

Title: Childhood obesity is associated with higher incidence of paediatric onset asthma

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Commentary on: Lang JE, Bunnell HT, Hossain MJ, et al. Being Overweight or Obese and the Development of Asthma. *Pediatrics*. 2018 Dec;142(6). pii: e20182119. doi: 10.1542/peds.2018-2119

1. Implications for practice and research

- The findings of this study further support the importance of reducing childhood obesity levels to reduce the risk for co-morbidities, including asthma
- This study also found a more modest increase in risk of childhood asthma in overweight children, highlighting the importance of interventions focusing on preventing further weight gain for overweight children
- Future research can focus on understanding causal pathways and developing effective interventions to manage and prevent childhood obesity and associated comorbidities.

2. Context

There is clear evidence that obesity and asthma both place a significant burden on children, their families and health care systems. [1] We also know that obesity in adults and adult onset asthma are linked [2], however we are lacking evidence for this in the paediatric population. This study compared risk of asthma in US children with normal weight and overweight/obese children to assess the attributable risk of excess body weight on paediatric asthma incidence. [3]

3. Methods

This retrospective, longitudinal (2009-2015) cohort study assessed incidence of asthma in US children, using a 1:1 ratio according to overweight or obese and healthy weight. The study utilised the US database PEDSnet, (a national paediatric network that pools and standardises electronic health data) to collect clinical data from children across six paediatric academic medical centres. Participants (aged 2-17 years) were excluded if they had a previous asthma diagnosis, a clinical record of wheezing or prescription for asthma medication. For each included overweight or obese participant, one randomly selected control patient was matched for age (at initial visit), sex, race, ethnicity, insurance status and PEDSnet centre. The primary outcome measure was the incidence of asthma during the observation period. The authors determined incident asthma rates and rate risk ratios for each group, and attributable risk for overweight and obese children.

4. Findings

507,496 children were included with a mean participant observation period of 4 years. The authors report the adjusted risk for incident asthma was increased among children who were overweight (relative risk [RR]: 1.17; 95% confidence interval [CI]: 1.10–1.25) and obese (RR: 1.26; 95% CI: 1.18–1.34). An estimated 23% to 27% of new asthma cases in children with obesity is directly attributable to their weight. 10% of all cases of asthma would be avoided if all children were of a healthy weight.

The authors found no evidence of overdiagnosis of asthma in obese children compared to healthy and overweight children.

5. Commentary

We now have a large and consistent body of evidence indicating childhood obesity as a preventable risk factor for several morbidities. [4] This retrospective cohort study adds to previous research on the relationship between childhood obesity, onset and severity of asthma, [5] showing that childhood obesity is an attributable risk for paediatric onset asthma. However, an important finding is the more modest increase in risk for overweight children, which is significantly increased for obese children, emphasising the importance for interventions to focus not only at reducing weight but also on preventing further weight gain for all children with a BMI over 65th centile.

There are some important limitations to this study. It is a retrospective cohort study, using routinely clinically collected data and therefore limits the ability to establish a causal effect and to rule out reverse causality. In addition there is a risk of selection bias due to the cohort design and the nature of matching. The authors report on attributable risk, which is more useful in health planning than focusing on relative risk alone. The former are good at estimating the strength of an association between a risk factor and a disease but are not a good measure of causality. The authors also report increases in cases of asthma caused by childhood obesity alone as six or more per 1000 patient years, which means that there would be on average six new asthma cases per 1000 children in any 1-year period. Whether this likely to be considered a clinically meaningful increase is debatable. Nevertheless, as rising obesity levels are known to increase risk factors for several non-communicable diseases and are a public health concern, the main conclusion to develop interventions that effectively reduce excess weight and prevent further weight gain remains important.

6. References

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Competing interests:

The authors have no competing interests to declare.