Medication vs. Non-Medication Intervention for ADHD

By: Max Grossman

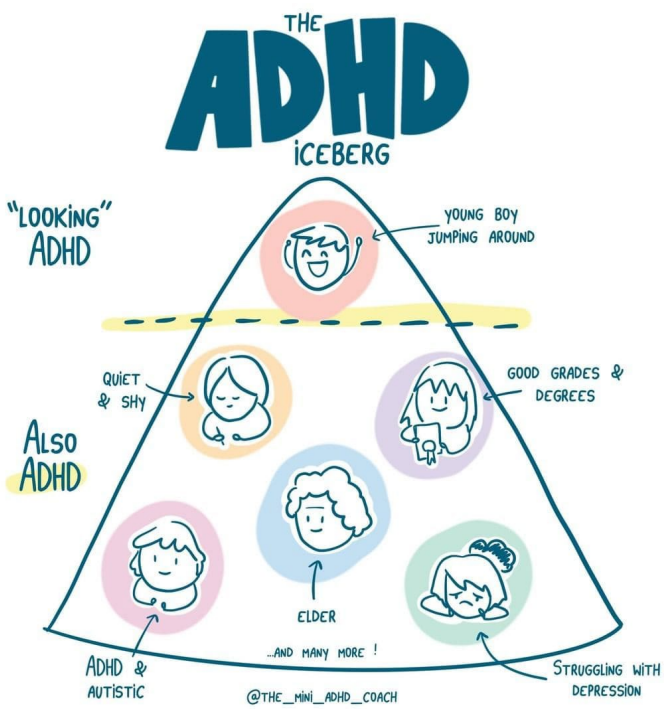
What is ADHD?

- 3 types: Predominantly Inattentive, Predominantly Hyperactive-Impulsive, and Combined Presentation

- Prevalence:
  - 7 million (11.4%) of US children 3-17 years old
  - 1 million more diagnosis since 2016
  - Boys are more likely to be diagnosed (15% boys compared to 8% girls)
  - Often co-morbid with other disorders (Autism, Down Syndrome, OCD, etc.)

(CDC, 2022)

What does ADHD look like in school?



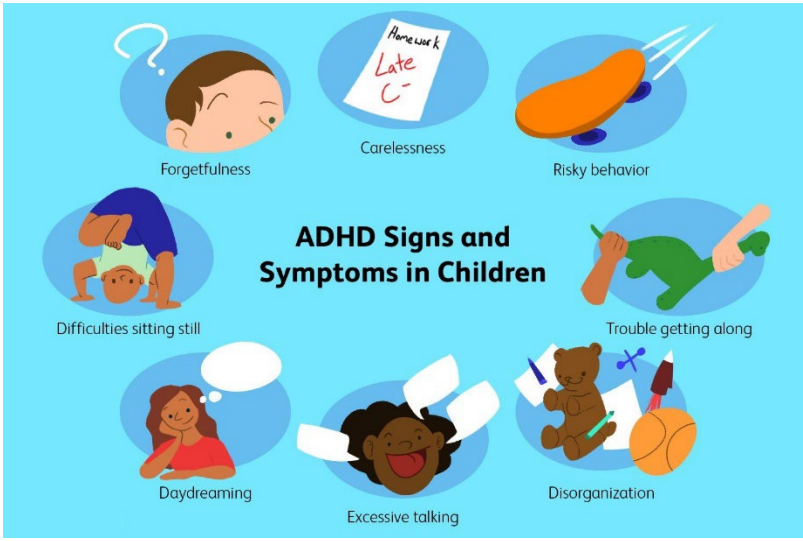
(Gendron, 2019)

- Inattentive:
  - Daydreaming during classroom instruction
  - Frequently losing materials (pencils, books, homework, jacket, etc.)
  - Difficulty with organization
  - Forgetting to turn in homework or assignments
- Hyperactive/impulsive
  - Trouble staying in their seat
  - Fidgeting/squirming
  - Calling out and speaking out of turn

(Miller, 2024)

How can untreated ADHD affect school-aged children?

- Poor self-esteem
- Poor social function
- Emotional and behavioral challenges
- Cognitive and organizational struggles
- Poor focus and motivation
- Poor academic performance
- Impacted mental health

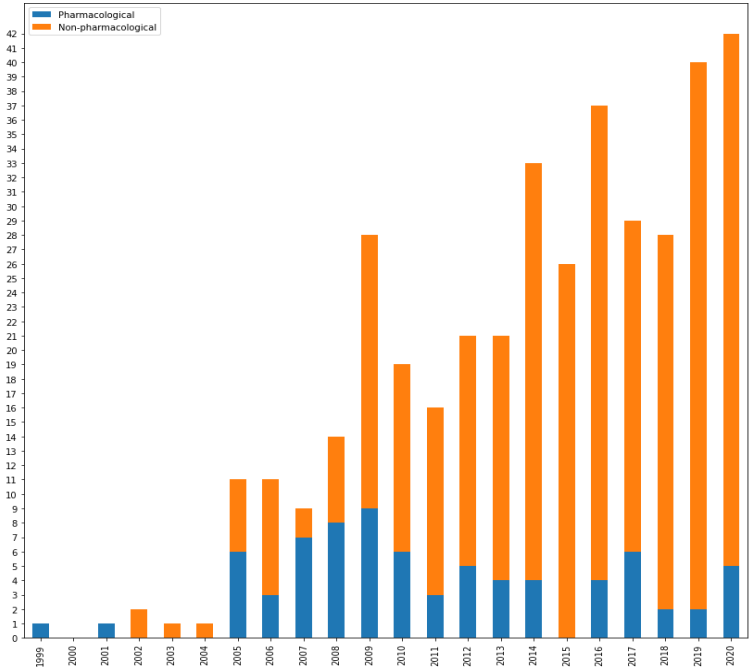


(World Brain Center, 2025)

(Harpin et. al, 2016)

Diagnosis to Medication

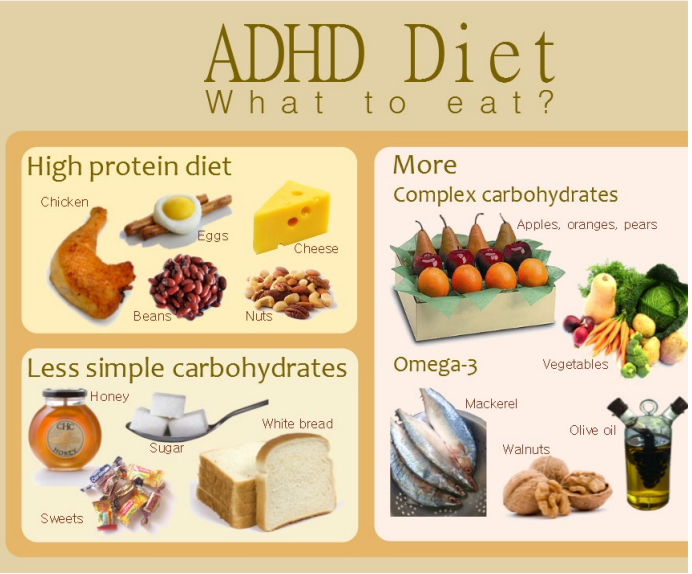
- Medications (stimulants) are considered the first-line treatment for ADHD in children.
- Non-stimulant medications (atomoxetine) are used when stimulants are ineffective or poorly tolerated.
- Studies suggest medications significantly improve ADHD symptoms and daily functioning in children.
- Stimulants, methylphenidate, and amphetamines are the most commonly prescribed medications for ADHD.
- Pharmacological treatments help to manage core ADHD symptoms, improving attention, hyperactivity, and impulsivity.
- A tiered approach to treatment is recommended, with medication being the foundation and behavioral therapy as a complementary strategy.



Even though the number of unique pharmacological interventions is not high, drugs remain the first-line treatment of ADHD (Nazarova, V. A. et al, 2022). The current treatment is based on using medications alone or in combination with behavioral therapies to boost dopamine and noradrenaline neurotransmission in the brain.

(Nazarova et. al, 2022)

Changing Diet for the Better



(Misquitta, 2014)

- Vegetable dietary patterns are associated with reduced risk of ADHD symptoms
- Phytochemical-rich foods were associated with a lower risk of ADHD in individuals diagnosed.
- "Few foods" diet
  - Eliminates almost all food items from the diet for a limited period to determine foods that may trigger ADHD symptoms

    (Lange, 2023)

- **"The use of diet interventions to treat symptoms of ADHD in children and adolescents – a systematic review of randomized controlled trials" (Torp & Thomsen, 2020)**
  - **Elimination Diets Show Promise**
    - 10 out of 12 randomized controlled trials (RCTs) found elimination diets reduced ADHD symptoms in children and adolescents.
  - **Artificial Food Coloring: Mixed Results**
    - Only 2 of 6 studies showed a benefit from removing artificial colorings.
  - **Few-Foods Diet (FFD) Effective for Some**
    - FFDs showed a large effect size in reducing symptoms, especially based on parent reports.

How can supplements or micronutrients enhance ADHD?

- Magnesium and Vitamin D
  - Magnesium: Individuals with ADHD are likely to be deficient in magnesium
  - Vitamin D: Significant reduction of vitamin D levels in children diagnosed with ADHD compared to healthy controls.
  - Over 8 weeks, significant reductions in conduct, emotional, and peer problems in students with ADHD
- Iron and Zinc
  - Low zinc and iron levels can be associated with higher baseline levels of ADHD
  - Iron and zinc supplements, coupled together improved ADHD symptom severity
- Probiotic Supplements
  - Children with ADHD who received supplementation with healthy bacteria reported better health-related quality of life

(Lange et. Al, 2023)

Vitamins, minerals improve symptoms for children with ADHD

OHSU researchers found children given supplemental micronutrients were three times more likely to have better concentration, moods

By Sara Hottman May 04, 2022 Portland, Oregon

In this video, Victor, age 9, struggles with developmental delays, learning and concentration. His family has been giving him micronutirents as part of the Micronutrients

(Hottman, 2022)

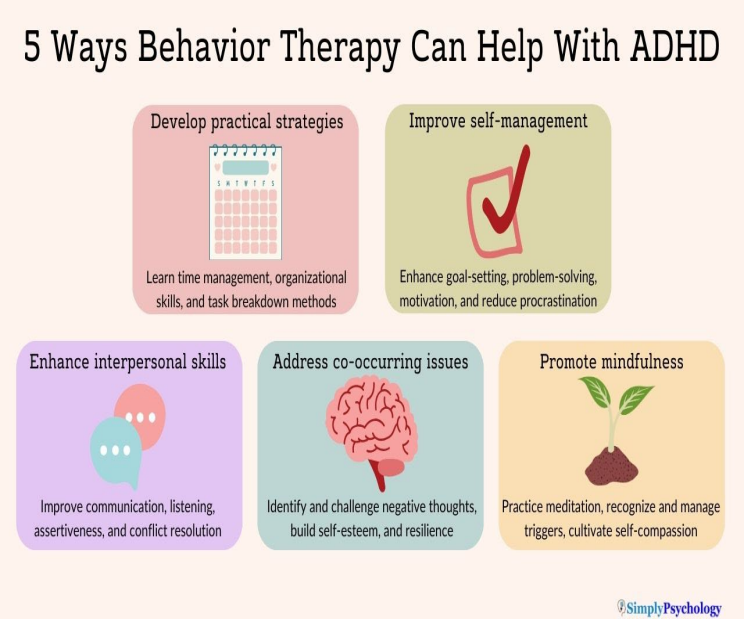
Behavior Therapy

Studies show that behavior therapy can significantly improve attention, impulse control, and social interactions in children with ADHD.

> *"Behavioral interventions, including parent training and classroom-based interventions, are considered highly effective in managing ADHD symptoms"* (*Child and Adolescent Psychiatric Clinics of North America*, 2014).

3 main objectives of Behavior Parent Training :

1. **Providing** psychoeducation about ADHD and the behavioral framework for treatment
2. Teaching effective parenting skills for improving desired behavior and decreasing problem behavior through altering antecedents and consequences, as discussed earlier
3. Practicing/troubleshooting the effective implementation of such skills



- It was concluded that behavioral therapy was the only non-pharmacological intervention that had a statistically significant effect on the management of ADHD. (Nazarova. V, 2022)
- Behavior Therapy reinforces desirable behaviors and reduces disruptive behaviors through structured rewards and consequences.
- BPT involves parents, teachers, and caregivers to ensure consistency across home and school environments.

(Nazarova et. al, 2022) & (Pfiffner & Haack, 2014)

"Efficacy and Safety of Medication for Attention- Deficit Hyperactivity Disorder in Children and Adolescents with Common Comorbidities: A Systematic Review

Medication – Key Findings

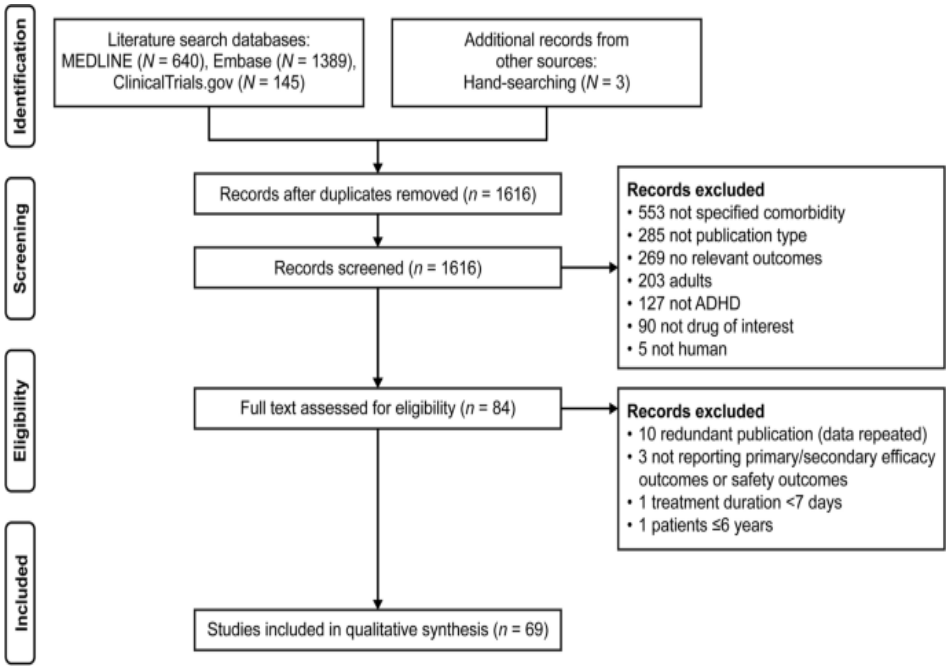
- **Atomoxetine (ATX)** (Non-stimulant) (Class: Selective norepinephrine reuptake inhibitor (NRI)): Moderately to highly effective across comorbidities (Effect size: 0.46–1.0).
- **Guanfacine XR** (GXR) (Non-stimulant) (Class: Alpha-2A adrenergic receptor agonist): Strong efficacy in some cases (Effect size: 0.92–2.0).
- **Stimulants** (e.g., Methylphenidate): Effective, but limited data for certain comorbidities.

Safety & Monitoring

- Side effects are similar across children **with and without comorbidities.**
- Common concerns: **Weight changes, cardiovascular effects.**
- **Close monitoring** is essential for all patients.

Clinical Takeaway

- Medication is effective, but it **must be individualized.**
- Consider **comorbid conditions** (ASD, ODD, GAD, etc.) tolerability, and long-term impact.
- More research is needed, especially for **non-stimulants in complex cases.**
- No one-size-fits-all approach. Treatment must be tailored based on both ADHD severity and co-occurring conditions.



(Tsujii et. al, 2021)

What has research shown?

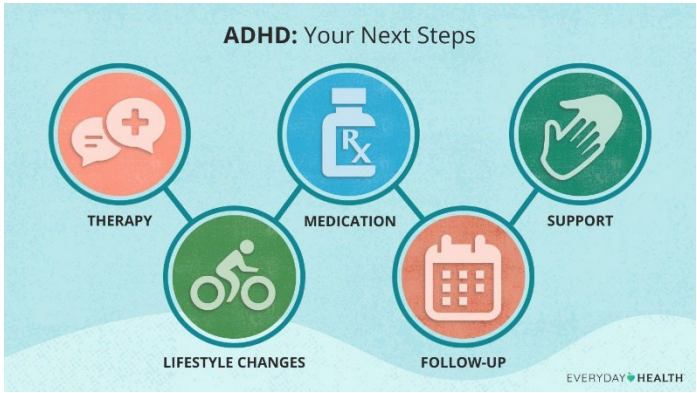
- Systematic reviews, "*The pharmacological and non-pharmacological treatment of attention deficit hyperactivity disorder in children and adolescents: A systematic review with network meta-analyses of randomized trials*," suggest that treatment effects are larger when behavioral therapy is combined with stimulants (with very low-quality evidence). The clinical decision to combine these interventions should be driven by the symptoms presented, the needs of the children and their families, and the availability of healthcare services. (Catalá-López. F, 2017)

- All ADHD medications, despite differing mechanisms, ultimately target broader neuro-cognitive networks. Psychostimulants are the most effective, while non-stimulants may be appropriate in specific cases. Psychosocial interventions are beneficial for young children, mild cases, or as add-ons to improve treatment response or reduce dosage. Treatment should be based on shared decision-making, considering patient age, disorder severity, and comorbidities. Regular follow-up is essential to monitor effectiveness, side effects, and long-term outcomes. (Caye. A et. al., 2018)

CHADD's National Resource Center on ADHD

The National Resource Center on ADHD (NRC), a program of Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD), was established to be the national clearinghouse for the latest evidence-based information on ADHD.

Get information and support from the National Resource Center on ADHD.



(CDC,2025)

Other Key Contributors to Intervention

"Research consistently shows that a collaborative, multi-disciplinary approach is crucial for the effective treatment of ADHD, leading to better academic and behavioral outcomes." (Faraone et al., 2015)

Who else is involved?

- **Pediatricians/Primary Care Physicians**: Diagnose, prescribe medications, and monitor side effects
- **Teachers**: Implement classroom strategies and provide ongoing academic and behavioral feedback
- **Occupational Therapists**: Address sensory processing issues and motor coordination challenges
- **Behavioral Therapists**: Provide interventions like cognitive-behavioral therapy (CBT) and parent training

Effective Communication & Coordination:

- Regular interdisciplinary team meetings foster consistent communication and unified treatment strategies (Miller et al., 2015).
- Cross-professional collaboration enhances consistency in the implementation of both medication and non-medication interventions

Why does it matter?

- **Holistic Approach**: Combining expertise from multiple fields leads to a more comprehensive understanding of ADHD and its impact across different settings
- **Comprehensive Support**: Research shows that when professionals from different fields coordinate their efforts, children with ADHD benefit from more tailored and effective interventions
- **Improved Outcomes**: Studies show that integrated, team-based interventions result in better long-term outcomes in both academic performance and social-emotional development

(Miller et al., 2015), (Barkley, 2015), & (Hinshaw, 2018)

What can I do as a School Psychologist?

"One of the most important clinical implications is that behavioral therapy, particularly given by parents and with active child and teacher involvement, is the only non-pharmacological intervention that was found to be associated with statistically significant benefits in our analyses." (Catalá-López. F, 2017)

ROLE OF SCHOOL PSYCHOLOGISTS

In summary, school psychologists play vital roles in the evaluation, identification, and intervention planning and monitoring for students with ADHD. School psychologists help teams to comprehensively assess the needs of these students, collaborate with others to differentially diagnose ADHD from other potential causes of attention problems, and serve as liaisons with the family and outside professionals regarding assessment and intervention. These roles require skillful consultation

(NASP, 2018)

I. Implement evidence-based practices

II. Never stop learning!

III. Create a collaborative support system!

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