Research Ideas on Respiratory Conditions and Tobacco Dependency Abstract

Abstract ID = 11588

Presented by Mathanki Sooriyakanthan on Saturday 4 July 2020

Development and validation of reference equations for lung function in healthy Sri Lankan Tamils

Mathanki Sooriyakanthan[1], Savithri Wimalasekera[2], Sivapalan Kanagasabai[1]
[1]University of Jaffna, [2]University of Sri Jayewardenepura

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Research Question: What is the reference value for lung function in Sri Lankan Tamils?

Background: Lung function test is a necessary investigation use in the diagnosis and monitoring of respiratory disease. The measured parameters should be interpreted based on ethnic specific reference values. Reference equations for Sri Lankan Tamils are not available.

Methodology: A descriptive cross-sectional study was carried out on consenting participants selected by cluster sampling (775 males, 687 females) from all 5 districts of Northern Sri Lanka. Base line data were obtained by a questionnaire. Anthropometric measures were done, and respiratory functions were assessed by a calibrated spirometer (Cosmed Micro Quark, Italy). Prediction equations were derived by step wise regression analysis. Equations based on age-height and age - arm span also were derived.

Same measurements were obtained in another 70 participants from the same population. Values of the new population were predicted based on age -height based equations and based on multi-ethnic equations of GLI 2012. Agreements between measured and predicted values of the new population were tested by Bland Altman analysis.

Results: Means, SD for each lung function parameter was derived. Lung function parameters have significant ($p<0.05$) positive correlations with most of the anthropometric measures except with age in more than 20 years age. Age-height based equations are:

< 20 years
Males

FVC = 0.054Height +0.108age-7.363
FEV1= 0.041 Height +0.1age-5.486

Females

FVC = 0.039 Height +0.021age-3.864
FEV1 = 0.034 Height -2.964

>20 years
Males
FVC = 0.046 Height -0.022age-3.311
FEV1 = 0.036 Height -0.021age-2.192

Females
FVC = 0.033 Height-0.018 age-1.985
FEV1 = 0.026 Height- 0.018 age- 1.186

Conclusion: Predicted values by the developed equations had better agreement with measured values than that of GLI 2012 equations. Hence, newly developed equations can be used in assessing the respiratory function in Sri Lankan Tamil population in clinical and research settings.