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Title: Lung function at age 8 and 16 yrs in moderate-to-late preterm children

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Body: Background Lung function development in infancy and early childhood of infants born moderate-to-late preterm (32-36 gestational weeks) has been shown to be impaired compared to term children. Reports on long-term development of lung function are sparse, although catch-up growth from early school-age to adolescence has been suggested. Aim We hypothesize that moderate-to-late preterm children will have reduced lung function at 8 and 16 years compared to those born at term. Methods The prospective BAMSE birth cohort (n= 4089) has baseline information on risk factors, gestational age and data from follow-ups at 1, 2, 4, 8, 12 and 16 yrs. Lung function, including spirometry, was compared between moderate-to-late preterms (32-36 w) and children born at term (37-41 w) at 8 (n=2455) and 16 yrs (n=1873, follow-up still ongoing). Adjustments were made for sex, age and height. Results In BAMSE, 102 (5.4%) children were included in the moderate-late preterm group. At 8 yrs of age, FEV_1/FVC was significantly lower (-1.57 % units, p=0.006) for the preterm group compared to term children, and a similar tendency was seen for FEV_1 (-32 mL, p=0.089). At 16, both FEV_1/FVC (-2.49 % units, p<0.001) and FEV_1 (-121 mL, p=0.008) were significantly lower in the preterm group. Lung growth, estimated as FEV_1 increase from 8 to 16 yrs, was significantly lower for preterm compared to the term group (-122mL, p=0.006). Analysing moderate (32-34 w) and late (35-36 w) preterms separately did not change the results. Conclusions Children born moderate-to-late preterm had significantly reduced lung function at age 8 and 16 yrs. Their lung function decreased between 8 and 16 yrs compared to term children, indicating impaired lung growth.