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Healthcare

CORRELATION OF SMOKING INDEX WITH FEF 25-75 IN YOUNG ADULT LIGHT SMOKERS.

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ABSTRACT

Introduction: Smoking is a worldwide major cause of preventable morbidity and mortality. About 17% smokers in the world live in India. The rate of cigarette smoking in young people continues to steadily increase. Start of smoking at early age causes more burden than a start late in life, and the relationship is linear. Also respiratory symptoms associated with smoking habit seem to be age dependent.

Aim and objective: To find the correlation of smoking index with FEF25-75 in light smokers.

Methodology: 100 smokers aged between 18-25 years were recruited for the study. They were all made to do the pulmonary function testing, their FEF25-75 was recorded.

Result and Conclusion: We found a significant negative correlation between smoking index and FEF25-75. Smoking causes early inflammatory changes in small airways, leading to increase resistance to expiratory flow. Also smoking causes increase sympathetic and vagal drive leading to increase resting heart rate which puts the individual at risk for mortality and morbidity.

KEYWORDS : Smoking Index, Forced Expiratory flow, Resting Heart Rate.

INTRODUCTION

Smoking is one of the most common forms of recreational drug use[1]. Cigarette smoking is an important health hazard and a major preventable cause of morbidity and mortality[2]. Tobacco smoking usually starts as experimentation during the teenage years in social context and with psychosocial motives. The habit is quickly attained through the pharmacological effect of nicotine, which is a very addictive and quick-acting drug[3-5]. Start of smoking at early age causes more burden than a start late in life, and the relationship is linear[6].Also respiratory symptoms associated with smoking habit seem to be age dependent[7]. Smoking Index is a parameter use to express cumulative smoking exposure quantitatively. The aim of the study is to find out the correlation of smoking index with FEF_{25-75} and resting heart rate in light smokers.

METHODOLOGY

Research Design: Correlational design

Sample Size : N=100

INCLUSION CRITERIA: Subjects of age group 18-25yrs., Normal BMI and having a sedentary lifestyle who understand written and verbal English language command

EXCLUSION CRITERIA: Subjects who were diagnosed case of or having a recent history of musculoskeletal dysfunction, Heart Disease, Respiratory Disease, Neuropsychological Disorder, Uncontrolled Systemic Conditions, use of any smokeless tobacco, or Major Surgery were excluded from the study[8-11].

Instrumentation used: Spirobank G spirometer, kuppuswami scale, noseclip, weighing machine, stadiometer

Procedure: 100 light smokers from south campus, who consented for the study were recruited. Detailed history and evaluation was done. The subjects were asked to avoid: Smoking for at least 30 mins before the test, Eating a large meal before the test, Vigorous exercise before the test and Wearing tight clothing during the test[19]. . The test was done in the morning hours to avoid circadian rhythm. Prior to testing, the required manoeuver was demonstrated by the operator and subjects were encouraged and supervised throughout the test performance. Resting heart rate was taken and then the subject was asked to perform the PFT procedure using Spirobank G. The best of three attempts value was taken. Subjects were made aware about the harmful effects of smoking and the physical exercises they can do to decrease the exposure. They were encouraged to quit smoking and also were enlightened about the areas where they can seek help.

Data analysis: Data was summarised as mean ± SD. To find out correlation of Smoking index with FEF_{25-75}, Pearsons correlation was used. T test was used to for the intergroup analysis.

RESULT: The data of total 100 subjects was taken. The age of all subjects ranged from 18-25 yrs. All the subjects were male and their height, weight and BMI ranged from 160-185cm, 53-81kgs, and 19.04-24.61kg/m^2. Smoking index was calculated for each subject by multiplying the number of cigarettes smoked per day and the duration of smoking. The physical characteristics of smokers are shown in Table 1.

	Mean	Std. Deviation
SI	24.23	19.124
Years ofsmoking	4.05	2.538
Age	21.59	2.207
Height	173.64	6.018
Weight	66.38	6.038
BMI	21.9990	1.43694

Table :1Basic characteristics

It was found that the smoking index possess a clear negative correlation with FEF_{25-75}(-0.53), with a significance value of 0.00.

Most of the subjects recruited had a smoking index score less than 50, they were further sub categorised Table 2 below shows the stats found in different groups.

Table no 2: Distribution based upon range of smoking index

SI	Mean value	No.of subjects	Mean RHR	Mean FEF_{25-75}
1 to 25	11.629	62	83.403	3.718
26 to 50	38.214	28	99.321	2.968
50 above	63.2	10	109.9	2.361

DISCUSSION

Early onset of smoking leads to more active years of smoking and health hazards[1,2,12-19]. It's therefore important to target the population who are in their early years of smoking. Although the overall number of smokers in society is decreasing, the high prevalence of regular smoking in young adults shows no sign of significant decline in the last decade[20]. Our study focuses on the college going subjects aged 18-25 years with the same socio economic status and to verify it kuppuswami scale was used. Subjects aged <18 years were not taken because their light and intermittent smoking often represents experimental phase of tobacco use, rather than stable chronic level consumption.[21]The burden monotonically increases strictly as the dose of smoking increases. The burden of each additional cigarette year of smoking is not as much as the previous cigarette year. Start of smoking at an early age causes more burden. Also it has been documented that the cumulative burden of smoking gradually reverses in a linear fashion as the duration elapsed since cessation increases.[6,1]Over the past 30 yrs, atleast 38 studies have looked at the connection between heart rate and cardiovascular or all cause mortality and atleast 32 studies shows that elevated heart rate is an independent risk factor for mortality and morbidity in healthy people.[22]

LIMITATION

Subject group was small. No female subjects was included. Age group of study was limited to 18-25 yrs. Various dimensions like filter and non-filter cigarettes, age at start, passive smoking (environmental factors), depth of inhalation, number and size of puffs, butt length of cigarette were not considered[4]Further data collection of data was not possible due to limited time. Only sedentary subjects were included in the study.

FUTURE SCOPE OF STUDY

The same study can be carried out in both male and female population, to be examined for FEF_{25-75} and RHR, and can be correlated with smoking index. By including a wider age group in the study and by assessing more number of light smokers, the subgroups amongst the category of "light smokers" can be studied further. Further analysis of data can also be done by segregating them in cigarette and bidi smokers. Subjects who lead active lifestyle can also be studied on the same variables.

CONCLUSION

The statistical data from the current study proves that a significant negative correlation exists between smoking index and FEF_{25-75} .

CLINICAL IMPLICATION

Many of the pulmonary function changes seen in early smokers are reversible and therefore strong anti smoking measures are required especially during the early years of smoking, when this pernicious habit begins. Other methods like lifestyle changes, pharmacological interventions, counselling and formal cessation programmes have been shown to be effective[31]. Smoking leads to decrease exercise capacity. It has been documented that regular exercise leads to numerous positive effects on cardiovascular status of smokers[32]. It has also been proven that regular exercise also decreases the detrimental effect of catecholamines, and thus reducing resting heart rate[33]

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