

## Normal Peak Expiratory Flow Rate and Nomogram for Children (8–12 years)

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*To the Editor:* Peak Expiratory Flow Rate (PEFR) measurements by Peak Flow Meter is a reliable, cost effective, outpatient procedure for predicting the magnitude of airway obstruction in various obstructive airway diseases especially asthma, and is an objective measure of lung function that can indicate airway hyper-responsiveness, warn of impending asthma exacerbation and can assess the severity of disease activity [1]. Children are the most biologically vulnerable group [2, 3] because even when children are exposed to the same aerosol concentrations, they can receive particle doses larger than adults mainly due to their increased breathing rate and more frequent mouth breathing compared to adults [4, 5].

Our objective was to study the PEFR in healthy school going children between 8 and 12 y in Ernakulam district and its correlation with anthropometric measures and use the data to construct a nomogram. Hence schools closer to the city traffic and away from the traffic in Ernakulam district were contacted and visited one at a time between April 2014 through April 2015, after taking prior appointment with the Principal. Classrooms and school environment were noted. All the children in the specified age group attending the school who satisfied the study criteria and had obtained the consent were studied. The children were

taken as a group into a separate place for examination and anthropometric measurements.

The procedure of PEFR measurement using the Mini Wright peak flow meter was first demonstrated and later the child was given two trials and the next three readings were noted down. The best of three readings was taken as the PEFR of the child. If the difference between any two readings was large, the probability of a faulty procedure was considered. The procedure would then be demonstrated again to the child and a new set of readings were taken. Statistical Analysis was carried out using Statistical Package, SPSS (version 22.0.0.0).

Nine hundred fifty four students of both sexes between 8 and 12 y were analysed for PEFR values. Four hundred eighty two were boys and 472 were girls. It was observed that the mean PEFR of boys (210.53) was greater than girls (184.04). The mean PEFR amongst those children who studied in schools away from the traffic (200) was higher than those who studied closer to the traffic (188.4). From the correlation analysis, it is observed that there is a significant positive relationship between PEFR and other studied variables like age, weight, height, BMI and chest circumference for both boys and girls.

As the correlation was more robust with height and age, nomograms were constructed separately for boys and girls using these variables. Comparing our data with previously published values showed that PEFR measurements of children in Ernakulam district are lower than those reported for North Indian and other South Indian children of the same height.

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### Compliance with Ethical Standards

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