

Growth in first three years of life affects respiratory health in children

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A new study analyzes the influence of weight and height on lung development and asthma risk in nearly 4,500 children in Rotterdam (Netherlands). Credit: Charlein Gracia

Children's growth in the first three years of life affects the development

of their lungs and the risk of asthma at 10 years of age. This is the main conclusion of a new study carried out by the Barcelona Institute for Global Health (ISGlobal) and Erasmus University Medical Centre in Rotterdam, the Netherlands.

Early infancy is a critical age for the subsequent development of respiratory diseases in childhood and later life. Recent studies have shown that excessive weight gain in the first years of life can be associated with lower [lung](#) function and a higher risk of childhood [asthma](#).

The new study, published in *Thorax*, examined whether early childhood growth patterns—ascertained by taking repeated weight and height measurements during the first three years of the child's life—affected respiratory health at the age of 10 years. The growth patterns analysed were peak height and weight growth velocities, which occur at around one month of age, and [body mass index](#) at adiposity peak, which occurs at around nine months of age.

The study tracked 4,435 children in the Netherlands participating in the Generation R Study, a population-based prospective cohort study, from birth until 10 years of age. The participants' weight and height were measured multiple times during the first three years of life. At age 10 years, spirometry was performed to assess the children's lung function and the parents answered a questionnaire designed to determine whether their child had been diagnosed with asthma by a physician.

"The findings show that the infants with the highest weight gain velocity and body mass index had lower lung function at 10 years of age," commented Maribel Casas, researcher at ISGlobal and Erasmus MC and lead author of the study. "Specifically, we observed that these children had a lower function related to the smaller airways in relation to their total lung volume. Although we did not observe any relationship between

height and weight growth and the risk of asthma, this disproportionate development of lung function could be a risk factor for the development of respiratory disease."

The study also found that "the later the children reached their peak body mass index, the better their [lung function](#) and, in the case of boys, the lower the risk of asthma," explained Casas.

"These results confirm that early childhood [growth](#) plays an important role in lung development."

More information: Maribel Casas et al, The effect of early growth patterns and lung function on the development of childhood asthma: a population based study, *Thorax* (2018). [DOI: 10.1136/thoraxjnl-2017-211216](#)

Provided by Barcelona Institute for Global Health (ISGlobal)

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