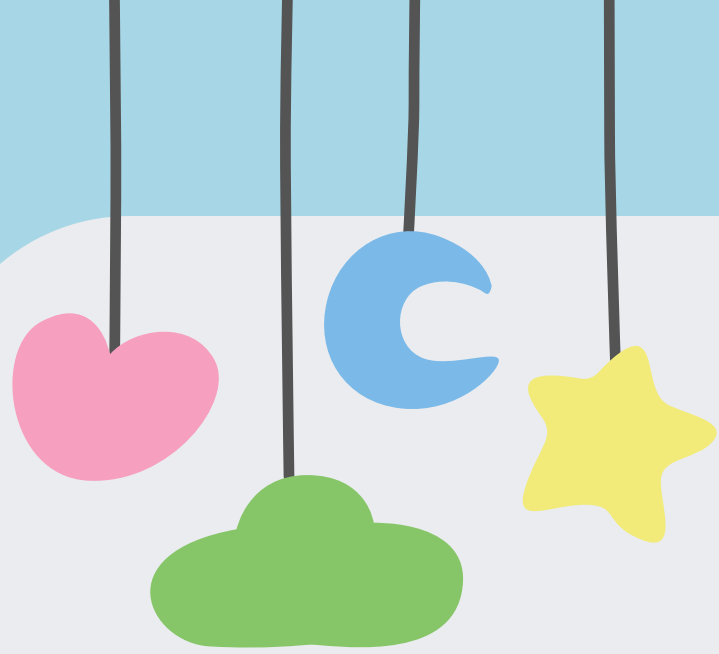




ADHD

Done By :

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- **Ayat Maaitah**
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DEFINITION

ADHD is a neurodevelopmental disorder that affects children and adults. It's an on-going pattern of inattention and/or hyperactivity/impulsivity that impacts on an individual's typical development or disrupts their daily life. People with ADHD may also have difficulties with working memory, maintaining attention and executive function.

ADHD SUBCATEGORIES

There are three main types of ADHD , namely:

- Hyperactivit type
- Inattentive type
- combined type



EPIDEMIOLOGY

Prevalence: 10% of children and 4.5% of adults.

Males > females with 2:1 ratio.

Females present more often with inattentive symptoms.

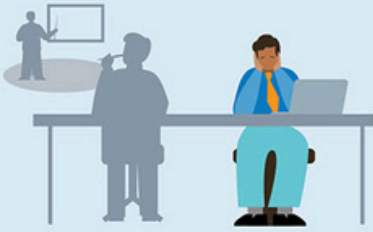
3 - 5% school age children (6 to 12 year old)

Symptoms persist to adulthood up to 2/3

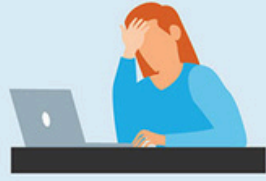
ADHD in Adults

Your symptoms determine which ADHD subtype you have.

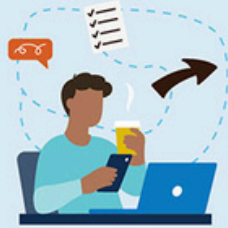
Inattention subtype symptoms:



Errors because of inattention.



Trouble completing tasks.



Easily distracted.



Avoidance of tedious work.

Hyperactivity/impulsivity subtype symptoms:



Frequent fidgeting.



Trouble sitting still or restlessness.



Conversational self-restraint problems.



Difficulties with social boundaries.

Adults vs children

ADHD

Providers use the kinds of presenting ADHD symptoms your child displays to diagnose the condition.

Inattentive presentation symptoms could be:



Issues staying focused on tasks.



Doesn't listen or daydreams.



Loses things frequently.



Difficulty organizing tasks and activities.

Hyperactive/impulsive presentation symptoms could be:



Fidgets or squirms frequently.



Runs or climbs when inappropriate.



Trouble with quiet activities.



Has trouble waiting for their turn.

Continue....

The differences between attention deficit hyperactivity disorder (ADHD) in childhood and adulthood center on how symptoms manifest and impact daily life. While children often display hyperactivity and impulsiveness, adults may experience more challenges with organization, time management, and maintaining focus.

Etiology

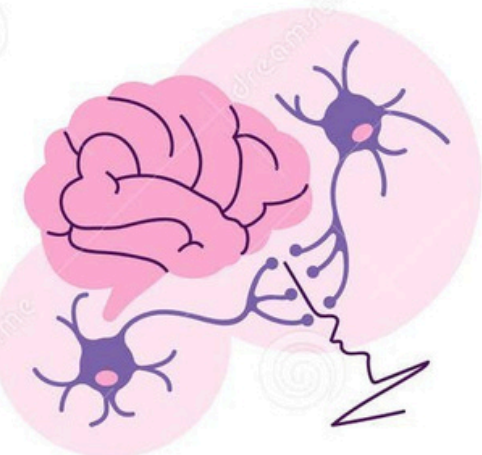
The etiology of ADHD is multifactorial and may include:

- Genetic factors: Increased rate in first-degree relatives of affected individuals.

- Environmental factors: Potentially in utero exposure to neurotoxin, low birth weight, or childhood abuse or neglect.

Etiology continue

Causes Of Attention Deficit Hyperactivity Disorder(ADHD)



Neurological Factors



Genetic Factors



Individual Factors



Social Factors



Psychological Factors

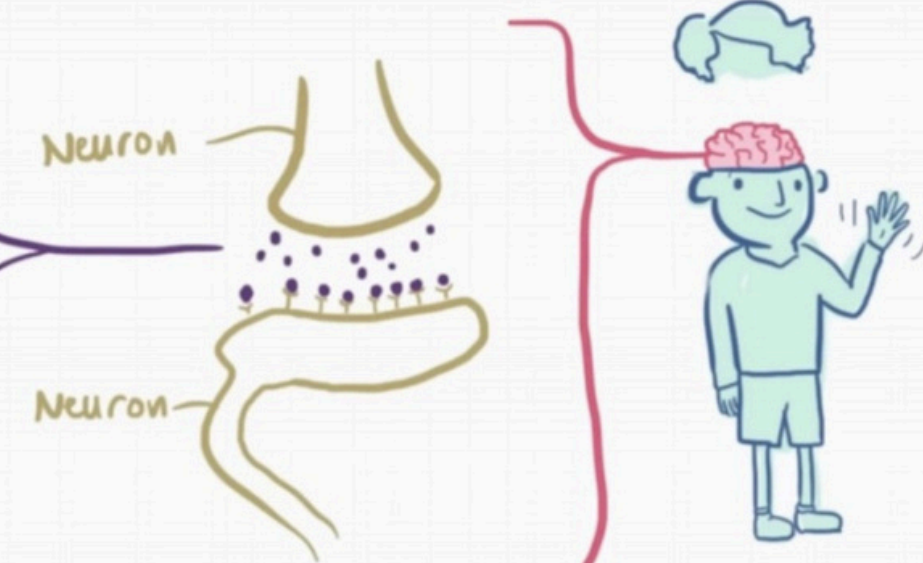
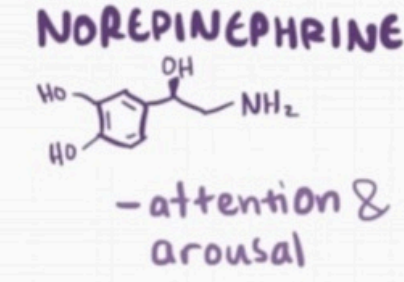
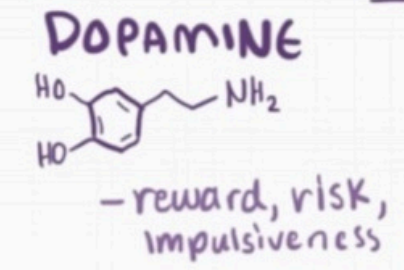


Environmental Factors

ATTENTION DEFICIT HYPERACTIVITY DISORDER
INATTENTIVE ~ not paying attention
HYPERACTIVE / IMPULSIVE ~ overly active & impulsive

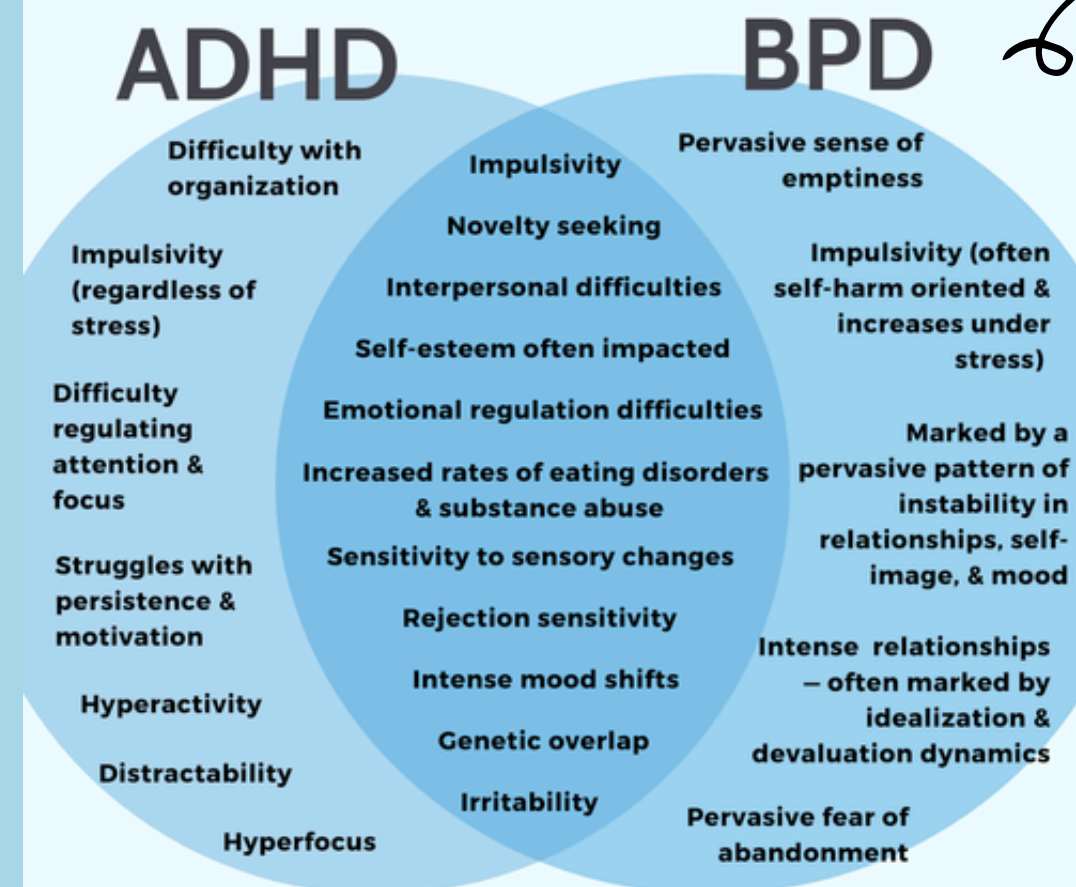
cause?
[**LOW LEVELS**]
↓
Symptoms of **ADHD**

CAUSE : Environmental + Genetic factors

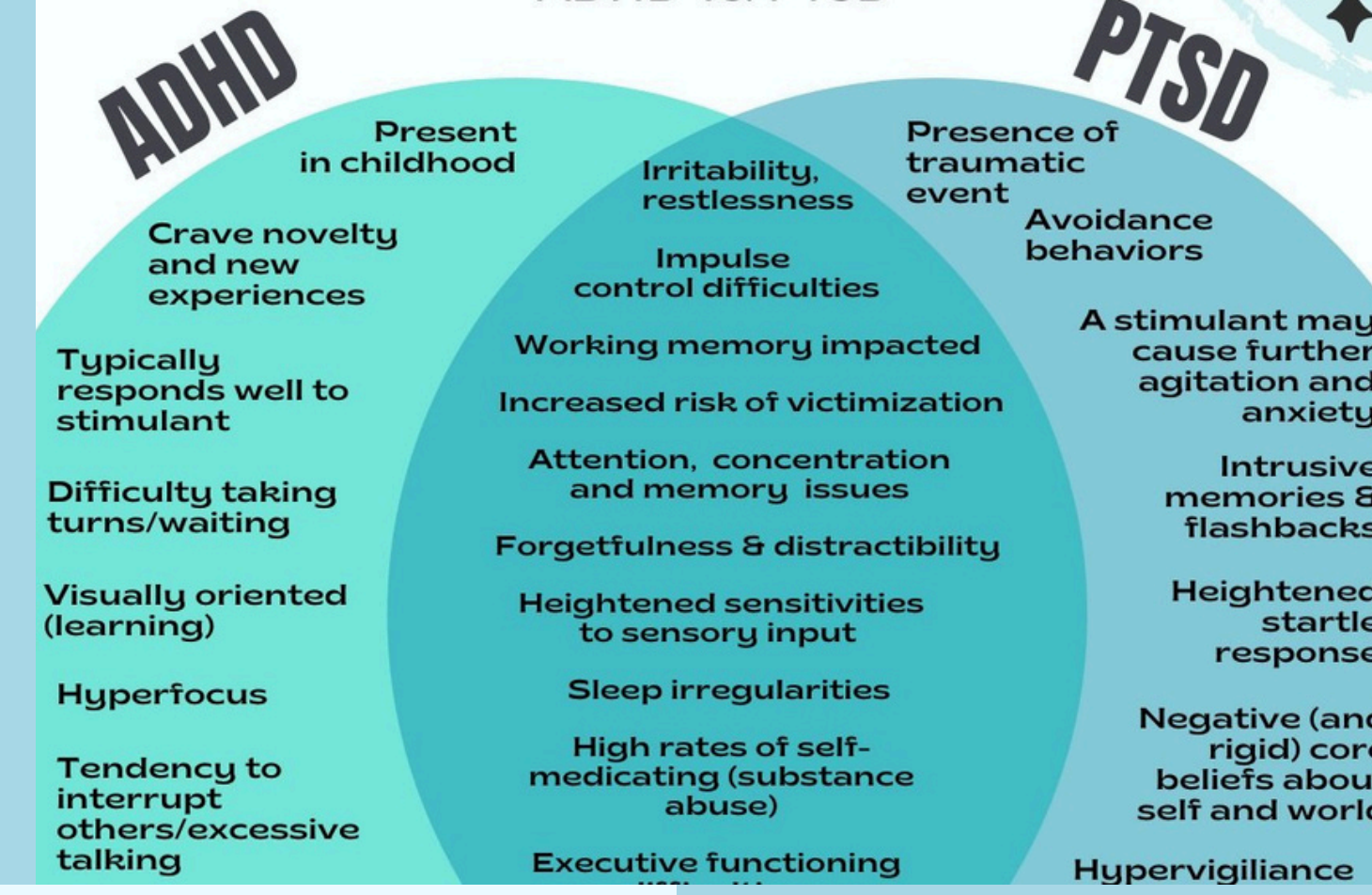


DD:

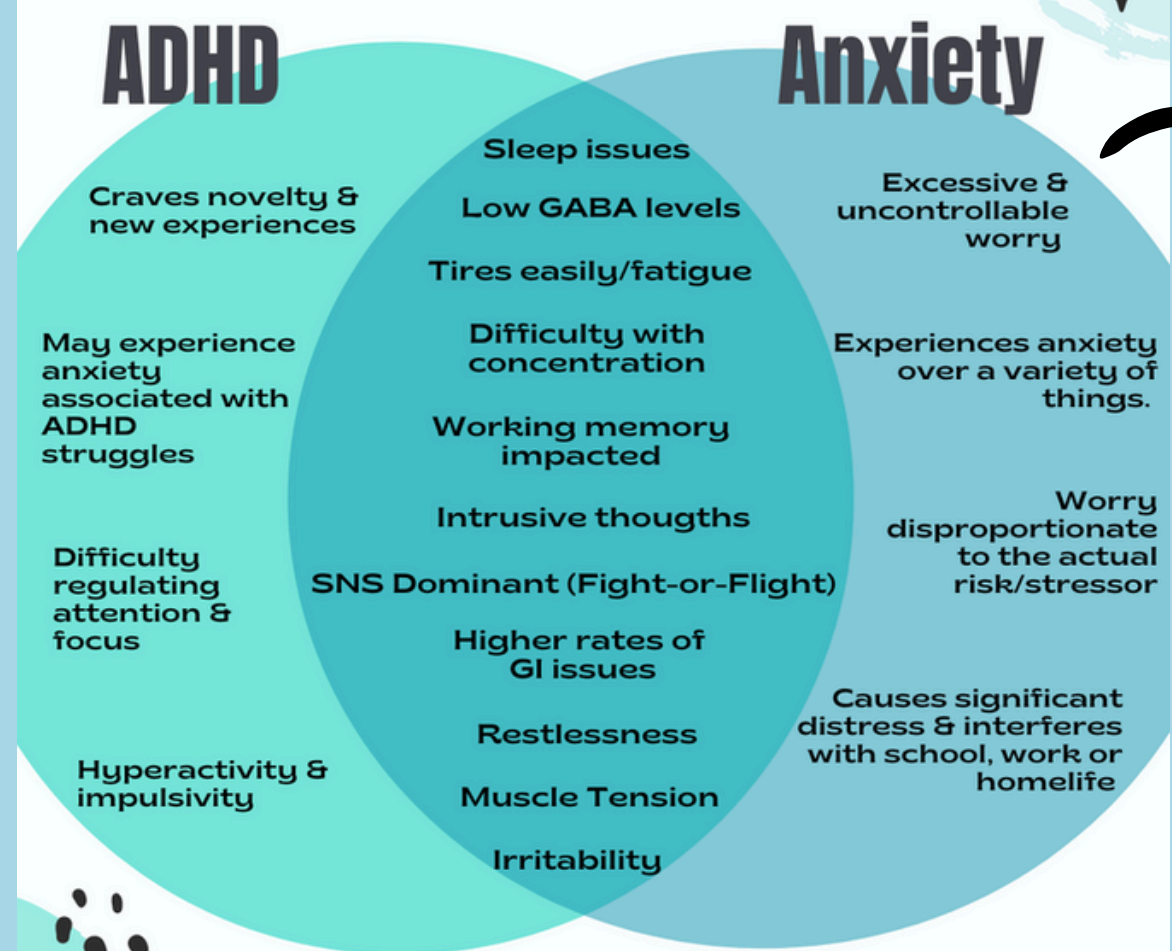
ADHD vs. Borderline Personality Disorder



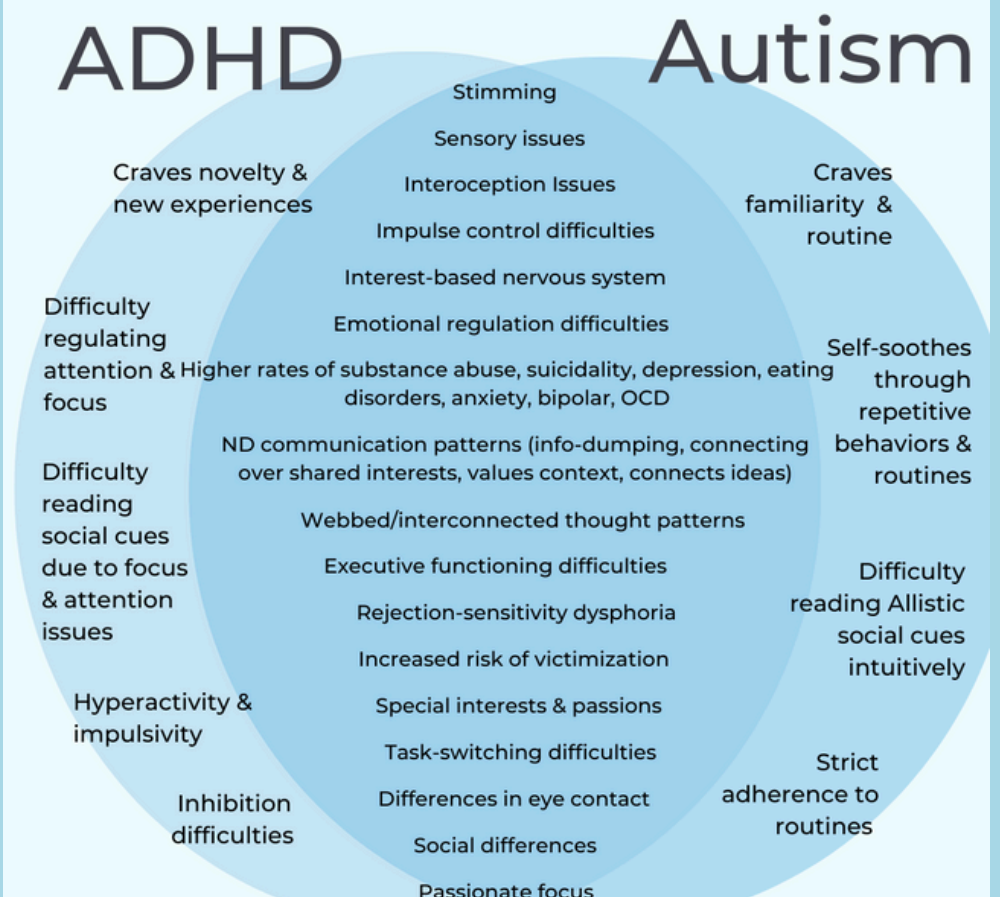
Misdiagnosis Monday: ADHD vs. PTSD



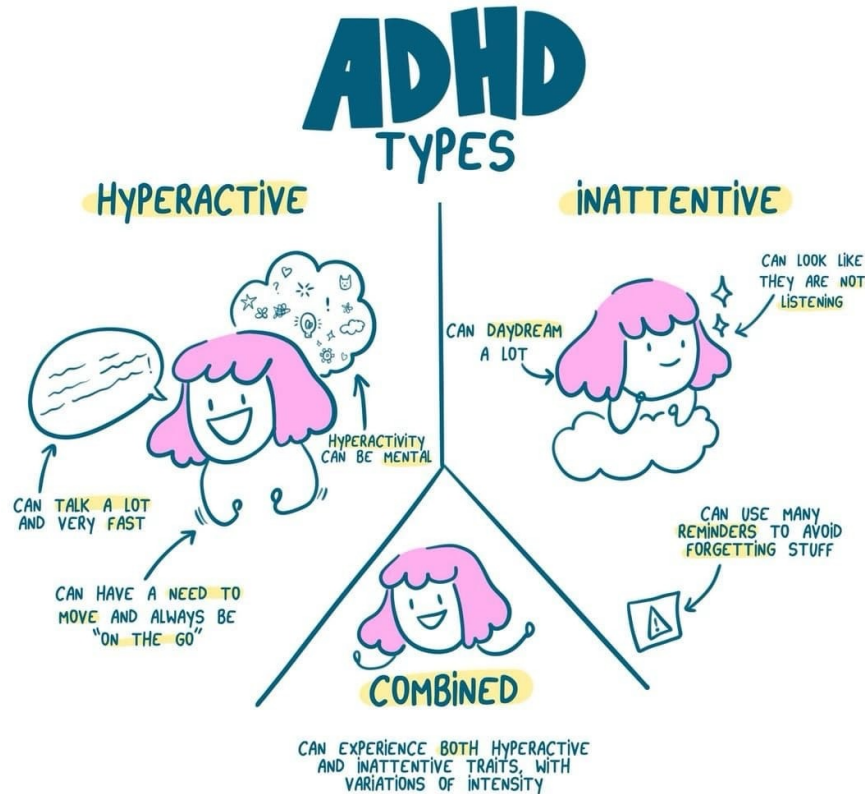
Misdiagnosis Monday: ADHD vs. Generalized Anxiety Disorder



Misdiagnosis Monday: ADHD vs. Autism



ADHD is characterized by persistent **inattention**, **hyperactivity**, and **impulsivity** inconsistent with the patient's developmental stage



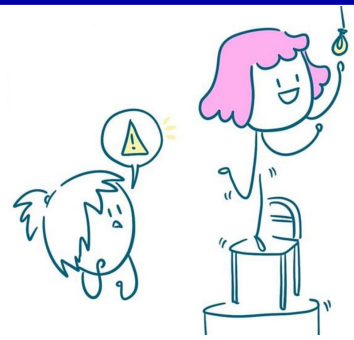
Two symptom domains : inattentiveness and hyperactivity / impulsivity

● Inattentive symptoms :

- Does not pay attention to details or makes careless mistakes
- Has difficulty sustaining attention
- Difficulty listening
- Struggles to follow instructions
- Is unorganized
- Avoids tasks requiring high cognitive demands
- Misplaces / loses objects frequently
- Is easily distracted
- Is forgetful



● Hyperactivity / Impulsivity symptoms :

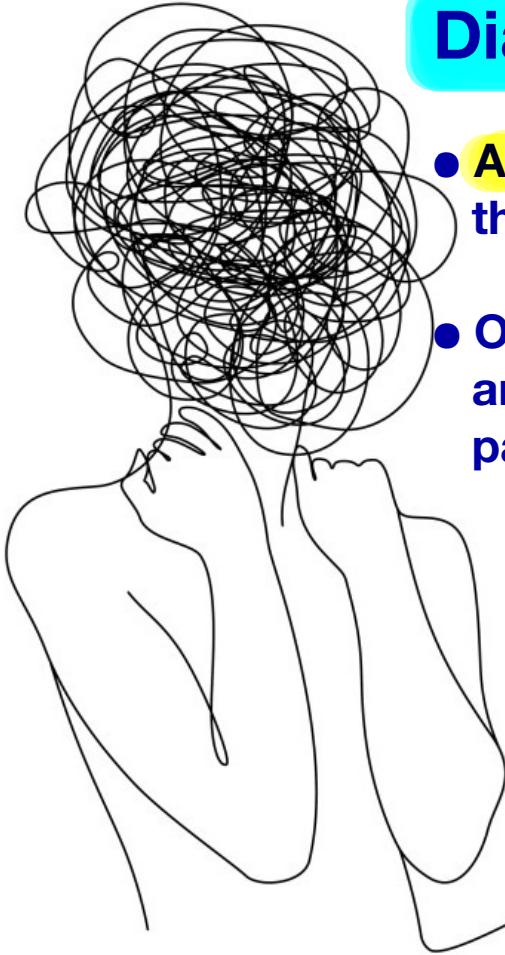


- Fidgets with hands / feet or squirms in seat
- Has difficulty remaining still
- Runs /climbs excessively in childhood (extreme restlessness in adults)
- Has difficulty engaging in activities quietly
- Acts as if driven by a motor (an internal sensation in adults)
- Talks excessively
- Blurts out answers before questions have been completed
- Has difficulty waiting or taking turns
- Interrupts or intrudes upon others



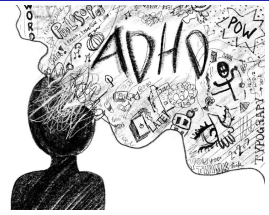
Diagnosis :

- ADHD is a clinical diagnosis made using the DSM-5 criteria
- Obtain collateral history from caregivers and individuals who interact closely with patient



adhd

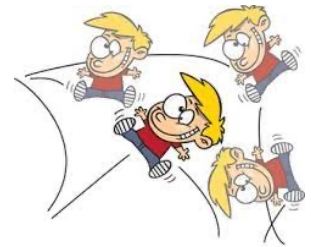
ADHD Diagnostic Criteria (DSM-5) :



- **six** or more symptoms for children up to age 16 years
or
five or more symptoms for adolescents ages 17 years
and older and adult
- persistent pattern of these symptoms for **at least six months** ,
the symptoms must be inappropriate for the individual's
developmental level



Poor school performance in children with ADHD is usually due to inattention and/or impulsivity and hyperactivity rather than level of intelligence, which is not directly affected by the disorder. [6]



- several inattentive or hyperactive - impulsive symptoms were present before age 12 years ,but can be diagnosed retrospectively in adulthood
- several inattentive or hyperactive - impulsive symptoms are present in two or more settings (e.g., at home ,school or work ; with friends or relatives ; in other activities)
- symptoms interfere with or reduce quality of social ,academic , and / or occupational functioning
- not due to the physiological effects of a substance , another medical or neurological condition (e.g. traumatic brain injuries) , or another mental disorder



ADHD & COMORBIDITIES

Sleep Disorders

Learning Disorder

Personality Disorders

Major Depressive Disorder

Anxiety Disorder

Conduct Disorder

Bipolar Disorder

Oppositional Defiant Disorder



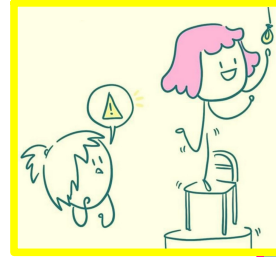
Substance Use Disorder

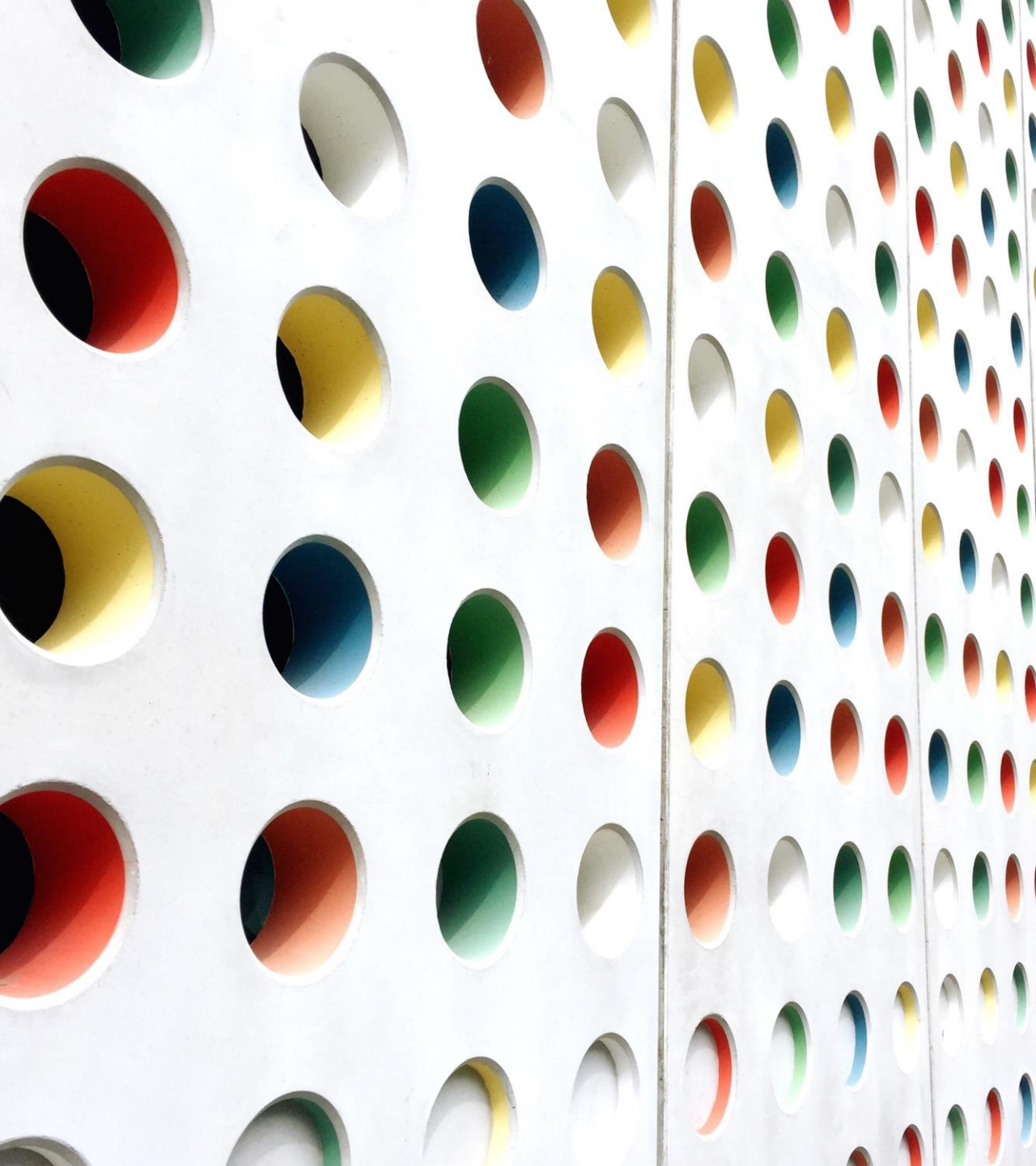
ADHD symptoms can change over times as a person ages

Preschool-Aged Children: Hyperactivity is often the most prominent symptom. These children may be constantly moving, climbing, and unable to sit still.

School-Aged Children: Inattention becomes more noticeable with academic demands. Teachers may report that the child has difficulty staying on task, following instructions, and completing assignments.

Adults: Inattention and impulsivity tend to persist. Adults may experience issues with time management, organization, and maintaining focus on work-related tasks. Hyperactivity typically manifests as inner restlessness.





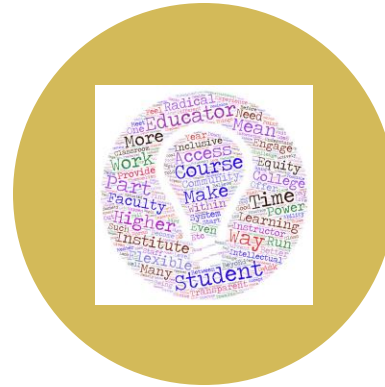
Management

Multimodal treatment plan:

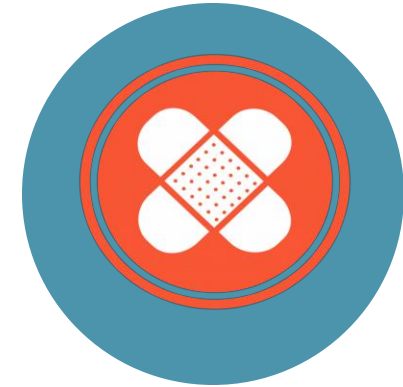


MEDICATION

(THE MOST EFFECTIVE TREATMENT
FOR DECREASING CORE SYMPTOMS)



EDUCATIONAL
INTERVENTIONS .



BEHAVIORAL
INTERVENTIONS .

APPROACH

- first line of management depends on individual's age:
 - for pre-school age: behavioral therapy is preferred as initial therapy
 - for school aged (≥ 6 years old): pharmacotherapy with adjunctive behavioral interventions
- manage of comorbid mental health conditions: e.g. anxiety
- Educate parents/ caregivers on ADHD and behavioral therapy for child
- schedule regular follow up for patients with ADHD

PHARMACOTHERAPY

Options:

- Stimulant medications (amphetamine/ analogue, methylphenidate)
 - * first line treatment in school age children & more effective
- Non –stimulant medications: (second line)
 - * norepinephrine reuptake inhibitors
 - * alpha 2 adrenergic agonists
 - * anti depressants

Stimulant medications

- methylphenidate
- amphetamine , amphetamine analogue (DEXTROAMPHETAMINE, LISDEXAMFETAMINE)
- They can be administered by : oral tablets/ capsules, transdermal patches(methylphenidate) ,liquid formulations, extended release formulations
- MOA: ↑release of norepinephrine and dopamine & block reuptake of them (inhibit MOA)
→ ↑ concentration of norepinephrine and dopamine in synaptic cleft → ↑mental performance (↑focus & attention + ↓impulsivity)

SIDE EFFECTS

- tachycardia, palpitations, hypertension, arrhythmias
- anorexia, weight loss, decrease growth rate
- hyperactivity, irritability, insomnia
- Headaches
- Tremors, seizures, dizziness, tics

CONTRAINDICATIONS

- severe atherosclerosis
- Moderate to severe hypertension
- Glaucoma
- hyperthyroidism
- Hx of substance use

During treatment with a stimulant medications

- pre use instructions:
- *discuss medical HX, medications, allergies of the patients
- * check weight, height, CBC, ECG, echocardiogram, blood pressure , liver functions test
- Monitor response to medication
- Assess effect on:
 - sleep
 - appetite
 - HR, BP
 - baseline mental status
- assess therapeutic effect of improved social, academic functioning

Use of non stimulant medications in case of:

- Contraindications to (when a history or family history of illicit substance use is present) or potential for serious adverse effects with stimulants
- no response in previous line
- Certain comorbidities

NOREPINEPHRINE REUPTAKE INHIBITOR

- ATOMOXETINE
- ↑ norepinephrine level in synaptic cleft
- Side effects:
 - * GI distress(e.g. anorexia, nausea)
 - * sedation, headache
 - * liver failure (rare)
 - * black box warning about suicidal ideation
in children & adolescents

ALPHA- 2 AGONISTS

- clonidine extended release, guanfacine extended release
- Can be used instead of or adjunctive therapy to stimulants
- side effects:
 - * GI distress
 - * headache , sedation
 - * ↓ HR & BP
- To avoid rebound hypertension, do not abruptly stop alpha-2 adrenergic agonists; taper gradually.

Anti depressants

- norepinephrine – dopamine reuptake inhibitor

BUPROION

- Side effects:

- * increase anxiety

- * increase risk of seizure & psychosis at high doses

Behavioral interventions

- parent training in behavioral management:
- **Be involved.** Learn all you can about ADHD. Follow the treatment your child's health care provider recommends. Go to all recommended therapy visits.
- **Give medicines safely.** If your child is taking ADHD medicine, always give it at the recommended time and dose. Keep medicines in a safe place.
- **Work with your child's school** Meet often with teachers to find out how your child is doing. Work together to help your child do well
- **Parent with purpose and warmth** Talk openly and supportively about ADHD with your child. Focus on your child's strengths and positive qualities.

Behavioral therapy

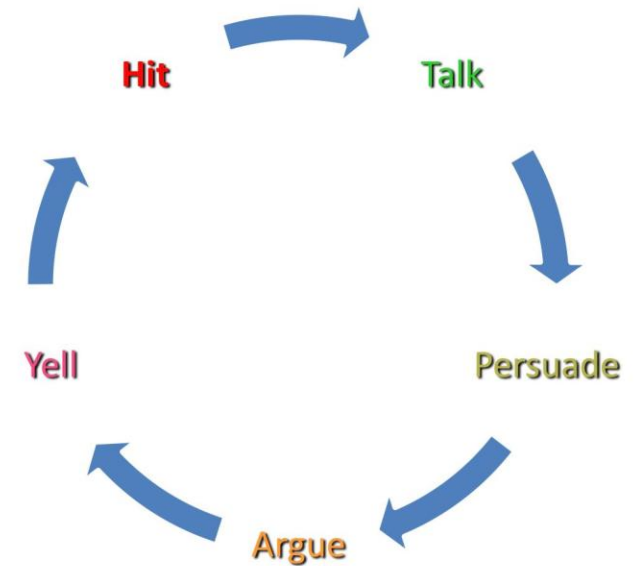
- for child:

for difficult & un acceptable behaviors, you can use: positive role modeling, praise, rewards

Too much talking & emotion: try to find the reason

For break down this cycle

- educational accommodations like classroom modification



Previous Dosage (Conventional Tablets)	Initial Dosage (Extended-release Trilayer Core Tablets)
5 mg given 2 or 3 times daily	18 mg once daily
10 mg given 2 or 3 times daily	36 mg once daily
15 mg given 2 or 3 times daily	54 mg once daily
20 mg given 2 or 3 times daily	72 mg once daily

Course/prognosis

- Stable through adolescence.
- Many continue to have symptoms as adults (inattentive > hyperactive).
- High incidence of comorbid oppositional defiant disorder, conduct disorder and specific LD