Online Data Supplement

Disparities in pulmonary function in healthy children across the Indian urban-rural continuum

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Comparison of lung function between UK born and non-UK born Indian children

As part of the SLIC study in London, 311 children of Indian origin were successfully assessed. Of these, 241 were born in the UK. The characteristics and spirometry results of UK-born Indian children and Indian children residing in the UK but born elsewhere were virtually identical (Table E1). Thus for the purposes of this manuscript, all the UK Indian children are included when comparisons are presented in Tables 1 & 2, Figures 1 & 2 and Table E3.

Table E1: Baseline characteristics and spirometry results in UK-Indian children

	UK-born	Non-UK-born	Mean difference (95% CI)
Subjects, N (boys %)	241(49%)	70 (51%)	
Age (years)	8.0 (1.6)	8.2 (1.7)	-0.2 (-0.6; 0.3)
z-Height*	0.34 (1.0)	0.33 (1.0)	0.01 (-0.3; 0.3)
z-Weight*	0.13 (1.0)	0.13 (0.9)	0 (-0.3; 0.3)
z-BMI*	-0.04 (1.0)	-0.04 (0.9)	0 (-0.3; 0.3)
Family Affluence Score	3.7 (1.3)	2.7 (1.5)	1.0 (0.7; 1.4)†
Exposure to household tobacco smoking, N (%)	37 (15%)	5 (7%)	8% (-1%; 15%)
z-FEV_1	0.00 (0.9)	0.16 (0.9)	-0.16 (-0.4; 0.1)
z-FVC	-0.02 (1.0)	0.09 (0.9)	-0.11 (-0.4; 0.1)
z-FEV_1/FVC	0.15 (1.0)	0.21 (0.9)	-0.06 (-0.3; 0.2)

Legend: Results are expressed as mean (SD), unless otherwise specified; FAS – Family Affluence Score (FAS): based on collated score for numbers of computers, vehicle ownership (car, motorcycle, bicycle) and whether the child had own bedroom (score 0 to 6). *z-Height, z-Weight and z-BMI are based on Indian growth charts. [E1] † $p<0.0005$; Spirometry results are based on new coefficients derived from the GLI-2012 equations for Indian subjects which adjust for age, height and sex. [E2;3]

Health status and lung function:

Mean (SD) z-FEV_1 and z-FVC approximated 0(1) in the asymptomatic group. However, when children with technically satisfactory spirometry but with respiratory symptoms such as runny nose, cough and upper respiratory tract infections on the day of testing were included, the spirometric outcomes were similar. Thus for the purposes of this manuscript, spirometry data from children who had respiratory symptoms on the day of testing are included in the analysis.

Table E2: Impact of health status on lung function

	Asymptomatic	Total*
UK-Indian	**293**	**311**
z-FEV_1	0.06 (0.94)	0.04 (0.94)
z-FVC	0.02 (0.96)	0.01 (0.96)
z-FEV_1/FVC	0.18 (1.03)	0.16 (1.03)
Indian-urban	**313**	**382**
z-FEV_1	0.04 (0.97)	0.02 (0.95)
z-FVC	0.00 (0.99)	-0.00 (0.99)
z-FEV_1/FVC	0.14 (0.92)	0.11 (0.93)
Indian Semi-urban	**137**	**188**
z-FEV_1	-0.51 (0.8)	-0.52 (0.85)
z-FVC	-0.54 (0.91)	-0.56 (0.89)
z-FEV_1/FVC	0.10 (0.88)	0.11 (0.89)
Indian-rural	**127**	**158**
z-FEV_1	-0.86 (0.96)	-0.88 (0.99)
z-FVC	-0.92 (1.16)	-0.91 (1.22)
z-FEV_1/FVC	0.23 (1.10)	0.26 (1.28)

*Data from three asthmatic children were excluded from analysis but all other symptomatic children (details in Table 1) were included in “Total”.

Comparison between UK Indian and Indian urban children: Indian urban children were significantly older than the UK Indian children by, on average, 1 year due to small differences in the age range of children admitted to the schools selected. However, once adjusted for height, age and sex by expressing results as z-scores, there were no differences in spirometric outcomes between UK Indian children and Indian urban children (Table E3).

Table E3: Comparison of characteristics and lung function between UK Indian and Indian urban

	UK Indian	Indian urban	Mean Diff (95% CI)	P value
Subjects, N (boys %)	311(50%)	382 (68%)*		
Age (years)	8.1 (1.6)	9.0 (1.9)	-0.9 (-1.2, 0.7)	<0.0005
z-Height†	0.34 (1.0)	0.07 (0.9)	0.27(0.12, 0.41)	<0.0005
z-Weight†	0.13 (1.0)	0.13 (0.9)	-0.00 (-0.14, 0.14)	1.00
z-BMI†	-0.04 (1.0)	0.12 (0.9)	-0.16 (-0.31, -0.02)	0.024
FAS	3.5 (1.4)	3.0 (1.2)	0.4 (0.2, 0.6)	<0.0005
Exposure to household tobacco smoking, N (%)	42 (14%)	34 (9%)	5% (0%, 10%)	0.01
z-FEV_1	0.04 (0.94)	0.02 (0.95)	0.02 (-0.1, 0.2)	0.987
z-FVC	0.01 (0.96)	-0.00 (0.99)	0.00 (-0.1, 0.1)	1.000
z-FEV_1/FVC	0.16 (1.03)	0.11 (0.93)	0.05 (-0.1, 0.2)	0.920

Legend: Results are expressed as mean (SD), unless otherwise specified; FAS – family affluence score: based on collated score for numbers of computers, vehicle ownership (car, motorcycle, bicycle) and whether the child had own bedroom (score 0 to 6). †z-Height, z-Weight and z-BMI are based on Indian growth charts.[E1]

Spirometry results are adjusted for age, height and sex based on recently derived GLI-2012 co-efficients for Indian children. *Data from three children with current asthma were excluded.

Table E4: Post-hoc comparisons of characteristics and lung function according to area of residence in India using Tukey HSD test

Variable	School	School	Mean Difference	95% CI	P Value
Age (years)	Rural	Urban	0.80	0.38, 1.21	<0.0005
		Semi-urban	-0.94	-1.42, -0.47	<0.0005
	Semi-urban	Urban	1.74	1.35, 2.14	<0.0005
z-Height*	Rural	Urban	-1.31	-1.51, -1.10	<0.0005
		Semi-urban	-0.04	-0.28, 0.20	0.911
	Semi-urban	Urban	-1.27	-1.46, -1.06	<0.0005
z-Weight*	Rural	Urban	-1.51	-1.71, -1.31	<0.0005
		Semi-urban	-0.07	-0.30, 0.16	0.766
	Semi-urban	Urban	-1.44	-1.64, -1.25	<0.0005
z-BMI*	Rural	Urban	-1.15	-1.34, -0.95	<0.0005
		Semi-urban	-0.05	-0.27, 0.17	0.858
	Semi-urban	Urban	-1.10	-1.28, -0.91	<0.0005
z-FEV_1	Rural	Urban	-0.90	-1.13, -0.67	<0.0005
		Semi-urban	-0.35	-0.62, -0.09	0.002
	Semi-urban	Urban	-0.54	-0.75, -0.32	<0.0005
z-FVC	Rural	Urban	-0.91	-1.15, -0.66	<0.0005
		Semi-urban	-0.35	-0.63, -0.07	0.008
	Semi-urban	Urban	-0.56	-0.79, -0.33	<0.0005
z-FEV_1/FVC	Rural	Urban	0.14	-0.08, 0.37	0.291
		Semi-urban	0.15	-0.10, 0.40	0.348
	Semi-urban	Urban	-0.01	-0.22, 0.20	0.996

Legend: *z-Height, z-Weight and z-BMI are based on Indian growth charts.[E1]

References

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