

# Pulmonary function characteristics in children with suspected asthma: implications for asthma diagnosis

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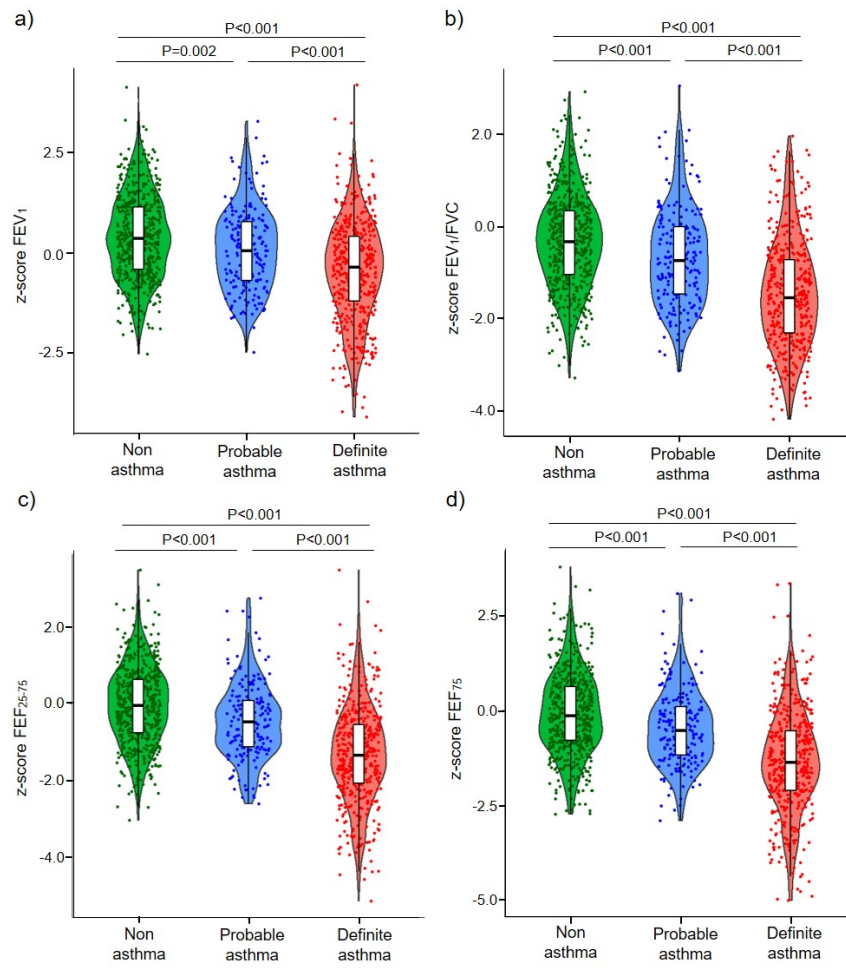
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## Abstract

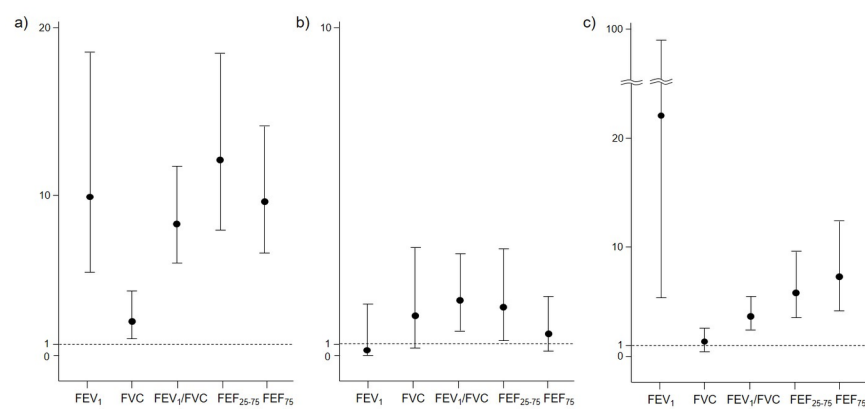
**Background:** In children suspected of asthma, diagnosis is confirmed via variable expiratory airflow limitation. This study aimed to evaluate the pulmonary function characteristics in children suspected of asthma without bronchodilator response (BDR) and bronchial hyperresponsiveness (BHR). **Methods:** We utilised two separate real-world retrospective observational cohorts of children who underwent both spirometry and bronchial provocation testing for asthma. Spirometry parameters were collected and compared between definite asthma, probable asthma, and non-asthma groups. The original cohort comprised 1199 children who visited the Severance Hospital (Seoul, Korea) between January 2017 and December 2019. The external cohort included 105 children who visited the Gangnam Severance Hospital between January 2000 and December 2017. **Results:** Probable asthma accounted for 16.8% and 32.4% of the original and external cohorts, respectively. Baseline forced expiratory volume in 1 second (FEV<sub>1</sub>), FEV<sub>1</sub>/forced vital capacity (FVC), forced expiratory flow at 25-75% of FVC (FEF<sub>25-75</sub>), and FEF<sub>75</sub> showed stepwise decrements from non-asthma, probable asthma, to definite asthma patients ( $P < 0.001$ ). The probable asthma group showed significantly higher odds of abnormal FEV<sub>1</sub>/FVC (OR, 2.24 [95%CI, 1.43-3.52]) and FEF<sub>25-75</sub> (OR, 2.05 [95%CI, 1.13-3.73]) than the non-asthma group and lower odds of abnormal FEV<sub>1</sub> (OR, 0.05 [95%CI, 0.01-0.19]), FEV<sub>1</sub>/FVC (OR, 0.27 [95% CI, 0.18-0.41]), FEF<sub>25-75</sub> (OR, 0.17 [95%CI, 0.11-0.28]), and FEF<sub>75</sub> (OR, 0.14 [95%CI, 0.08-0.24]) compared to the definite asthma group. The external cohort was consistent with the original cohort. **Conclusions:** We show evidence of airway dysfunction in children for whom a high clinical suspicion of asthma exists without evidence of BDR and BHR.

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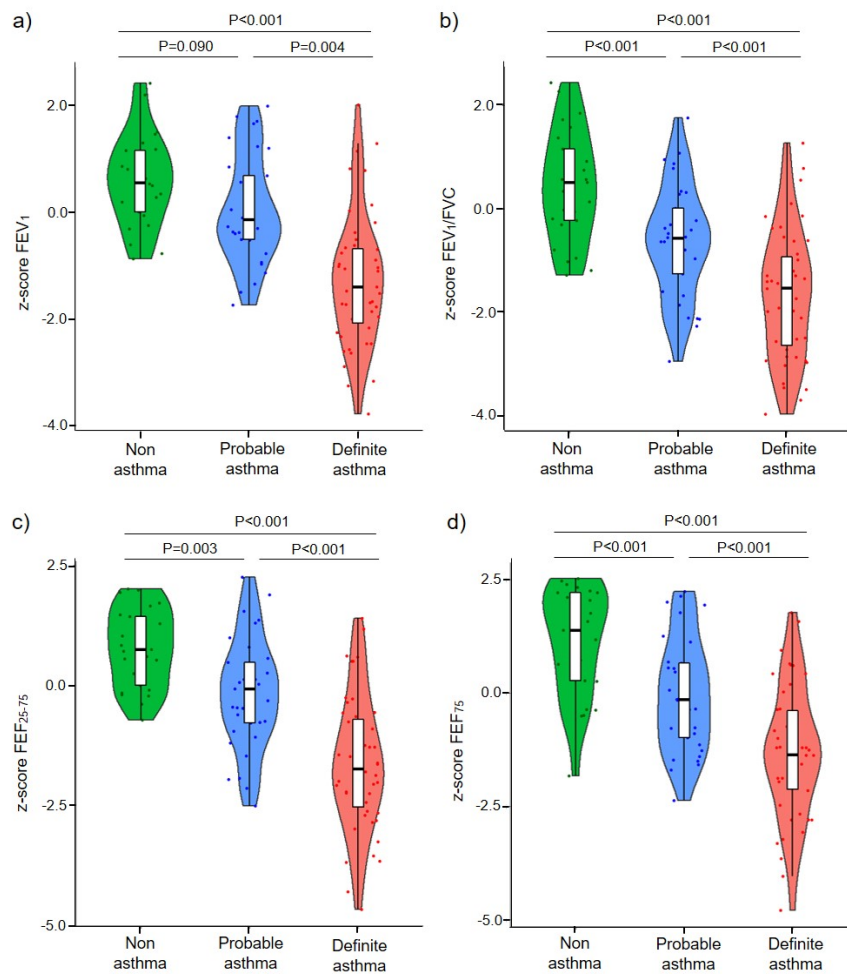
PFT\_manuscript\_Allergy\_Final.docx available at <https://authorea.com/users/462005/articles/713172-pulmonary-function-characteristics-in-children-with-suspected-asthma-implications-for-asthma-diagnosis>



**Figure 1**



**Figure 2**



**Figure 3**