chronic Pulmonary disease is a leading cause of morbidity and mortality worldwide.¹ Currently it's the 4th leading cause of death all over the world. Chronic obstructive pulmonary disease (COPD) is currently the 4th leading cause of death all over the world. Smoking by far is the most documented cause for respiratory disease.² However, COPD can still be recorded among a good percentage of non-smoker patients, due to other different causes. COPD is considered rare in persons with no smoking history except in the context of exposure to occupational dust, air pollution, or biomass fuel. Accordingly, the disease has not been well characterized in persons who have never smoked.^{3,4} according to Salvi SS and Barnes PJ. estimated 25–45% of COPD patients have never smoked. It is now recognized that non smokers may account for between one-fourth and one-third of all COPD cases.⁵ Globally, approximately 50% of households and 90% of rural households use biomass fuel and coal as source of domestic energy, and about 700 000 of the 2.7 million global deaths from COPD could be attributed to indoor air pollution from this solid fuels, particularly in female.^{5,6} In the recent past years many have reported the prevalence of lung diseases among the smokers in the Rajasthan region, 13th September 2018 the Indian express reported 32% of the global respiratory disease burden is born by India, according to the Times of India November 15, 2017 Rajasthan has the highest deaths due to chronic pulmonary disease. The objective of this study was to determine the prevalence of respiratory disease among non-smokers attending NIMS Hospital who were referred for HRCT thorax scan. This paper describes the prevalence of different lung diseases with the help of HRCT Thorax scan during the study period.

MATERIALS AND METHOD

The cross-sectional study was conducted at NIMS Hospital from December 2021-June 2022. A total of 190 participants who were referred for HRCT scan of thorax were included in the study. The study was approved by Institutional research committee and ethical committee for data collection. Only the patient referred for HRCT scan who were non-smokers and willing to participate in the study were included in the study. Participants with history of Covid, early childhood respiratory disease were excluded. The participants were scanned with the standard HRCT protocol and scans were reported for any chronic lung pathology. There after the data were tabulated in excel sheet and the data was analyzed using descriptive statistics of mean & SD for continuous variables and frequency and percentage was used for discrete variables. The data gathered for chronic lung disease were analyzed using SPSS 23.0.

RESULTS

Total of 190 subjects referred for HRCT Chest were included in this study with age ranging from 18-99 years. It was observed that the mean age of the participants was 52.43 with SD 17.822. 123 (65%) patients

were males, and 67 (35%) patients were females. (Figure 1)

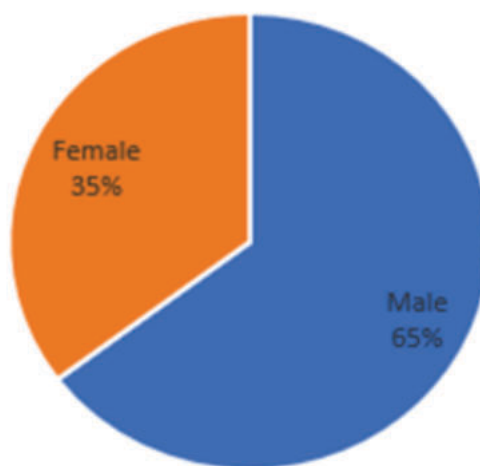


Figure 1: Gender Distribution of Participants

Table 1: Distribution of Normal and Cases with Respiratory Disease among the genders.

	Normal Cases	Cases with Respiratory Disease	Total N=190	Percentage of Respiratory disease
Male	29	94	N= 123	49.47%
Female	13	54	N= 67	28.42%

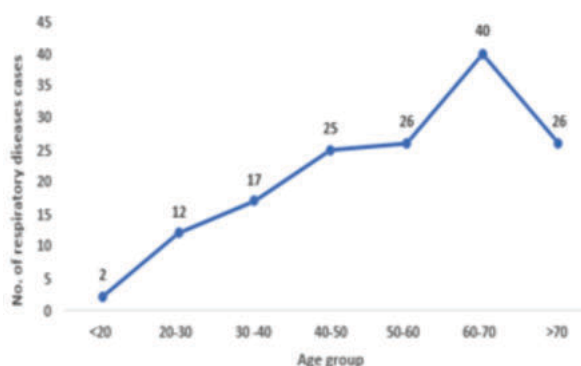


Figure 2: Distribution of respiratory cases among different Age group.

DISCUSSION

Chronic respiratory disease has become a serious issue that affects people of all ages in every corner of the world. There are various reason a person can suffer from these respiratory diseases, like smoking which is tobacco consumption in any form, indoor air pollution and outdoor, environmental and occupational pollutants.^{7,8} According to the Times of India November 15, 2017 Rajasthan has the highest deaths due to chronic pulmonary disease Rajasthan. Even though smoking is still the main reason for causing respiratory diseases, many recent studies observed respiratory disease among non-smokers or never smokers: Bakr and Elmahallawy 2014; Cushen et al. 2016; Gupta, Aggarwal, and Jindal 2003; Hagstad et al. 2015; Jindal 2006; Bernd Lamprecht et al. 2011; Laurent et al. 2017; Parikh et al. 2019; Viet et al. 2015; Walia, Vellakkal, and Gupta 2016^{2,7-15} Most of the studies reported are based only on COPD but in our study different respiratory disease conditions were observed. Tuberculosis n=23 (12.11%), Cystic Bronchiectasis n=8 (4.21%), ILD n=8 (4.21%). The most affected respiratory disease was COPD with a rate of 21.05% of the total population in our study, there are many studies reported on COPD among the smokers and never smokers. In Nhung Nguyen Viet et al. study overall prevalence of COPD was found to be 6.9%, with almost three times higher prevalence in men than women. The researcher further concluded that the prevalence of COPD among non-smokers from rural and urban Vietnam and Indonesia was 6.9%, of which a significant proportion (94%) were previously undiagnosed. In comparison to the current study the prevalence of COPD and COPD among non-Smoking population is much lower. According to Ramadan M. Bakr et al. Never smokers made up to 40% (120/300) of all COPD cases, also never smokers showed more occupational exposure to organic and inorganic dust and irritant gases at work place [41.7% (50/120) vs 27.7% (50/180)] the percentage is much higher when compared to our study. Shuo liu et al. observed overall prevalence of COPD in green house farmers was 17.5%. The COPD prevalence was significantly higher in elderly subjects (≥ 50 years).¹⁶ The mean prevalence of COPD defined by the criteria of chronic bronchitis, was 4.1% in 35295 adults of over 35 years of age in 2006 by S.K. Jindal.¹⁰

Although there are many studies reporting the prevalence of respiratory diseases, most studies have used spirometry as the principle technique, where as we used HRCT scan to detect respiratory pathology the same was used by Thibaud Soumagne et al.¹³ The estimated mean age of the participants in this study is 52.43 with SD 17.822. The older population were the most affected with respiratory disease 60-70 years in our study, which is very similar to the survey reported by 'The Times of India' 8 January 2021 that Rajasthan topped in lung disease among the elderly population. Although the increase in respiratory disease among the elderly population was not explored in our study, but there are quite many physiological, habitual, environmental, and occupational factors that may contribute to this result, the recent Covid 19 may also be one of the strong factor. In a similar study by Ramadan M. Bakr et al. never smokers were significantly older than smokers 65.08 ± 5.03 years vs 56.33 ± 5.67 years. Non smoker with severe COPD (GOLD stage III) were older in age (70.6 ± 2.44 years vs 61.14 ± 1.25 years).²

Chronic lung disease among the male population were the most prevalent of the total sample in this study with n=94 of 123 (49.47%). This study also saw a large number among the females also being affected with respiratory disease n=54 of 67 (28.42%). This result is quite lesser as compared to the reported by Ramadan M. Bakr et al. 41.7% of the never smokers (50 of 120) and 11% of the ever smokers (20 of 180).² The reason behind the increase of respiratory among the women population are many environmental, and occupational factors and passive smoking as reported by many researchers.^{2,8,11} Gupta D, Aggarwal AN, Jindal SK observed Passive smoking was shown to increase morbidity and to worsen the control of asthma among adults. Further, the study reported that 50 healthy non-smoking women passively were exposed to tobacco smoke and matched for age with 50 unexposed women and found association between passive smoking and lung cancer.¹¹ Priti Parikh et al. 2019 observed the use of biofuel and Linkages of respiratory Symptoms among women in Rajasthan, and found that those who cook with biofuels perceive adverse health outcomes.⁸ This study did not explore the causes of rise in respiratory disease among the elderly population. Although incidence of increase in respiratory disease was unexplored we assume to be the recent concluded covid 19, which is the studies limitation also, and the increase rate of air and environmental population in the region of

Rajasthan and occupational exposure factor.

CONCLUSION

This study revealed that respiratory disease among non smoking population is prevalent, on both the genders but slightly higher in male populations. In addition to increased age, passive smoking, among man and women are associated with an increased risk for Chronic lung disease among never smokers.

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