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Home Modification for Families and Caregivers of Children with ADHD

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Abstract

This review provides practical, research-based guidance for parents, grandparents, and caregivers on how to create home environments that support the needs of children with attention deficit hyperactivity disorder (ADHD). Given that children with ADHD are especially sensitive to sensory and environmental stimuli, the physical home setting can significantly influence their attention, behavior, and emotional regulation. Drawing from recent studies and expert recommendations, this guide outlines how various aspects of the indoor and outdoor environment—such as air quality, lighting, spatial layout, furnishing, neighborhood quality, and access to green spaces—can be modified to reduce overstimulation, increase comfort, and support cognitive and emotional development. Strategies include soundproofing, improving ventilation, optimizing lighting, ensuring safety and privacy, and enhancing opportunities for restorative nature exposure. This resource aims to empower families with actionable insights to create nurturing, structured, and safe living spaces that improve daily life and well-being for children with ADHD.

Keywords

home modifications; ADHD-friendly design; child mental health; indoor environmental quality; ADHD home adaptations, neurodiversity design

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Contribution of Authors

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Dr Sima Alizadeh devised the project and developed the main conceptual ideas, research design, and methodology. She conducted the literature review, carried out data collection and evaluation, and was responsible for writing and editing the paper.

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Contents

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Glossary

ADHD	Attention Deficit Hyperactivity Disorder
HEPA	High-efficiency particulate air
IAQ	Indoor air quality
IEQ	Indoor environmental quality
VOCs	Volatile organic compounds

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Background

Parents and Grandparents who are caregivers of children with ADHD may find information about home modification pertinent to how they support day to day activities within the family home. Young children often face challenges such as sitting still, focusing, memorizing, and following instructions. In most cases, these difficulties improve naturally as they grow and develop. But, for children with attention deficit hyperactivity disorder (ADHD), these challenges can be more severe and may continue into adulthood.

Individuals with ADHD often struggle to ignore environmental stimuli encountered in their daily lives (Tufvesson & Tufvesson, 2009). This difficulty in filtering out input from their surroundings makes them particularly sensitive to the influence of features in their environment, including their home setting (Zentall, 2005).

This review offers information for parents, grandparents, and caregivers about aspects of the home environment that can influence the concentration and behavior of children and adolescents with ADHD. It also provides practical strategies and suggestions for creating an ADHD-friendly home, making it more comfortable for individuals with cognitive impairments, attention deficits, and hyperactivity-impulsivity behaviors.

What is ADHD?

ADHD is the most commonly diagnosed behavioral and neurodevelopmental disorder in childhood, affecting functioning, activity levels, or development. It is defined by one or more core symptoms— inattention, impulsivity, and hyperactivity— that are inconsistent with an individual's developmental age and can manifest at mild, moderate, or severe levels, as outlined in the DSM-5 (APA, 2013; Berger & Goldzweig, 2010; Bruce, Thernlund, & Nettelbladt, 2006; Stephen V Faraone, Sergeant, Gillberg, & Biederman, 2003; Remschmidt, 2005).

Children with ADHD often face challenges with cognitive abilities, which involve a range of mental functions, including understanding, focusing, perceiving, remembering, decision-making, and problem-solving. These difficulties can significantly hinder their ability to process information and carry out daily tasks (Claesdotter, Cervin, Åkerlund, Råstam, & Lindvall, 2018; Maheria Suhaag, 2024; Moura, Costa, & Simões, 2019).

Symptoms of ADHD

ADHD can significantly impact various aspects of a child's performance and behavior at home and at school (Stephen V. Faraone et al., 2015). These impacts may include difficulties with sustaining attention, social skills, learning, and self-regulation (Bruce et al., 2006), which often persist into adolescence and even adulthood (Cherkasova et al., 2022; Stephen V Faraone et al., 2003).

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In children, ADHD may present as an inability to sit still in the classroom, frequent fidgeting, or interrupting others during conversations. In adults, it might manifest as constant fidgeting during work meetings or experiencing a persistent sense of restlessness, which can make it challenging to focus and complete tasks requiring sustained attention (Archibald, Kerns, Mateer, & Ismay, 2005; Lombardi, 2019; National Institute of Mental Health, 2017; Pliszka, 2007).

Economic and social impacts of ADHD

ADHD imposes a significant and multifaceted economic impacts on individuals, families, and society as a whole. In Australia alone, the economic and well-being costs associated with ADHD are estimated to be $20 billion annually (Deloitte Access Economics, 2019; Sciberras et al., 2022). This impact arises from direct medical expenses, indirect costs such as productivity losses, and additional expenditures related to special education and involvement in the criminal justice system. As a result, ADHD impacts healthcare systems, the workforce, educational institutions, and the criminal justice sector (Chhibber, Watanabe, Chaisai, Veettil, & Chaiyakunapruk, 2021; Fletcher & Wolfe, 2009; Gupte-Singh, Singh, & Lawson, 2017; Schein et al., 2022).

Individuals with ADHD often face challenges such as lower occupational status, difficulties in maintaining healthy social relationships, and an increased likelihood of committing motoring offenses. Furthermore, they are at higher risk of developing substance abuse problems (Adamou et al., 2013). The condition also affects family members, with parents and siblings often experiencing heightened stress levels and a greater likelihood of depression (King, Alexander, & Seabi, 2016; Orm & Fjermestad, 2021; Peasgood et al., 2016; Theule, Wiener, Rogers, & Marton, 2011; van Steijn, Oerlemans, van Aken, Buitelaar, & Rommelse, 2014).

Importance of Home Modification for ADHD

Urbanization and modern lifestyles have led children to spend most of their time indoors, primarily within their home environment (Mendell & Heath, 2005; National Research Council, 1981; Wherry, 2004). As a result, their growth and development largely take place within this setting.

The quality of the home environment has therefore become increasingly significant, as substandard housing can lead to health issues and negatively affect residents' overall well-being. Children are especially vulnerable to the harmful effects of poor housing quality due to the rapid physical and mental development they experience during this stage of life (World Health Organization, 2006).

Children with ADHD are particularly sensitive to their surroundings (Zentall, 2005), and can face extra challenges in the home. They process emotional and environmental stimuli more intensely and thoroughly than others and often notice more details in their environment, which can lead to overstimulation and an aggravation of ADHD symptoms (Listou Grimen & Diseth, 2016).

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For instance, prolonged exposure to fluorescent lighting may trigger painful photophobia in individuals with ADHD (Green, 2018). Even subtle stimuli, such as the humming of an air conditioner, the irritation from a clothing tag, or the flicker of a candle, can become significant distractions (Low, 2019). Consequently, home environments with multiple sensory inputs make it difficult for them to maintain focus, which can adversely affect their cognitive abilities and overall mental well-being (Barber, Grubbs, & Cottrell, 2005).

The Impact of Home Environment on ADHD: Key Factors for a Supportive Living Space

Home modification for children with ADHD is an important consideration for managing symptoms and creating a comfortable environment that promotes safety, security, and well-being. Research has identified several housing factors that influence the severity of ADHD symptoms. The following provides insights and recommendations to help caregivers create an optimal home setting for children with ADHD.

Indoor Environment

Creating an optimal indoor environment is vital for supporting children with ADHD, as environmental factors profoundly influence their behavior, attention, and overall well-being. Children with ADHD are particularly sensitive to sensory inputs, and poor environmental conditions can exacerbate their symptoms. This guide explores key aspects of indoor environmental quality (IEQ)—acoustic quality, air quality, thermal comfort, and lighting quality—and provides practical recommendations for creating a supportive and calming home environment.

Acoustic quality

Noise is one of the most significant environmental challenges for children with ADHD. They are especially sensitive to auditory stimuli, and high noise levels can act as chronic stressors that overstimulate their already heightened sensory responses. Persistent exposure to noise can exacerbate difficulties with attention regulation, impulse control, and hyperactivity. It can also impair cognitive functions like working memory and concentration, further complicating their ability to learn and process information (Enmarker & Boman, 2004; McAllister & Maguire, 2012; Norlander, Moås, & Archer, 2005; Stansfeld & Clark, 2015). Additionally, environmental noise disrupts sleep quality, which is crucial for emotional and cognitive functioning. Sleep disturbances, already common among children with ADHD, can worsen under noisy conditions (Gamble, May, Besing, Tankersly, & Fargason, 2013; Konofal, Lecendreux, & Cortese, 2010).

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Recommendations for ADHD-friendly acoustic quality:

- **External walls**: Consider sound-reducing construction techniques such as hollow blockwork, cavity wall systems, and increased cross-sections to reduce noise infiltration from outside. These are particularly beneficial for homes located near heavy traffic, schools, or parks (Mostafa, 2010).

- **Openings**: Minimize openings, especially in bedrooms and other quiet areas, to reduce external noise. Use double or triple-glazed windows and install sound-trapping devices, like louvered fins, over openings. Heavy curtains made of materials like velvet or gauzy cotton can further dampen external noise (Tufvesson, 2007).

- **Internal walls and ceilings**: Use soundproof insulation for walls and ceilings to reduce noise transmission between rooms. Special attention should be given to noise-generating areas like kitchens and bathrooms, where plumbing systems can contribute to disruptive sounds.

- **Internal noise sources and echo-proofing**: Incorporate non-reflective, sound-absorbent materials for floors, walls, and ceilings to minimize echoes. Floating floor systems, paired with sound insulation materials, are particularly effective in improving the acoustical quality of critical spaces. Reflective materials like ceramic tiles should be limited to necessary areas, such as splash zones in kitchens and bathrooms (Mostafa, 2010).

Air quality

Indoor air quality (IAQ) significantly impacts children with ADHD, as exposure to allergens, pollutants, and particulates can exacerbate their symptoms. Poor air quality can lead to respiratory issues, irritation, and discomfort, all of which can heighten ADHD-related challenges. Research has linked exposure to traffic-related air pollution and indoor pollutants with neurodevelopmental disorders, including ADHD. Additionally, unpleasant odors can cause sensory discomfort for children with heightened olfactory sensitivity, further impacting their focus and mood (Alizadeh, Bridge, Judd, & Eapen, 2023; IQAir, 2016; Needleman, Schell, Bellinger, Leviton, & Allred, 1990; Newman et al., 2013; Schneider, 2002; Siddique, Banerjee, Ray, & Lahiri, 2011; Silver, 2022).

Recommendations for ADHD-friendly air quality:

- Use high-efficiency particulate air (HEPA) filters in air purifiers and vacuum cleaners to reduce airborne particles, allergens, and pollutants (Lowther et al., 2020; Roberts et al., 2009; Vicente et al., 2020).

- Ensure adequate ventilation to maintain fresh air circulation and minimize the buildup of carbon dioxide, which can cause headaches, drowsiness, and difficulty concentrating.

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- Avoid materials and furnishings that release volatile organic compounds (VOCs) or other toxic chemicals. Choose natural, non-toxic materials whenever possible.

- Pay attention to odors in the home by incorporating ventilation solutions that help neutralize unpleasant smells, especially in kitchens and bathrooms.

Thermal comfort

Thermal comfort is an often-overlooked aspect of indoor environmental quality that significantly affects children with ADHD. Unsuitable temperatures can cause discomfort, reduce attention spans, and worsen symptoms (Al Horr et al., 2016; Geng, Ji, Lin, & Zhu, 2017; Wargocki et al., 2012). Cooler environments are often more suitable for children with hyperactive tendencies, helping to regulate energy levels and support better focus (Mostafa, 2010).

Recommendations for ADHD-friendly thermal comfort:

- Use fans, heaters, and air conditioning systems to maintain a stable and comfortable indoor temperature.

- Install ceiling fans to provide cooling in rooms where children with ADHD spend a significant amount of time.

- Avoid drastic temperature fluctuations by insulating walls, windows, and doors to create a stable thermal environment.

- Monitor humidity levels, as excessive heat and humidity can lead to increased discomfort and reduced concentration.

Lighting quality

Lighting has a profound impact on mood, behavior, and concentration, making it a critical element of ADHD-friendly home design. Natural lighting, while beneficial, must be carefully managed to avoid glare, excessive brightness, or visual distractions. Inappropriate artificial lighting, particularly flickering fluorescent lights, can exacerbate hyperactivity and distractibility in children with ADHD (Alizadeh et al., 2023; Green, 2018; McKnight, 2010; Mostafa, 2010; Tufvesson & Tufvesson, 2009).

Recommendations for ADHD-friendly lighting quality:

- **Natural lighting**: Utilize indirect natural light to minimize glare and distractions. Clerestory windows or frosted glass can provide daylight without overwhelming visual stimulation (McAllister & Maguire, 2012).

- **Window views**: Place windows strategically to avoid direct exposure to visually busy areas like streets or playgrounds, which can be distracting.

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- **Artificial lighting**: Avoid fluorescent lighting due to its flickering and humming sounds, which can irritate children with ADHD. Select soft-tone or incandescent bulbs and install dimmer switches to allow adjustments based on sensory needs (McAllister, 2010; Mostafa, 2010; Wertz, 2012).

- **Lighting orientation**: Ensure that windows face directions that provide consistent, non-harsh lighting. In Australia, north- or east-facing windows are ideal, as they receive abundant and balanced natural light, especially morning light from the east. South- and west-facing windows should be used cautiously, as they receive less light or intense afternoon sun, which may cause glare or overheating (Alizadeh et al., 2023; McAllister & Maguire, 2012).

Summary of indoor environment

An optimal indoor environment is crucial for supporting children with ADHD, as they are highly sensitive to sensory inputs. Poor conditions can worsen symptoms like inattention, hyperactivity, and impaired cognitive functions. Key aspects include acoustic quality, air quality, thermal comfort, and lighting quality. High noise levels can disrupt sleep and concentration, so strategies such as sound-reducing walls, minimized openings, and echo-proofing are recommended. Indoor air quality also plays a vital role; using HEPA filters, ensuring proper ventilation, and avoiding toxic materials can help reduce allergens and pollutants linked to neurodevelopmental issues. Maintaining thermal comfort is essential too—stable temperatures and controlled humidity levels help prevent discomfort and support better focus, particularly in hyperactive children. Additionally, proper lighting is critical: while natural light is beneficial, it must be managed to avoid glare and distractions, and fluorescent lighting should be avoided in favor of softer, adjustable options. Overall, a well-designed indoor environment with these considerations can significantly reduce sensory overload and enhance the well-being of children with ADHD.

Indoor Space

Designing indoor spaces with ADHD in mind involves carefully considering how the scale, organization, orientation, and privacy of a home affect a child's ability to focus and regulate their emotions. The following explores the role of spatial geometry, zoning, and orientation, along with the importance of private areas, in creating environments that reduce distractions and overstimulation for children with ADHD.

Spatial geometry

The scale and proportion of spaces within a home significantly affect how children with ADHD interact with their environment. Large, open spaces, particularly when finished with non-sound-absorbent materials, can create echoes that are distracting and overstimulating. To mitigate this, smaller or well-proportioned spaces with sound-absorbent materials should be prioritized. High spaces, such as stairwells, and long

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corridors can amplify sound and visual distractions. Minimally enclosed stairwells can help reduce echo and contribute to a calmer atmosphere (Mostafa, 2010).

Spatial organization and zoning

The organization and zoning of spaces are critical in creating an environment that supports focus and minimizes distractions for children with ADHD. High-stimulation areas, such as kitchens and bathrooms, should be located away from quiet zones like bedrooms and study areas. When high-stimulation zones are placed along main circulation paths, they can cause unnecessary distractions. Additionally, clear boundaries should be provided between activity zones. Rooms should be divided into distinct zones for specific purposes, such as studying, relaxing, or playing, to provide clarity, predictability, and structure to the space, and reducing overstimulation (Alkahtany, 2014b; Henry, 2012; Mostafa, 2008; Tufvesson & Tufvesson, 2009).

Spatial orientation and climatic issues

This point involves the interaction of the building with its natural surroundings. How a room is oriented will influence its physical characteristics. For example, in Australia, a south-facing room will be colder than a north-facing room, due to orientation of solar radiation. This can be taken into consideration while designing an ADHD-friendly space.

A hyperactive individual may require a cooler environment than a less active or sedentary one. Orientation can also influence natural ventilation in the building. For hyper-olfactory sensitive children, ventilation is essential as it helps naturally flush out any disturbing and uncomfortable odors (Mostafa, 2010).

Privacy

Privacy is one of the key considerations for children with ADHD, particularly those with inattention symptoms. Shared bedrooms can increase distractions and stress levels, whereas having access to personal space allows children to retreat from external stimuli, practice focusing, and promote self-regulation (Alizadeh, 2025). When private bedrooms are not possible, creating designated quiet zones within the home can help mitigate the impact of shared spaces. Research has also linked inadequate private spaces to increased depression and anxiety (Bonnefoy et al., 2004; Weich et al., 2001).

Summary of indoor space

In summary, the design of a home can greatly influences the well-being of children with ADHD. Well-proportioned spaces with sound-absorbent materials help minimize distracting echoes, while thoughtful spatial organization—separating high-stimulation

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areas from quiet zones—provides a structured, calming environment. Proper orientation improves natural ventilation and temperature control, and ensuring privacy through dedicated personal spaces reduces distractions and stress. Together, these spatial strategies create a supportive setting that can help children with ADHD manage their symptoms.

Architectural Characteristics

Architectural characteristics of an environment are powerful tools in shaping homes that support the unique needs of children with ADHD. Children with ADHD are particularly sensitive to their surroundings, and the architecture, layout, and access features of a home can significantly influence their attention, behavior, and emotional regulation. This section explores how architectural design, spatial layout, structural features, and home characteristics—such as size, type, and access—can be optimized to create ADHD-friendly living environments.

Architecture

Architectural design plays a vital role in creating an ADHD-friendly environment. Complex designs and features like multiple doors into a room or windows on several walls increase sensory input and can be overwhelming, causing distractions. Instead, simplicity should guide the design process. Thoughtful placement of these elements as well as smaller, more enclosed spaces can create a more calming environment and help children with ADHD feel secure and focused, especially in bedrooms or personal spaces. For bedrooms, a single bed against one wall or a tent-like structure can enhance a child’s sense of security (Mostafa, 2010; Tufvesson, 2007).

While smaller, enclosed spaces are beneficial, larger spaces for group activities are also necessary. In these cases, incorporating "escape spaces" within the larger areas allows children to retreat and self-regulate when needed.

Structure and layout

The structure and layout of a home significantly influence the attention, behavior, and emotional regulation of children with ADHD. Research indicates that homes with unsound structures or problematic layouts are often linked to more severe ADHD symptoms and comorbid conditions. More specifically, homes with open-plan layouts, unsuitable structures such as thin walls, uneven floors, or outdated layouts featuring numerous small rooms and corners have been identified as factors that exacerbate ADHD-related challenges (Alizadeh, 2025). On the other hand, well-designed homes with clear spatial organization, defined activity zones (study areas, play areas, and quiet spaces), and minimal distractions reduce overstimulation and contribute to better focus and behavior (Alkahtany, 2014b; Nagib & Williams, 2018).

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ISBN: 978-0-7334-4107-3 Evidence Based Practice Review Series ISBN: 978-0-7334-3663-5 **www.homemods.info**

Recommendations for ADHD-friendly architecture and layout:

- **Logical and simple layouts**: Design the home with simple and straightforward layouts. Also, create clear boundaries and organize spaces by function, separating high-stimulation zones from quiet areas for different activities, such as studying, playing, and resting. This structure helps children understand and navigate their environment with less cognitive effort.

- **Minimize open-plan designs**: Avoid overly open spaces that lack distinct boundaries, as they can overwhelm children with ADHD and increase distractions. Instead, create distinct, smaller, enclosed spaces for personal or focused activities, along with larger areas equipped with "escape spaces".

- **Strategic placement of openings**: Position doors and windows thoughtfully to minimize visual distractions. For instance, avoid having multiple windows on the same wall in study areas or bedrooms, as excessive external stimuli can hinder concentration.

Why it matters:

The association between ADHD and home structure can be understood through the lens of sensory and cognitive processing challenges. Children with ADHD often struggle with overstimulation and disorganization, both of which can be exacerbated by chaotic or poorly designed home layouts. A well-structured home with logical spatial sequencing can reduce these stressors and create a calming environment conducive to learning, relaxation, and social interaction.

Home size, type, and access

While home type, size, and access may not directly determine whether a child has ADHD, they do influence symptom severity, particularly inattention. Larger homes tend to be rated as more suitable for children with ADHD, as they provide quiet areas that enhance acoustic comfort. Conversely, smaller homes may contribute to overstimulation, although enclosed spaces can also be beneficial for concentration and offer a sense of emotional security for children. Respondents in studies rated detached houses as the most suitable home type, while townhouses and apartments were considered less ideal. Direct street or garden access was also preferred over balcony access (Alizadeh, 2025). Overcrowded living spaces can lead to stress and exacerbate ADHD symptoms, making space planning an essential factor.

Recommendations for ADHD-friendly home size, type, and access:

- **Home size**: Larger homes offer more flexibility in creating designated spaces for different activities, though smaller, enclosed areas can provide comfort and focus when needed.

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- **Home type**: Separate houses are generally preferred over apartments or townhouses, which may have higher noise levels and fewer outdoor spaces.

- **Home access**: Direct access to a garden or street is considered more suitable than access via balconies or shared hallways, which may pose safety and sensory challenges.

Summary of architecture and layout

In summary, suitable home structures and layouts are those that address the unique sensory and cognitive needs of children with ADHD. By emphasizing simplicity, organization, and a thoughtful division of space, parents, grandparents, and caregivers can create a nurturing environment that enhances attention, behavior, and overall well-being.

Interior Design

Creating an environment that is supportive of children with ADHD requires careful consideration of interior design elements. Choices around furnishing, finishing materials, colors, and textures can significantly impact their ability to focus, feel secure, and manage sensory sensitivities. For a home designed to meet the needs of children with ADHD, simplicity, unity, and sensory-conscious choices are key. Below are detailed recommendations and justifications to help create an ADHD-friendly interior design.

Furnishings and layout

Clarity and visual cues: Clear pathways, predictable layouts, and a straightforward arrangement of furniture reduce cognitive load and help children feel more in control of their surroundings. Simple designs and well-coordinated layouts help guide movement, prevent confusion, and promote safety (Alkahtany, 2014b; McAllister & Maguire, 2012; Mostafa, 2010). Circulation patterns should be logical and aligned with sensory stimulus zones, creating an environment that facilitates control and reduces hyperactivity.

Avoid loose and distracting furnishings: Loose interior decorations, such as excessive wall art or clutter, can negatively impact attention. Accessories should be kept minimal and functional rather than purely aesthetic. For example, designing windows with clear and minimal detailing can reduce shadows and create a calming atmosphere (Tufvesson, 2007).

Closed storage solutions: Open-shelf storage can be visually distracting and overwhelming for children with ADHD. Instead, closed storage options, such as cupboards and drawers, are recommended to maintain a tidy and organized

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environment. Even infrequently used materials and equipment should be stored out of sight to reduce visual clutter (Tufvesson & Tufvesson, 2009).

Safe and functional furniture: Classical furniture designs with rounded edges and curves are safer for children prone to impulsive or hyperactive movements (Alkahtany, 2014a). Multifunctional furniture can further reduce clutter and promote organization, creating a more structured and ADHD-friendly environment.

Encouraging social interaction: Furniture arrangements that encourage eye contact and interaction among family members can foster stronger social bonds and reduce feelings of isolation. For example, seating arrangements designed to promote communication can improve psychological adjustment and emotional well-being (Engineer et al., 2021; Timko, 1996).

Movable and flexible furniture: Movable furniture accommodates children's need for physical activity while maintaining safety. Clear pathways ensure easy navigation, reducing the risk of accidents caused by impulsive behavior.

Recommendations for ADHD-friendly furnishing choices:

- **Safety and clarity**: Simple furniture arrangements and closed storage options minimize distractions and create a safer environment.
- **Reduced visual clutter**: Closed storage solutions and minimal decorations prevent overstimulation and help children maintain focus.
- **Promoting social bonds**: Arranging furniture to encourage interaction supports emotional regulation and reduces isolation.
- **Facilitating movement**: Clear circulation patterns and movable furniture cater to hyperactive behavior while promoting safety.

Finishing materials

Unified design for a sense of calm: A unified and cohesive design across ceilings, walls, and floors is essential in reducing distractions and providing a sense of predictability. By using coherent finishing materials, such as matching colors and textures, the space can feel more harmonious and less overwhelming. Consistency in the durability, degree of isolation, and level of sound absorption of materials further contributes to an environment that promotes focus and calmness (Alkahtany, 2014b; Alqahtani, 2015; Mostafa, 2010; Nagib & Williams, 2018). For example, matching the color of ceilings to walls and floors eliminates visual breaks that might otherwise draw attention.

Non-reflective and sound-absorbent materials: One key consideration for ADHD-friendly interiors is to minimize both auditory and visual distractions. Non-reflective,

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sound-absorbent materials are highly recommended to dampen noise and avoid distracting glares (Mostafa, 2010). Examples include:

- **Natural softwoods**: Materials such as pine or maple are ideal for floors, walls, and ceilings due to their sound-dampening properties.
- **Cork flooring**: Cork is a natural material that provides excellent soundproofing and reduces echoes, making it a practical choice for creating a quieter environment.
- **Natural sisal**: This material is both tactile and sound-absorbent, offering a calming texture while reducing noise levels.
- **Textured non-glossy paints**: These can be used for walls to avoid reflective surfaces and enhance sound absorption.

Avoiding reflective and noisy surfaces: Materials like ceramic tiles, while durable, are not ideal for ADHD-friendly designs. Ceramic floors reflect sound, especially in unfurnished spaces, and their hardness can pose safety risks if items are dropped or children fall. Instead, floating floors, carpets, or timber flooring are recommended. These materials help reduce noise and provide a softer, safer surface (Alkahtany, 2014a; Mostafa, 2010).

Durability and safety: The durability of materials is also an important factor in homes with children. Natural materials like maple or cork are not only sturdy but also safer for children who are prone to impulsive actions (Alkahtany, 2014b). Their ability to withstand wear and tear ensures a long-lasting solution that remains ADHD-friendly.

Colors and patterns

Impact of colors on focus and mood: Color is a powerful tool in shaping the mood and atmosphere of a space. For children with ADHD, pale, neutral colors are the most effective in reducing sensory overload (Mostafa, 2010).

Recommendations for ADHD-friendly color choices:

- **Single light colors such as whites and off-whites**: These provide a neutral backdrop that is calming and non-stimulating.
- **Colors with calming effects such as pale pink and beige tones**: Soft and soothing, these colors contribute to a sense of tranquility.
- **Avoid complex color schemes**: Mixed colors or bold patterns on walls and ceilings can be overwhelming and distract attention. Bright or highly saturated colors, as well as contrasting combinations, can also create unnecessary stimulation and make it difficult for children to focus (Alkahtany, 2014a; Wertz, 2012).

Evidence Based Practice Review: Home Modification for Families and Caregivers of Children with ADHD
August 2025; DOI: 10.26288/zs85-qd22
ISBN: 978-0-7334-4107-3 Evidence Based Practice Review Series ISBN: 978-0-7334-3663-5 **www.homemods.info**

Minimal use of patterns: Patterns on walls, ceilings, or flooring should be kept to a minimum. Busy or intricate patterns can overwhelm children with ADHD and exacerbate symptoms such as hyperactivity and impulsivity. Instead, opt for plain surfaces or subtle textures that contribute to a visually calm environment.

Unified color schemes: Maintaining a consistent color scheme throughout the space can help reduce cognitive load and create a sense of predictability. This unity makes the environment easier for children to navigate and process, promoting a sense of security and focus.

Textures

Smooth and soft materials and textures: Children with ADHD often experience heightened tactile sensitivities. Using smooth, soft textures can prevent overstimulation and promote a soothing atmosphere.

Recommendations for ADHD-friendly material choices:

- **Cork**: Soft and warm to the touch, cork is an excellent choice for floors and walls.
- **Natural wood**: Smooth, polished woods like maple provide a tactile experience that is calming.
- **Soft carpets**: Carpets with a smooth, even texture are ideal for creating comfortable and quiet spaces.

Avoid overstimulating textures: Rough or highly textured surfaces can overstimulate children with tactile sensitivities, leading to discomfort or distraction. Materials should be chosen with these sensitivities in mind to create a balanced environment.

Functional balance: Texture should also support the functional needs of the space. For example, soft, sound-absorbent materials help minimize auditory distractions, while smooth, easy-to-clean surfaces ensure practicality for everyday use.

Recommendations for ADHD-friendly design choices:

- **Reduction of sensory overload**: Non-reflective and sound-absorbent materials minimize visual and auditory distractions, helping children focus better (Alkahtany, 2014b; Mostafa, 2010).
- **Calming effects of natural materials**: Natural materials like wood provide both tactile and aesthetic qualities that reduce hyperactivity and impulsivity (Tufvesson & Tufvesson, 2009).
- **Predictability and security**: A consistent design reduces cognitive load and creates a predictable environment, which is particularly beneficial for children who are easily overwhelmed (Alkahtany, 2014a).

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- **Texture and pattern sensitivity**: Minimizing patterns and using smooth textures reduces overstimulation, supporting better behavior and focus (Barkley, 2015).

Summary of interior design

Designing ADHD-friendly interiors involves not only selecting appropriate materials, colors, and textures but also carefully planning the layout and furnishings. Reflective surfaces, loud acoustics, busy patterns, and harsh textures can overwhelm sensory systems, leading to increased hyperactivity and impulsivity. By prioritizing clarity, safety, and minimalism and by using non-reflective, sound-absorbent materials, light colors, and simple textures, you can create a supportive environment that promotes focus, calmness, and security.

Interior Condition

Creating a safe and well-maintained home environment is essential for supporting children with ADHD. Due to their impulsivity and difficulty assessing risks, these children are more vulnerable to accidents and environmental stressors. From securing hazardous areas to ensuring cleanliness and order, thoughtful design and maintenance practices can significantly reduce potential dangers while fostering emotional security. This section outlines how safety features, interior upkeep, and household organization can be optimized to promote well-being, reduce anxiety, and enhance focus in children with ADHD.

Safety and security

Ensuring safety and security is a top priority. Children with ADHD are more prone to impulsive and inattentive behaviors which sometimes make them unable to accurately judge risks. Therefore, homes with inadequate safety measures, such as unsecured windows, sharp objects, or poorly maintained staircases, can increase the risk of accidents (Alizadeh, 2025; Alkahtany, 2014a). This means that everyday features of the home—such as balconies and high windows—require extra attention. Given that some children may have difficulty with depth perception, it is essential to install features like guardrails, lattices, childproof locks or even modify these openings so that they cannot be operated without supervision.

In addition to these measures, kitchens and bathrooms often contain equipment that can be hazardous. For example, hot water taps and ovens should have safety devices installed, and electrical outlets must be properly covered to minimize the risk of injury (Mostafa, 2010). Keeping hazardous objects, such as sharp items or chemicals, well out of reach and using child-proof locks or covers adds an extra layer of protection and supports a peaceful, secure atmosphere at home. These modifications not only prevent accidents but also contribute to a sense of safety and security within the home which can reduce anxiety and stress and be particularly beneficial for children with ADHD.

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Why it matters:

- Children with ADHD may have difficulty judging risks and can act on impulse.
- Poor safety features at home can lead to accidents such as falls, burns, or injuries.
- A secure home environment not only protects from physical hazards but also supports mental well-being.
- When children feel safe and in control of their environment, they may experience less anxiety and stress.

Key modifications:

- **Balconies & high windows**: Install guardrails, lattices, or make openings inoperable to prevent falls. Be mindful of depth perception challenges that can make these areas more hazardous.
- **Kitchens & bathrooms**: Use safety devices on hot water taps and ovens. Secure potentially dangerous appliances and equipment.
- **Electrical safety**: Cover electrical outlets and secure cords to reduce risks of shocks or burns.
- **Door and window locks**: Ensure all entry points are secure while still allowing the child to feel comfortable and not overly restricted. Balance security with accessibility, so children are not tempted to act impulsively in unsafe ways.
- **Hazardous objects**: Keep sharp or dangerous items (like knives, tools, or cleaning chemicals) out of reach. Use child-proof locks or safety covers where appropriate.

Maintenance and upkeep

The condition and maintenance of a home are also key factors in promoting the health of children with ADHD. Homes that are well-maintained and free from issues such as dampness, mold, poor lighting, inadequate ventilation, or pest infestations tend to have a positive impact on physical and mental health. Keeping a well-maintained interior condition and organized home improves mental health and reduces hyperactivity and impulsivity (Alizadeh, 2025). Research suggests that home improvements, such as maintenance, remodeling or upgrading living spaces, can lower anxiety and stress, as well as behavioral challenges in children with ADHD (Alizadeh, 2025; Bailie, Stevens, McDonald, Brewster, & Guthridge, 2010; Evans, 2003; Morales et al., 2009; Palacios, Eichholtz, Kok, & Aydin, 2021; Riva, Rebecchi, Capolongo, & Gola, 2022).

Why it matters:

- Poor interior conditions (e.g., dampness, poor lighting, structural issues) can contribute to stress and even worsen ADHD symptoms.

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ISBN: 978-0-7334-4107-3 Evidence Based Practice Review Series ISBN: 978-0-7334-3663-5 **www.homemods.info**

- A well-maintained home supports overall health and can reduce irritability and hyperactivity.

Key modifications:

- **Structural upkeep**: Address issues such as mold, dampness, poor ventilation, or structural problems promptly. Ensure good lighting and temperature control throughout the home.

- **Spatial organization**: Create clear, designated zones for activities (e.g., play, study, relaxation) to help children feel more organized and secure. Use visual or physical boundaries (such as rugs, furniture arrangements, or room dividers) to define spaces.

Cleanliness and organization

Cleanliness and organization are linked to lower ADHD severity (Alizadeh, 2025). A tidy, well-organized environment helps to reduce sensory overload and creates a calm environment where children can better focus and manage their behavior (Tufvesson & Tufvesson, 2009). When an environment is cluttered or messy, it can contribute to heightened stress and make it harder for children to concentrate. Establishing regular cleaning routines and organizing belongings into designated spaces can create a more orderly atmosphere. By minimizing clutter and ensuring that items are stored properly, families can reduce the potential for chaos, which may otherwise exacerbate symptoms of inattention and hyperactivity.

Why it matters:

- A cluttered or messy home can overwhelm children with ADHD, increasing sensory overload and stress.

- Maintaining a clean and organized space may help improve focus and reduce impulsive behaviors.

Key strategies:

- **Regular cleaning routines**: Establish daily or weekly cleaning schedules to keep clutter under control. Involve children in age-appropriate tasks to promote responsibility and routine.

- **Smart storage solutions**: Use labelled storage bins, shelves, or color-coded systems to keep items organized. Create dedicated spots for frequently used items to reduce chaos.

- **Minimizing clutter**: Regularly review belongings and remove or donate items that are no longer needed. Encourage habits that prevent excessive accumulation of clutter.

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Summary of interior condition

In summary, modifying the home environment to address safety, security, maintenance, and cleanliness can have a substantial impact on the well-being of children with ADHD. These adjustments are not only about preventing physical accidents but also about creating a supportive space that fosters emotional stability and development. By taking proactive steps to improve the home, families can help ensure that children with ADHD feel both safe and empowered as they navigate the challenges of their daily lives.

Outdoor Environment

The quality of the outdoor environment plays a significant role in the well-being of children with ADHD. Factors such as neighborhood conditions, traffic-related pollution, access to green spaces, and opportunities for outdoor leisure can all influence ADHD symptom severity. In contrast, exposure to high-quality outdoor environments and natural settings can offer restorative benefits that help alleviate ADHD symptoms, reduce stress, improve attention, and foster overall mental health.

Neighborhood quality

Research shows that children living in neighborhoods with poor physical conditions—such as deteriorated buildings, damaged roads, and broken footpaths—tend to exhibit more severe ADHD symptoms (Alizadeh, 2025). Areas with heavy traffic, high noise levels, and elevated air pollution further increase stress and can limit outdoor activities (Arcury et al., 2015), which are crucial for children's development, thereby compounding the challenges faced by children with ADHD. In addition, neighborhoods with low socio-economic support and weak community ties often contribute to chronic stress and social isolation, which can worsen symptoms and affect mental health (Butler, Kowalkowski, Jones, & Raphael, 2012; Christian et al., 2015; Razani et al., 2015; Russell, Ford, & Russell, 2015).

Studies have also indicated that improvements in neighborhood quality, such as moving from low-income to middle-income areas, are linked with better health outcomes and improved behavior and academic performance in children (Dalgard & Tambs, 1997; Johnson, Ladd, & Ludwig, 2002). Secure, safe, and well-maintained neighborhoods offer a more supportive environment, reducing stress and providing better opportunities for social interaction and outdoor play.

Key recommendations:

- **Community improvement**: Advocate for and support local initiatives that aim to maintain and upgrade neighborhood infrastructure, including buildings, roads, and footpaths.

- **Social support networks**: Encourage community programs that foster social ties and neighborhood support to reduce isolation and stress.

Evidence Based Practice Review: Home Modification for Families and Caregivers of Children with ADHD
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- **Safety measures**: Work with local authorities to enhance neighborhood safety through improved lighting, community policing, and public space maintenance.

Traffic and pollution

High traffic volumes not only increase noise but also expose children to air pollutants such as lead, manganese, and other toxic substances. These pollutants can interfere with brain function and contribute to difficulties with attention, impulse control, and hyperactivity (Newman et al., 2013; Saez, Barceló, Farrerons, & López-Casasnovas, 2018; Siddique et al., 2011). The combination of noise and air pollution—common in busy urban areas—can create an overstimulating environment that exacerbates ADHD symptoms.

Key recommendations:

- **Avoid high traffic areas**: When possible, plan outdoor activities in areas or during times when traffic levels are lower.
- **Air quality awareness**: Monitor local air quality reports and reduce exposure during high pollution days, using protective measures like air filters indoors.
- **Urban planning**: Support policies and urban planning initiatives that aim to reduce vehicular pollution and create buffer zones between busy roads and residential areas.

Nature and green spaces

Access to quality green spaces is one of the most promising factors in supporting children with ADHD. Well-maintained green spaces have a restorative effect on mental health and attentional functioning (e.g., Godbey, 2009; Kuo & Taylor, 2004; F. A. Taylor & Kuo, 2011; Wells & Evans, 2003). Green areas provide a calm, inviting space for outdoor leisure activities, which promote both physical and mental health (McCurdy, Winterbottom, Mehta, & Roberts, 2010; Riva et al., 2022; A. F. Taylor, Kuo, & Sullivan, 2001). More specifically, exposure to nature can help reduce mental fatigue and stress, improving focus and emotional regulation (e.g., Mårtensson et al., 2009; Mostafa, 2010; van den Berg & van den Berg, 2010; Wells, 2000). Further, time spent in quality green areas and well-maintained parks has been shown to improve concentration in children with ADHD (F. A. Taylor & Kuo, 2009). However, the quality of green spaces appears to be more influential than the mere quantity (Alizadeh, 2025). Well-maintained, accessible, and safe green areas offer significant therapeutic benefits compared to larger but poorly maintained or inaccessible outdoor spaces.

Key recommendations:

- **Enhance local parks**: Advocate for the maintenance and improvement of local parks and recreational areas to ensure they are safe, accessible, and engaging.

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- **Nature-based programs**: Encourage schools and community centers to incorporate outdoor learning and nature-based activities into their programs.
- **Regular outdoor time**: Make it a priority to include regular visits to green spaces in daily routines to provide restorative breaks from indoor activities.
- **Outdoor play**: Encourage unstructured outdoor play in natural settings, such as parks or nature trails, to allow children to expend energy in a healthy way.

Gardening

Gardening offers additional therapeutic benefits for children with ADHD. Gardening not only encourages physical activity but also fosters the development of mind-body coordination, help release built-up energy, improve motor skills, and provide a calming environment that promotes focus and emotional balance (Mostafa, 2010). This hands-on activity engages children, helping to channel their energy constructively.

Key recommendations:

- **Gardening projects**: Consider starting a small garden or participating in community gardening projects which offer hands-on engagement with nature and foster responsibility.
- **Indoor plants**: Integrate indoor plants to improve air quality and create a more soothing, nature-inspired environment at home.

Summary of outdoor environment

A high-quality outdoor environment is beneficial for managing ADHD symptoms. By addressing neighborhood quality, reducing exposure to traffic-related pollution, enhancing green spaces, and promoting nature-based activities, families can create supportive surroundings that help improve attention, reduce stress, and foster healthier, happier lives for children with ADHD. Engaging with community efforts and advocating for improved urban planning can also lead to long-term benefits for both individual families and entire neighborhoods.

Conclusions

The home environment plays a vital role in shaping the day-to-day experiences of children with ADHD. Creating a home environment that is both physically safe and emotionally supportive can make a big difference for children with ADHD. Small modifications—ranging from installing guardrails to setting up clear activity zones—can help. From the acoustic and thermal conditions inside the home to the design of furnishings, spatial layout, and access to calming outdoor areas, every element of the physical setting can either exacerbate or help manage ADHD symptoms. Children with

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ADHD benefit most from environments that reduce sensory overload, provide clear structure and predictability, and offer safe, secure spaces for both stimulation and retreat. Through thoughtful modifications—such as using non-reflective materials, reducing clutter, enhancing natural ventilation, securing potentially hazardous areas, and increasing access to well-maintained green spaces—parents, grandparents, and caregivers can create a home that fosters concentration, emotional balance, and overall well-being. By translating research into everyday solutions, families are better equipped to support the developmental, emotional, and behavioral needs of children with ADHD in a practical and sustainable way.

Evidence Based Practice Review: Home Modification for Families and Caregivers of Children with ADHD
August 2025; DOI: 10.26288/zs85-qd22
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