ENDURANCE IN SMOKER AND NON-SMOKER - A COMPARITIVE STUDY

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ABSTRACT

Background: Because elastic recoil of the lung is decreased in cigarette smokers, we hypothesized that chest circumference would increase while chest expandability would decrease in these individuals.
Aim and objectives: To compare endurance level in smoker and non-smoker.
Methodology: For this study, 100 Samples were selected According to the inclusion and exclusion criteria. 50 were smokers and 50 were non smokers. Chest expansion test, Peak Flow rate was used to assess lung functions. Results: Chest expansion in smokers and non smokers. Mean of chest expansion in smokers at 2nd rib is 1.4 inches, at 4th rib is 1.36 Inches and at 6th rib is 1.38 Inches. Chest expansion in non smokers at 2nd rib is 1.68 Inches, at 4th is 1.81 Inches and at 6th rib is 1.72 inches. In smokers, PEFR shows 20% people were normal and 80% people were abnormal. In non smokers 62% people were normal and 38% people were abnormal.
Conclusion: Chest expansion and PEFR values were reduced in smokers as compared to non smokers.
Keywords: endurance, smoker, non-smoker, reduced recoil fibre, PEFR, chest expansion

INTRODUCTION

Tobacco is the second major cause of death in the world. It is currently responsible for the death of one in ten adults worldwide (about 5 million deaths each year). If current smoking patterns continue, it will cause some 10 million deaths each year by 2020.
Cigarette smoking has been shown to decrease serum haemoglobin and hematocrit levels, decrease lung volume and stimulate weight loss characteristics all known to enhance performance in endurance. Because elastic recoil of the lung is decreased in cigarette smokers, chest circumfer-

ence would increase while chest expandability would decrease in smokers. Also it showed that smokers differed from non-smokers and former smokers in age, weight and fatness. In men of all ages, chest expansion of smokers was lower than non-smokers, but their chest size and shape were similar.

The airflow limitation that defines chronic obstructive pulmonary disease (COPD) is the result of a prolonged time constant for lung emptying, caused by increased resistance of the small conducting airways and increased compliance of the lung as a result of emphysematous destruction. These lesions are associated with a chronic innate and adaptive inflammatory immune response of the host to a lifetime exposure to inhaled toxic gases and particles. Processes contributing to obstruction in the small conducting airways include disruption of the epithelial barrier, interference with mucociliary clearance apparatus that results in accumulation of inflammatory mucous exudates in the small airway lumen, infiltration of the airway walls by inflammatory cells, and deposition of connective tissue in the airway wall. Smokers had a decrease in respiratory minute volume and a lower oxygen consumption at equivalent heart rates than nonsmokers. Recent findings suggest that females may be more susceptible than males to the deleterious influence of tobacco smoking in developing chronic obstructive pulmonary disease (COPD).

Some studies found that FEV1/FVC decreased in adolescent smokers of both sexes, also found lung volume capacity FEV1 significantly decrease in both male and female as compare to non-smoking population. Exertion level increase after any aerobic activity. Smoking acutely impaired glucose tolerance and insulin sensitivity, enhanced serum cholesterol and triglyceride levels, and raised blood pressure and heart rate. These findings support the pathogenetic role of cigarette smoking

METHODOLOGY

"Study Design:-	Survey based study
"Target Population:-	young adult (18-30)
"Sampling Method:-	Convenient Sampling
"Sample Size: -	100
"Materials required: -	Pen, Pencil,Measuring tape,Peak flow meter
"Inclusion Criteria:-	Both gender Age between 18-30
"Exclusion Criteria:-	Not willing to participate, Known case any pathological condition.
"Outcome Measures: -	Chest expansion test, Peak Flow rate.

on cardiovascular risk factors.

PROCEDURE

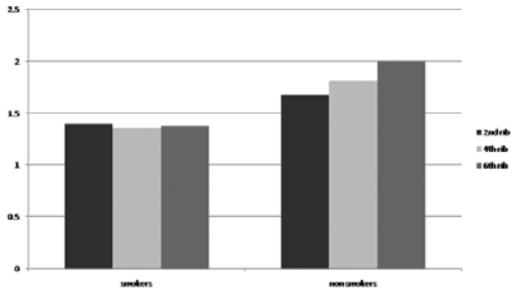
For this study, 100 Samples were selected According to the inclusion and exclusion criteria. In which 50 were smokers and 50 were non smokers The assured and responsibility is taken that the identity of Smokers is preserved. They were explained about the aim and objectives of the study. The consent form was signed by the patient. Data collection form was used for demographic identification. Chest expansion test, Peak Flow rate, was used to evaluate normal and abnormal chest expansion.

RESULTS

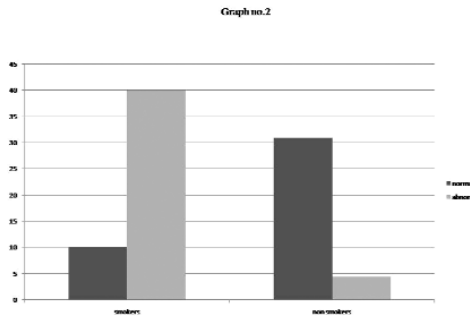
Chest expansion in smokers and non smokers were assessed. Mean of chest expansion in smokers at 2nd rib is 1.4 inches, at 4th rib is 1.36 Inches and at 6th rib is 1.38 Inches. Chest expansion in non smokers at 2nd rib is 1.68 Inches, at 4th rib is 1.81 Inches and at 6th rib is 1.72 inches. Chest expansion were reduced more in smokers

In smokers, PEFR shows 20% people were normal values of FVC and 80% people were having reduced FVC. In non smokers 62% people were normal FVC values and 38% people were having reduced FVC values.

Graph.01. Chest expansion



Graph No. 2: PEFR



DISCUSSION

The major purpose of our study was to quantify and specify the prevalence of endurance in both male smoker and non-smoker & female smoker and non-smoker in and around Pune.

In smokers, PEFR shows 20% people were normal and 80% people were abnormal. In non smokers 62% people were normal and 38% people were abnormal.

Chest expansion in smokers and non smokers. Mean of chest expansion in smokers at 2nd rib is 1.4 inches, at 4th rib is 1.36 Inches and at 6th rib is 1.38 Inches. Chest expansion in non smokers at 2nd rib is 1.68 Inches, at 4th rib is 1.81 Inches and at 6th rib is 1.72 inches..

According to our study male reduced more recoil fibre length than female in both smoker and non-smoker population in female and male respectively.

In this investigations smoking and non-smoking population was selected randomly so all female and male are exposed to various type of air pollution as well. Reduce in lung volume capacities and chest expansion level. Cigarette smoking has been implicated as an important risk factor for the development of respiratory symptoms in adults. The relationship of dyspnea with cigarette smoking has been examined in smokers and ex-smokers and the beneficial effects of smoking cessation have been demonstrated. Recent studies reported that in subjects who smoke cigarettes the risk of developing respiratory symptoms is higher in a dose-dependent way. Abnormalities in sensory nerves might diminish the perception of bronchoconstriction in smokers. In this regard, it has been postulated that prolonged exposure to cigarette smoke may lead to chronic depletion of sensory nerve neurotransmitters. Eosinophil airway inflammation has been proposed as a determinant of breathlessness via mechanisms affecting either the mechanical pathways that control breathlessness or the afferent nerves involved in perception of dyspnea. An increased number of eosinophils in some smokers implies the possibility that smoking may trigger immunological or other reactions associated with eosinophilia. In conclusion, cigarette smoking is by far one of the greatest risk factors for most respiratory symptoms, including dyspnea. Smoking is associated with the development of symptoms in a dose-dependent way and eosinophilia and airway hyper responsiveness (AHR) increase the risk of developing dyspnoea.[8]

Numerous prospective investigations have demonstrated a substantial decrease in CHD mortality for former smokers compared with continuing smokers. This diminution in risk occurs relatively soon after cessation of smoking, and increasing intervals since the last cigarette smoked are associated with progressively lower mortality rates from CHD. Similar rapid decreases in risk with smoking cessation are also seen for ischemic stroke. Benefits from quitting are seen in former smokers even after many years of heavy smoking.

Investigations also have demonstrated benefits from cessation for smokers who have already developed smoking-related diseases or symptoms. Persons with diagnosed CHD experience as much as a 50% reduction in risk of reinfection, sudden cardiac death, and total mortality if they quit smoking after the initial infarction. Thus, the provision of smoking cessation advice is associated with a 50% long-term (more than 1 year) smoking cessation rate in patients who have been hospitalized with a coronary event, and even modest telephone-based counselling can increase this percentage to ?70% in a particularly cost-effective manner.

The pathophysiology of smoking, the evidence linking smoking to disease,

and the value of smoking cessation have been extensively documented in other AHA scientific statements. At present every healthcare professional is aware of the hazards of cigarette smoking. Recently the Agency for Health Care Policy and Research produced a comprehensive monograph on smoking cessation, and readers are referred to that and other cited publications for full background information and extensive discussion of intervention methods. This advisory emphasizes the value of smoking cessation intervention by healthcare professionals and outlines methods found to be of value. [17]

Smoking has a direct effect on the respiratory system. The rate of cigarette smoking among young people has continued to increase steadily. The present study quantified and compared the respiratory function of smoking and non-smoking youths. [Subjects] Smoking and non-smoking male participants aged between 15 to 18 years were recruited (n=34 per group). [Methods] Participants were asked to complete a questionnaire relating to smoking habits and the Fagerström test for nicotine dependence questionnaire, and their respiratory function was tested (measurement of chest expansion, lung function test with a spirometer, and assessment of respiratory muscle strength). All respiratory function tests demonstrated significant differences between the smoking and non-smoking groups. Smokers initiated cigarette smoking between the ages of 15 to 18 years. The most common duration of cigarette smoking was 1-3 years and the degree of nicotine dependence among the youths was at a low level. [Conclusion] This study's findings show that the early effects of cigarette smoking found in youths can lead to problems with the respiratory system. Such information can be used to illustrate the harm of smoking and should be used to encourage young people to quit or avoid cigarette smoking.

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the youths was at a low level. This study's findings show that the early effects of cigarette smoking found in youths can lead to problems with the respiratory system. Such information can be used to illustrate the harm of smoking and should be used to encourage young people to quit or avoid cigarette smoking. [18]

Those studies found that FEV1/FVC decreased in adolescent smokers of both sexes.[18] In this study we found lung volume capacity FEV1 significantly decrease in both male and female as compare to non-smoking population. Exertion level increase after any aerobic activity. At three different levels of chest expansion girth reduces in both male and female.

CONCLUSION

Chest expansion and PEFR values were reduced in smokers as compared to non smokers. Respiratory impairment were seen in smokers

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