

Research Article

Peak expiratory flow rate; the effect of smoking on younger & middle aged males

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ABSTRACT

A total of 80 male subjects in age group of 20-50 years were selected for the purpose of the study. They were divided in two groups, smokers and non smokers. Each group subdivided into age groups of 20-35 and 36-50 yrs. The criteria for smoking was about 5-10 cigarettes per day since 6-12 months. Peak Expiratory Flow Rate (P.E.F.R.) was determined by using Wright's peak flow meter. The results showed that in Non-Smoker of age group 20-35 years, (n=30) the mean PEFr value was 535 ± 50 L/min, whereas in age group 36-50 years, (n=15) the mean P.E.F.R value was 515 ± 50 L/min. In Smokers of age group 20-35 years, (n=10) mean P.E.F.R. value was 374 ± 128 L/min whereas in age group 36-50 years, (n=25) mean P.E.F.R. value was 357 ± 86 L/min. This shows that in smokers P.E.F.R. value is lower compared to Non-smokers in both age groups and that P.E.F.R. is lower in the elder age group in comparison to younger age group.

Keywords: P.E.F.R., Wright's peak flow meter, Smokers

INTRODUCTION

Yogis of ancient times used to practice and preach 'Pranayama', to maintain a healthy body and mind. Chinese used to practice 'Chenyi' before venturing forth to teach or learn the martial arts. The importance of breathing was thus well recognized even before knowledge about breathing existed. Thus from time immemorial, the study of breathing or respiration was known to the people.

P.E.F.R. is used as one of the important tests for ventilatory function of Lungs, for evaluating severity of disease as well as for judging its prognosis. The effect of age and smoking in P.E.F.R., we also compared our values in nonsmokers with other studies done in Nagpur and Tikrit.

METHODS

A total of 80 Subjects from age group of 20-50 year males, born and brought up in south India, mainly Andhra Pradesh, were selected for the purpose of the study. They were well motivated, & well informed to undergo the experimental procedures. They were divided in two groups, smokers and non smokers. Each group subdivided into 20-35 years and 36-50years. The criteria for smoking was about 5-10 cigarettes per day since 6months -1year. The final break up of subjects was as follows:

Table 1: Final break up of subjects.

Nonsmokers	Smokers
20-35 Yrs = 30	20-35 Yrs = 10
36-50 Yrs = 15	36-50 Yrs = 25
Total = 45	Total = 35

Peak Expiratory Flow Rate was determined by using Wright's peak flow meter.¹ The working of the Wright's Peak Flow Meter was explained to the subjects in a clear and concise manner. Stress was laid on the fact that the subject's co-operation was essential to get a good result. The test was performed in front of the subject in an ideal and practicable manner to instill confidence in the subjects. Each subject was made to perform the test thrice in standing position and the best of the three values was taken for the purpose of this study.

RESULTS

Our observations are summarized in table 2.

Table 2: Observations for non-smokers & smokers.

Age	Non-Smokers	Smokers
20-35 yrs		374 ± 127 (10)
% Change	535 ± 50.0 (30)	-30
P value		p < 0.001
36- 50 yrs		357 ± 86 (25)
% Change	515 ± 50 (15)	-31
P value		p < 0.001

Non-Smoker subjects of age group 20-35 years, (n=30) the mean P.E.F.R. value was 535 ± 50 L/min whereas in age group 36-50 years, (n=15) mean P.E.F.R value was 515 ± 50 L/min.

In Smoker subjects of age group 20-35 years, (n=10) mean P.E.F.R. value was 374 ± 128 L/min whereas in age group 36-50 years, (n=25) mean P.E.F.R. value was 357 ± 86 L/min.

Analysis of our results shows the following important points:

1. Smokers P.E.F.R. value is lower compared to Non-smokers in both age groups. The decrease in P.E.F.R values is statistically significant (P value <0.001) in all the above groups.
2. P.E.F.R. is lower in the elder age group in comparison to younger group difference is statistically significant.

DISCUSSION

Our results agree with similar studies done by other workers. Chatterjee et al (1995) studied pulmonary functions of different categories of chronic obstructive pulmonary disease (C.O.P.D.) in railway workers using

spirometer and peak expiratory flow meter found that all pulmonary function tests values significantly deteriorated in all categories of C.O.P.D. patients as compared to normal non-smokers and smokers. Smokers were found to have significantly lower value of P.E.F.R. in comparison to non-smokers.² Other studies done in Lahore, Pakistan also showed that the P.E.F.R. of smokers was less than non-smokers.³ Smoking is responsible for more than 90% of chronic obstructive airway disease within one to two years of smoking regularly and many young smokers will develop inflammatory changes in their small airways. After twenty years pathophysiological changes in the lung develop and progress in proportional to intensity and duration of smoking.⁴

When we compared our P.E.F.R. values in non smokers of age groups 20-50, our values were lower (528.44±50.40) than those obtained in Nagpur subjects (547.84±23.9, n=286),⁴ but higher than in Tikrit (487±129, n=33).⁵ Further they observed a high prevalence rate of smoking among students and employees of Tikrit university, the smoking effect (and passive smoking) on P.E.F.R. was statistically significant.

CONCLUSION

The P.E.F.R. values in younger and middle aged males were 528±50 in non smokers. The value was lower than Nagpur subjects but higher than Tikrit subjects. Our study substantiates other studies which show that P.E.F.R. is lower in smokers than non smokers and in older age group than younger age groups.

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