

Normal lung function in Angolan children

Michele Arigliani¹, Mario C. Canciani¹, Andrea Magnolato², Philip H. Quanjer³

¹Department of Clinical and Experimental Medical Sciences, Unit of Paediatrics, University Hospital of Udine, Italy.

²Department of Paediatrics, University of Trieste, Italy

³Department of Pulmonary Diseases and Dept of Paediatrics, Division of Respiratory Medicine, Erasmus University Medical Centre – Sophia Children’s Hospital, Rotterdam, Netherlands.

BACKGROUND

There are no data about normal lung function in Angolan children. The *Global Lung Initiative 2012* (GLI-2012; Quanjer et al. *Eur Respir J* 2012;40:1324–1343) established new multi-ethnic reference values for spirometry for all-age healthy people. The prediction equations for black people were derived from African Americans.

AIMS

Evaluate whether the GLI-2012 prediction equations for black people fit Angolan children.

METHODS

362 children (50.2% boys) aged 6-12 years from public and private schools in Luanda, Angola, were initially recruited. 55 subjects were excluded because they had chronic or acute disease or were not able to perform a repeatable flow-volume loop of normal shape. FEV₁, FVC, FEV₁/FVC of 307 healthy children (50.2% boys) were evaluated. A portable spirometer (Pony FX®, Cosmed, IT) was used. Height and weight were recorded. Z-scores for spirometric data were derived from GLI-2012 equations for African Americans, z-scores for BMI and height were calculated according to CDC 2000 growth charts. Height was also compared to that in African Americans from NHANES III.



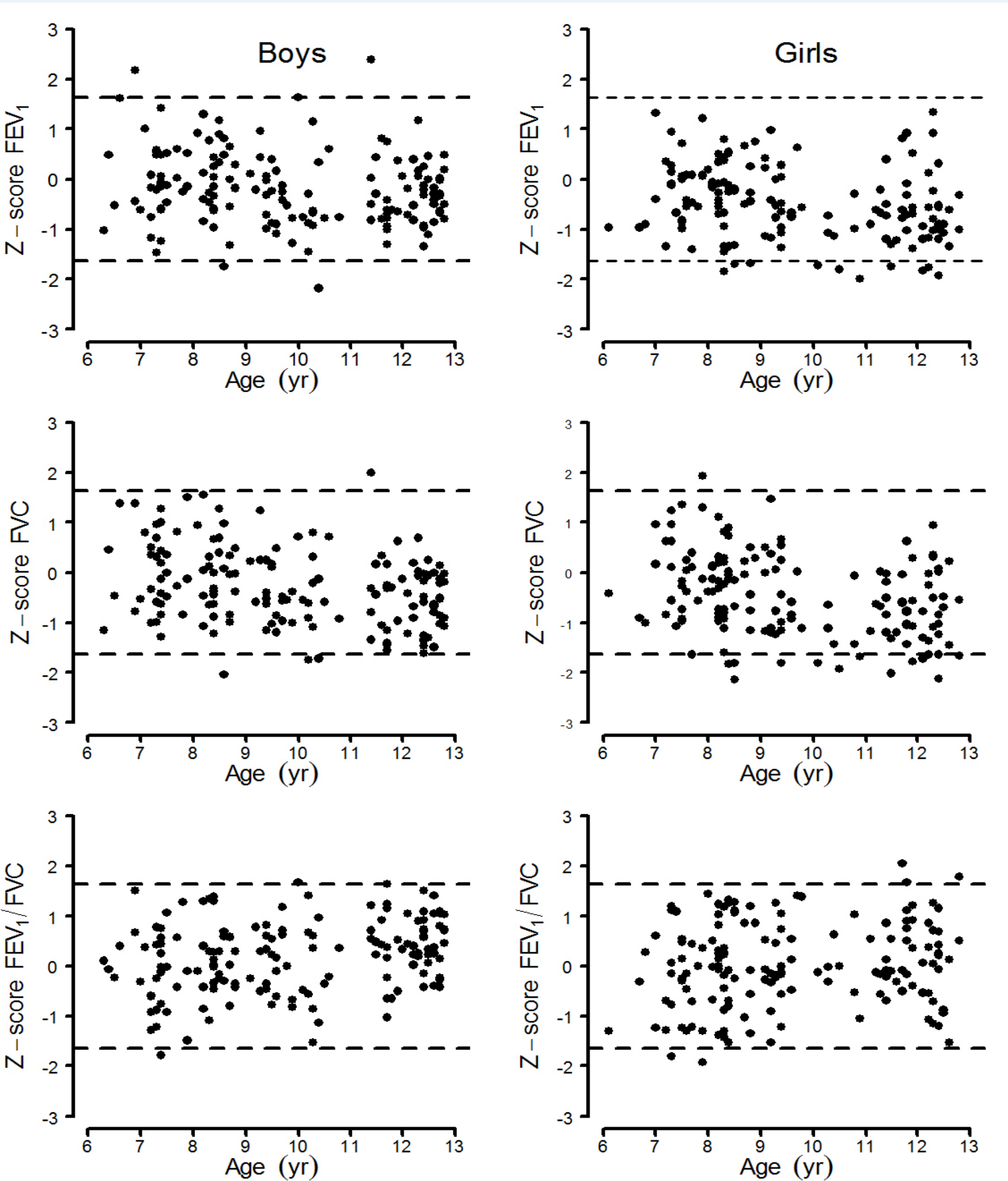
RESULTS

Mean age was 9.8 years (SD 1.9). Z-scores (table 1) fell within the 90% reference interval for black people (figure 1). 25.8% of children were underweight (zBMI <-2), and 7.8% had stunted growth (zHeight <-2). African American girls were 3.4%, boys 4.3% taller than the Angolan ones. Z-scores for FEV₁ and FVC, but not FEV₁/FVC, were lower in girls, and correlated positively with zBMI and school type (private or public). The scatter was remarkably low (SD <1), implying a more homogeneous population than in GLI-2012

Table 1. Mean zFEV₁, zFVC, zFEV/FVC (GLI-2012), mean zBMI and zHeight (CDC 2000) in Angolan children.

	Boys (154) mean (SD)	Girls (153) mean (SD)
zFEV ₁	-0.18 (0.74)	-0.47 (0.73)
zFVC	-0.28 (0.77)	-0.48 (0.82)
zFEV ₁ /FVC	0.18 (0.71)	0.01 (0.84)
zBMI	-1.08 (2.34)	-0.75 (2.19)
zHeight	-0.40 (0.95)	-0.15 (1.57)

Figure 1. zFEV₁, zFVC, zFEV/FVC values in Angolan children (GLI-2012). Boys n. 154. Girls n. 153



CONCLUSIONS

FEV₁ and FVC are proportionally reduced by poor nutritional status as shown by the positive correlation between zBMI, FEV₁ and FVC. Whilst GLI equations grossly fit Angolan children, they should preferably be evaluated in a larger sample, in particular in Angolan girls.