

Study on Peak Expiratory Flow Rate in Different Positions

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Peak expiratory flow rates (PEFR) is one method to test lung function. It was measured in 221 subjects in standing, sitting and lying positions to see whether there is any effect of position on PEFR. The subjects were selected from Dhaka, Kushtia and Rajshahi towns of Bangladesh. There were no significant differences of PEFR in different positions. So, PEFR can be measured in any position.

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Key words: Peak expiratory flow rate.

Introduction

Peak expiratory flow rates (PEFR) is one of the convenient lung function tests. It is now used and standardized in our country to widen its use. There are many patients who are bed ridden and cannot sit. Some patients cannot lie. In field situations it may be necessary to measure PEFR in standing position. In this study PEFR was measured in different positions - standing, sitting and lying and the results were analyzed to see whether there is any effect of position on PEFR.

Methods

Two hundred and twenty one subjects, 175 males and 46 females, were studied. Their age ranged from 9 years to 78 years. All have been demonstrated how to use the peak flow meter for measuring PEFR. It was measured 5 times in each subject and the maximum was recorded.¹ This procedure was repeated with the patient in standing, sitting and lying positions. The study was carried out in Dhaka, Kushtia and Rajshahi. Wright peak flow meter (W 15484) was used.² The mean and standard error (SE) of PEFR in standing, sitting and lying positions were calculated.

Student's 't' test were performed between standing and sitting, lying and sitting, and lying and standing to see any significant difference of PEFR among different positions.

Results

PEFR was expressed in litres/minute (L/min). Mean \pm SE of PEFR were 384.1 ± 9.7 , 375.8 ± 9.5 and 358.5 ± 9.5 L/Min in positions standing, sitting and lying, respectively. No significant changes were observed in PEFR between standing and sitting, sitting and lying, and lying and standing. (Table I).

Table I: PEFR in different positions.

Position (Group)	Number	Mean \pm SE of PEFR in L/min
Standing	221	384.1 ± 9.7
Sitting	221	375.8 ± 9.5
Lying	221	358.5 ± 9.5

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Discussion

PEFR in males and females were measured by different observers in different countries in different time. Some observers have mentioned the position of the subjects during measurement of PEFR. But others have not mentioned the position.^{3, 4, 5, 6,7} None have studied the effect of position on PEFR. In one study it was observed that PEFR is affected by chest expansion.⁸ In another study it was found that there is a relation between PEFR and surface area of the subjects.⁹ PEFR is increased with increase of surface area. In our another study we found that subjects age influences on PEFR.¹⁰ It is maximum in middle aged group subjects. Height of the subjects is also a factor which influence PEFR.¹¹ Peak expiratory flow rate increases with increase of height of the subject. It was born in our mind that position of the subjects may affect the results of PEFR. So, we study the results of PEFR in different positions of on subjects in different regions of the country. We found no significance difference of PEFR in different positions of the subjects. From this study it can be concluded that PEFR can be measured in any position of the patient

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