

Weight in first years of life can affect lung health in later childhood

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Body mass index (BMI) trajectories in the first years of life may be associated with lung function in later childhood. For example, children with accelerated BMI gain before age four years have higher lung function at age seven years, although they also exhibit airflow limitation. This is the conclusion of a new study by the Barcelona Institute for Global Health (ISGlobal), a centre supported by the "la Caixa" Foundation, which has been published in the *European Respiratory Journal*.

Early childhood is a key period for [lung function](#) development. Previous studies have found an association between weight in the [first years of life](#) and [lung](#) health in infancy and childhood. "These studies had certain limitations in terms of defining weight gain," explained Gabriela P. Peralta, researcher at ISGlobal and lead author of the study. "Most of them only considered the difference in weight between two points in time and did not take the overall trajectory into account. That's why we decided to carry out this new study."

The study used data on more than 1,200 children living in three areas of Spain—Sabadell, Valencia and Gipuzkoa—who were enrolled in birth cohort of the INMA Environment and Childhood Project. "First, we determined the children's BMI trajectory from birth to age four years and classified them in five categories. The trajectories differed in terms of weight at birth (which could be lower, average or higher) and speed of BMI gain (which could be slower or accelerated)," explained Peralta. BMI is an indicator based on weight in relation to height that is frequently used to classify overweight and obesity. The authors then analysed the relationship between BMI trajectory and lung function, which was measured by spirometry at age seven years. Forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1) and FEV1/FVC ratio were measured.

The findings showed that children with accelerated

BMI gain before age four years, regardless of weight at birth, had higher lung function at age seven years but also airflow limitation, which indicates difficulty expelling air from the lungs. In contrast, children with [lower weight](#) at birth and slower BMI gain in early childhood had lower lung function at age seven years.

Maribel Casas, a researcher at ISGlobal and co-coordinator of the study, said, "Our findings have important implications for research and [public health](#)." She added: "This study shows that BMI trajectories in early childhood are a useful tool for identifying growth patterns associated with poor respiratory health."

"Since weight gain is affected by modifiable factors, public health interventions in [early childhood](#) that promote [healthy lifestyles](#)—for example, healthy eating and physical activity—can help improve lung function and reduce respiratory morbidity in adulthood," concluded Judith Garcia-Aymerich, head of the Non-Communicable Diseases and Environment Programme at ISGlobal and co-coordinator of the study. "Public health strategies aimed at reducing respiratory health problems may need to focus on early [weight gain](#)."

More information: Early childhood growth is associated with lung function at seven years: a prospective population-based study, *European Respiratory Journal*. August 2020.

Provided by Barcelona Institute for Global Health

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