

Housing quality may affect kids with ADHD

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Attention deficit/hyperactivity disorder (ADHD) is the most frequently diagnosed behavioral and neurodevelopmental disorder in childhood. Children with ADHD experience difficulty with one or more of its core symptoms—inattention, impulsivity and hyperactivity.

While researchers aren't entirely sure what the underlying cause of ADHD is, in most cases, genetics appears to be a factor in the development of the condition. But there are also environmental determinants that might affect the severity of symptoms and outcomes.

A recent study from UNSW Sydney found ADHD in children correlated with indoor environmental quality (IEQ) in homes. The research is among the first with a large sample size to document the association between ADHD in children and the indoor conditions of their homes, including lighting, acoustic quality, [air quality](#) and thermal comfort.

The findings are published in the journal *Sustainability* and echo growing concerns about the impact of poor-quality indoor environments—such as schools and homes—on the well-being of children, particularly those with different cognitive abilities. The results also come as a new parliamentary inquiry examining the impact of ADHD on people around Australia has been announced.

"While the findings don't necessarily mean causality, and there are many confounding factors we didn't control for, this research suggests the indoor environment has some influence on symptom presentations and severity of ADHD in children," says Professor Valsamma Eapen, a child psychiatrist and senior author of the study from UNSW Medicine & Health.

For the study, the researchers examined the link between IEQ and ADHD in children. They surveyed 435 parents of children aged 5–17 with ADHD in Australia using the home version of the ADHD Rating Scale for Children and Adolescents and a self-reporting Housing Environmental Quality Assessment tool. A control group of children who did not have ADHD were included in the study for comparison.

The research found for over one in 10 children with ADHD, housing

IEQ factors were associated with the symptoms and diagnosis of ADHD. The poorer the IEQ, the more severe the symptoms were.

"Children with ADHD may be extra sensitive to their everyday surroundings and [home environment](#)," says Sima Alizadeh, lead author of the study and Ph.D. candidate from the School of Built Environment at UNSW Arts, Design & Architecture. "In particular, the severity of inattention and hyperactivity-impulsivity was impacted by a collective contribution of air quality, acoustic quality, and problems with lighting and thermal comfort within their home."

The findings support previous research, which has also shown things such as everyday distractions like noise adversely influence children's psychological well-being and may worsen inattention and behavioral issues in children with ADHD.

Creating ADHD-friendly spaces

There are ways to help manage ADHD symptoms, including medication and behavioral therapy and support—and the findings suggest adjusting our indoor spaces may also be key to supporting children with ADHD.

"Having air free from unpleasant smells or dust, sufficient lighting, and suitable acoustic quality free from distracting noise at home may help to manage ADHD symptoms," Ms Alizadeh says. "It is also vital to have heaters and fans in the home to provide a comfortable temperature for the children."

Children spend most of their time at home and indoors. However, most homes are designed for the needs of an average healthy adult user. The researchers say building regulations should be improved to accommodate more diverse needs.

"It's essential to add some policy guidelines for future housing to ensure the indoor environmental quality factors we can control like ventilation and air quality are ADHD-friendly," Ms Alizadeh says. "Furthermore, maintaining the indoor environmental quality is not just beneficial for children with ADHD, but also the well-being and general health of the broader population."

The researchers hope to build on the study's finding with qualitative assessments testing the IEQ preferences of children with ADHD and their parents.

"Alongside addressing air quality and thermal comfort in the home, it's important we are looking at how all of the spaces in our lives like outdoors and [green space](#) can better support children with ADHD," Prof. Eapen says.

More information: Sima Alizadeh et al, Home Indoor Environmental Quality and Attention Deficit Hyperactivity Disorder, *Sustainability* (2023). [DOI: 10.3390/su15042899](https://doi.org/10.3390/su15042899)

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