Obesity can add five weeks of asthma symptoms per year in preschoolers

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Asthma affects almost 1 in 10 children in the U.S. and is a leading cause of emergency room visits and hospitalizations in preschoolers. According to new research from Duke Health and collaborators, symptoms may be worse for children ages 2 to 5 who are overweight.

In a study publishing Dec. 19 in the *Journal of Clinical Immunology*, preschoolers with a body mass index (BMI) beyond the 84th percentile who weren't using an inhaler had 70 percent more days with asthma symptoms per year than untreated peers of a healthy weight.

Compared to healthy-weight peers, asthma sufferers who were untreated and overweight suffered 37 more symptom-days—more

than five extra weeks—per year. Researchers also found untreated children who were overweight had more asthma attacks than untreated peers of a healthy weight.

There is good news: obesity doesn't seem to lessen the effectiveness of corticosteroid inhalers, the standard treatment to ease asthma symptoms such as shortness of breath, coughing and chest pain, said Jason Lang, M.D., a pediatric lung specialist and director of the Duke Children's Pulmonary Function Laboratory, who led the study.

When used daily, inhalers reduced the number of symptom-days and asthma attacks in both healthy and overweight children, and may even be more protective to overweight children, the authors found.

"The impact of overweight and obesity on asthma has not been studied in the youngest asthma patients, and this finding is the opposite of what has been seen in older kids and adults who are overweight," Lang said. "Reports in older children and adults with asthma who are overweight have shown a poor response to inhaled corticosteroids to manage their asthma. This study suggests either pathways of inflammation are a bit different in preschool-aged patients, or that it takes years for obesity to reduce the effectiveness of steroid inhalers."

The study analyzed data from three randomized, controlled clinical trials conducted between 2001 and 2015 called INFANT, PEAK and MIST that included 736 children. One-third of participants had a BMI above the 84th percentile.

Some trial participants were randomly assigned to use inhalers daily while some used them intermittently; some received placebos and some received no treatment.

The authors believe this is the first study on whether obesity impacts asthma severity and the effectiveness of inhalers in preschoolers, but the study does have limitations, including that it was a retrospective analysis, one that searches back

in time to seek patterns.

Prospective, or forward-looking, research with a larger number of children could offer more insights into the best asthma treatments for overweight preschoolers and include strategies that address weight loss, the authors said.

“This study uses the best, mostly highly controlled data to demonstrate that early-life weight gain does worsen the severity of asthma in the youngest patients,” Lang said. “Weight does not hamper the effectiveness of inhaled steroids in preschoolers, but this study provides clear evidence that maintaining a healthy weight in preschoolers may be an effective strategy for controlling asthma.”

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