Medical Xpress

Air filters shown to improve breathing in children with asthma

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(HealthDay)—Daily use of a fine particulate matter air filtration device

can significantly improve airway mechanics and reduce airway resistance in children with asthma, according to a study recently published in *JAMA Pediatrics*.

Xiaoxing Cui, Ph.D., of the Nicholas School of the Environment at Duke University in Durham, North Carolina, and colleagues performed a double-blind study of 43 children with mild-to-moderate asthma (ages ranging from 5 to 13 years) to test the efficacy of daily use of a fine particle (generalized particulate matter 2.5 µm in size [$PM_{2.5}$]) filter device. The authors initiated random placement of a working $PM_{2.5}$ filtration device and a placebo filtration device within the children's bedrooms for two weeks, incorporating a two week washout interval period.

The researchers found that while using the $PM_{2.5}$ filtration device, the concentrations of $PM_{2.5}$ within the bedrooms were a mean (SD) of 63.4 percent (35.9 percent) lower than when the placebo filter was used. The use of a true filter also incrementally improved airway mechanics, shown in peak expiratory flow (1.6 percent) and fractional exhaled nitric oxide (a 27.6 percent reduction). Additionally, the children exhibited a reduction in total airway resistance of 24.4 percent, a reduction of 43.5 percent in small airway resistance, an reduction of 22.2 percent in resonant frequency, and an increase of 73.1 percent in airway reactance.

"These observations support a future clinical trial to assess the efficacy and effectiveness of indoor air filtration in improving small airway pathophysiology that plays a vital role in asthma," the authors write.

More information: Abstract/Full Text (subscription or payments may be required)