

Validation of GLI-2012 Spirometry Reference Values in 3-11 Year Old Children from Northern and Central Italy

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Rationale- The Global Lung Initiative (GLI-2012) spirometry reference values (1) are a potentially valuable tool for the interpretation of spirometry worldwide. Although their validity has been proved in many countries, doubts remain for some populations. The aim of this study was to assess the validity of the GLI-2012 reference values in an adequate number of 3-11 year old children from northern and central Italy. **Methods-** Healthy children were recruited from randomly selected kindergartens and elementary schools in or around Udine (northern Italy) and Florence (central Italy). The subjects' history of respiratory symptoms was assessed using a standardized questionnaire (ISAAC modified), translated into Italian. Children born at less than 36 weeks of gestational age or who had received oxygen at birth for more than 30 days were excluded. Children with no more than 3 episodes of wheezing ever, but no episodes of wheezing during the previous 12 months, were included. All children had no respiratory symptoms or signs at the time of testing. Spirometry was performed according to ATS/ERS spirometry recommendations. Z-scores for forced vital capacity (FVC), forced expiratory volume in 1 s (FEV₁), FEV₁/FVC ratio, and forced expiratory flow between 25% and 75% of FVC (FEF₂₅₋₇₅) were calculated using GLI-2012. Z-scores for forced expiratory volume in 0.75 s (FEV_{0.75}) were also reported for preschool children. Z-score values > 0.5 were considered to have a clinical significance (2). Since we have previously reported a difference in GLI-2012 performance between preschool and school-children in Florence, the analysis was based on the two age groups separately. **Results-** A total of 404 healthy children [219 female and 185 male, age range 3.2-11.5 yr, mean age (SD) 7.3 (2.1) yr, mean height 124.3 (14.8) cm] performed acceptable and reproducible spirometry maneuvers. No relevant differences were found between the two centers. Mean (SD) measured spirometry indices and predicted values using GLI-2012 are reported in the Table. A paired t-test showed that measured values were often significantly different from predicted values, especially in the school-age group. However, mean Z-scores of the measured values were smaller than 0.5, showing that the difference was not clinically significant (Table). **Conclusions-** Although differences were statistically significant mostly in school-age children, the difference between measured and predicted values using GLI-2012 was not clinically significant in 3-11 year old healthy children from northern and central Italy. 1. Quanjer PH, et al. Eur Respir J 2012;40:1324-43 2. Quanjer PH, et al. Eur Respir J 2011;37:658-64

	3-5.9 year old n=140				6-11 year old n=264			
	Measured	GLI-2012 predicted	p	Z- score	Measured	GLI-2012 predicted	p	Z-score
FVC L	1.18 (0.25)	1.17 (0.18)	0.513	-0.03	2.04 (0.51)	1.96 (0.46)	<0.001	0.32
FEV_{0.75} L	1.02 (0.20)	1.01 (0.14)	0.687	0.03	-	-	-	-
FEV₁ L	1.11 (0.20)	1.08 (0.15)	0.011	0.23	1.82 (0.44)	1.73 (0.37)	<0.001	0.46
FEV₁/FVC	0.93 (0.06)	0.93 (0.01)	0.315	0.25	0.90 (0.05)	0.89 (0.02)	<0.001	0.18
FEF₂₅₋₇₅ L/s	1.53 (0.40)	1.54 (0.12)	0.809	-0.05	2.34 (0.67)	2.15 (0.39)	<0.001	0.34

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