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Title: Malnutrition and pulmonary function in children in a developing country

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Body: In animal models perinatal nutritional deficiency profoundly disturbs lung development. It appears reasonable that a similar poor nutritional status in humans leads to reduced pulmonary function. To the best of our knowledge, few studies have been performed to assess the effects of malnutrition on pulmonary function tests (PFTs) in children.[1] AIMS: to elucidate the relationship between nutritional status and pulmonary function in children living in a poor country METHODS: in this cross-sectional study 163 children (5-11 y.) living in the northern of Madagascar (Human Development Index 0.480) underwent a clinical exam and PFTs. Children were grouped according to the presence (group 1) or absence (group 2) of malnutrition, defined as BMI z-score <2. RESULTS: among the whole cohort, 100 children (mean age 8.1±1.3; 42F) performed successfully PFTs according to ERS/ATS guidelines. Group 1 was constituted by 25 malnourished children (median BMI z-score -2.88), while the remaining 75 had an adequate nutritional status (group 2; median BMI z-score -0.63). Group 1 showed lower lung volumes, such as FVC (p<0.05) and FEV1 (p<0.01), when compared to group 2 (mean FVC 80.3±7.3* vs. 85.6±8.4*, median FVC 81* vs. 86*; mean FEV1 76.2±18* vs. 83.2±6*, median FEV1 78* vs. 86*). There was a significant correlation between BMI z-score with both FVC (r=0.25; p=0.01) and FEV1 (r = 0.35; p<0.01). * % of predicted values CONCLUSIONS: Our data highlight the close relationship between nutritional status and pulmonary function. Malnutrition has a negative effect on PFTs in Malgascian children. It might affect respiratory muscles strength and endurance and/or parenchymal structure of the lung. [1] Ong TJ et al. Arch Dis Child 1998;79:18-21.