





# Unmasking The Face of Autistic Spectrum Disorder and ADHD: Diagnostic Overlap and Integrated Care

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- ▶ “The most interesting people you’ll find are the ones that don’t fit into your average cardboard box. They’ll make what they need, they’ll make their own boxes.”
  - ▶ - Dr Temple Grandin.

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- ▶ Dr Temple Grandin was an American scientist and author. She designed livestock handling systems that made slaughtering animals more humane by reducing their stress and anxiety. She was also a famous advocate for autism.
  - ▶ She was diagnosed with Autism when she was three years old.



# What is Autistic Spectrum Disorder

- ▶ Autistic Spectrum disorder is a neurodevelopmental disorder that affects how people interact with others, learn and behave.
- ▶ Global prevalence of 2% and 0.7% in South Africa however most literature is from high income countries and very little is known about South Africa prevalence
- ▶ It is characterized by:
  - Persistent deficits in social communication and social interaction across multiple contexts
  - Restricted, repetitive patterns of behavior, interests, or activities with at least two of the following: Stereotyped or repetitive motor movements, use of objects, or speech; insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior; restricted, fixated interests that are abnormal in intensity or focus; hyper- or hypo reactivity to sensory input or unusual interests in sensory aspects of the environment




# What is Autistic Spectrum Disorder

- ▶ -Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).
- ▶ -Clinically significant impairment in social, occupational, or other important areas of current functioning.
- ▶ Not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay.



# What is Autistic Spectrum Disorder

- ▶ The DSM-V has also defined all of the above diagnoses as Autistic Spectrum Disorder and now specifies severity of Autistic Spectrum Disorder as:
- ▶ Level 1 – requires support
- ▶ Level 2- Requires substantial support
- ▶ Level 3 – Requires very substantial support
- ▶ There are also specifiers of:
- ▶ With or without accompanying intellectual impairment
- ▶ With or without accompanying language impairment
- ▶ Associated with a known medical or genetic condition or environmental factor
- ▶ Associated with another neurodevelopmental, mental, or behavioral disorder
- ▶ With catatonia



In the DSM-IV, if a patient was diagnosed with Autism, they were not able to be diagnosed with Attention Deficit Hyperactive Disorder.

The DSM-IV also made a differentiation between Asperger's disorder, pervasive developmental disorders (PDDs) and autism.

With the advent of the DSM-V, allowance was made for people to have co-morbid diagnoses of Autistic Spectrum Disorder and ADHD.



# Attention Deficit Hyperactivity Disorder (ADHD)

- ▶ ADHD has a prevalence of 5% globally and in the South African context.
- ▶ Boys are 2-4 times more likely to be diagnosed with ADHD than girls.
- ▶ Likely underreported in both genders but more so in girls
- ▶ Combined, inattentive and hyperactive subtype exist
- ▶ Persistent pattern of inattention and/or impulsivity/hyperactivity with symptoms present before age 12 years.  
Symptoms are present in two or more settings  
Symptoms interfere with, or reduce the quality of, social, school, or work functioning.  
The symptoms are not better explained by another mental illness




# Attention Deficit Hyperactivity Disorder (ADHD)

Inattention	Hyperactivity/Impulsivity
≥ 6 symptoms children up to age 16, (≥5 for adolescents over 17 and adults); duration ≥6 months, inappropriate for developmental level, functional impairment	
Inattentive to details or makes careless mistakes	fidgets with or taps hands or feet, or squirms
Has trouble holding attention on tasks or play activities	Leaves seat inappropriately
Does not listen when directly spoken to	Runs about or climbs inappropriately (adolescents or adults = feeling restless).
Does not follow through on instructions and fails to finish tasks	Unable to play/ engage in leisure activities quietly.
Avoids, dislikes, reluctant to do tasks that require mental effort over a long period of time	“on the go” acting as if “driven by a motor”.
Trouble organizing tasks and activities	talks excessively.
Easily Distracted	blurts out answers
Forgetful	trouble waiting his/her turn.
Loses things	interrupts or intrudes on others “butts in”



# So what does this all mean?

- ▶ New diagnostic criteria have changed the way we approach Autistic Spectrum Disorder
- ▶ As we understand more about neurodevelopmental disorders we find we need to be aware to carefully differentiate Autistic Spectrum Disorder (ASD) from ADHD and those patients presenting with both.
- ▶ Because the DSM-V is relatively new, not enough is known on the prevalence of both occurring co-morbidly.
- ▶ There is a need to be able to differentiate those with ADHD from ASD – while there is diagnostic overlap, management differs.
- ▶ The COVID-19 pandemic and ever accelerating advances in technology have led to a world with more and more online interactions and screen time. How does this impact on ASD and ADHD?

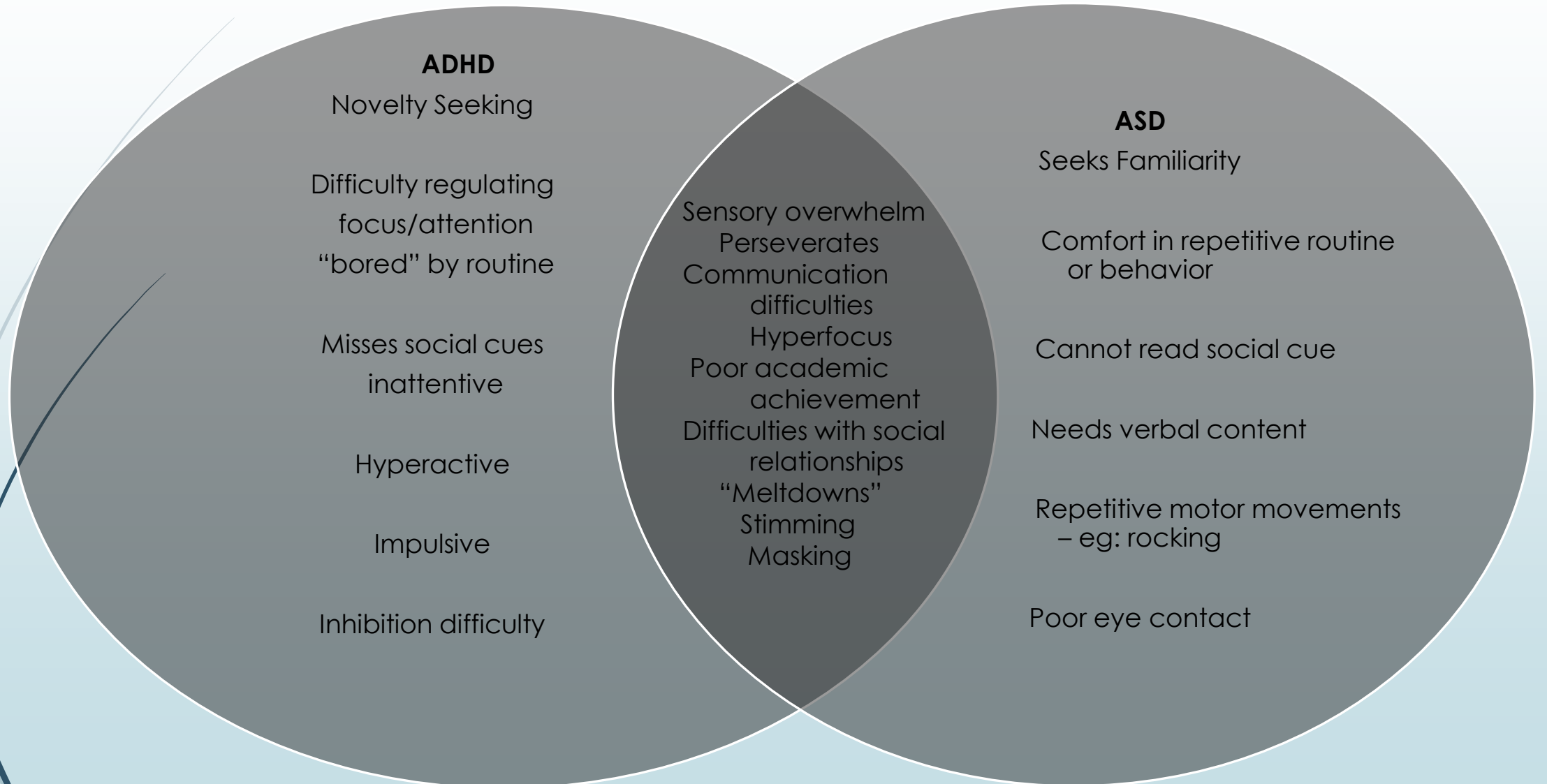
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- ▶ A 12 year old boy presents to your rooms:
  - ▶ His mother complains that he has no “real friends” and only interacts with people he games with online. He hyperfocuses on computer games and she is concerned that he wastes all his pocket money on games, does not complete his homework and has had several “meltdowns” related to his gaming. These have been related to his mother limiting internet access after 10pm and his sister using his gaming console while he was out. He has always been an “odd child” who is a little socially awkward and lives in his own world. His mother saw a tiktok video and wants to know if her son has autism.
  - ▶ ?ASD
  - ▶ ?ADHD
  - ▶ ?Normal 12 year old



# Pathogenesis

- Both ADHD and ASD are strongly heritable polygenic disorders
- Twin studies have reported heritability as high as 80% for ASD and ADHD
- High co-morbidity of both ADHD and ASD in individuals and their families
- **Neuroanatomy:**
- **Common to both ASD and ADHD:**
- Dorsal attentional network (DAN) is engaged in externally directed attentional tasks (visio-motor area, frontal eye fields, superior parietal lobule, intraparietal sulcus, and ventral premotor cortex)
- Default Mode Network (DMN) is involved in self awareness, active during “wakeful rest”, when internally focused (dorsal medial prefrontal cortex, posterior cingulate cortex, precuneus and angular gyrus)
- executive function, visual, somatomotor regions, amygdala
- **ADHD:**
- ADHD deficit in reward circuit
- Ventral Attentional Networks - involved in detecting unexpected/unattended stimuli and triggering shifts of attention (temporoparietal junction (TPJ) and the ventral frontal cortex)
- **ASD:**
- more social cognition and language regions, abnormal synaptic pruning

# Clinical Presentation





# Clinical Presentation

- ▶ Age of onset:
- ▶ ASD may be evident by age of 2 years while ADHD often presents later. Symptoms of ADHD may be evident by age of 4 years however often diagnosed later – entry to school
- ▶ DSM-V now makes provision to diagnose in adulthood given that symptoms may have been missed
- ▶ High rate of comorbidities:
- ▶ Substance use disorders; learning disorders; sleep disorders; oppositional defiant disorder; conduct disorder; depression; anxiety disorders; tic disorders; ocd; bipolar disorder; personality disorder; ?gender dysphoria...



# Social media and current social climate post Covid-19: impact on ASD and ADHD

- ▶ Screen media use has been associated with ADHD symptoms and severity of symptoms (Beyens, 2018)
- ▶ Some studies also demonstrated increase in ADHD score severity with increase in screen time due to COVID-19 lockdown – specifically, recreational screen time not study screen time (Sriwaranun, 2023)
- ▶ Screen time associated with externalizing behavioural problems, sleep problems and problems with language and cognitive development – mimicking ASD/ADHD and/or worsening ASD/ADHD (Vaidyanathan, 2020)
- ▶ Screen time at the age of 1 year has been associated with ASD symptoms by the age of 3 years (Kushima, 2022)
- ▶ Some studies suggest screen time is associated with changes in melatonin (Figueiro, 2011) and “internet addicted” children may have changes in dopamine, acetylcholine, gamma aminobutyric acid (GABA), and 5-hydrotryptamine (Ge, 2015)
- ▶ Other studies have suggested changes in brain grey and white matter volumes are associated with screen time (Takeuchi, 2015)



# Social media and current social climate post Covid-19: impact on ASD and ADHD

- ▶ These studies however do not infer causality
- ▶ ? Are children with ADHD and ASD more likely to engage in more screen time
- ▶ ? Over reporting – bias in studies
- ▶ ? ASD and ADHD are associated with other environmental factors which are neurotoxic and cause epigenetic changes – common factors influencing screen time and ASD/ADHD – psychosocial adversity, parental and attachment factors?
- ▶ Covid-19 lockdown resulted in more screen time, but also less social interaction with peers?
- ▶ Effects of Covid-19 infection itself?

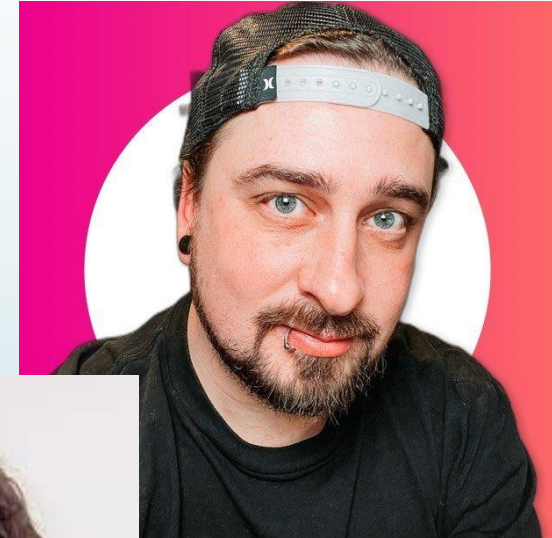




# Did Covid-19 pandemic and lockdown increase prevalence of ASD/ADHD?

- ▶ Little research examining prevalence of these diagnoses over the course of the Covid-19 pandemic
- ▶ What is known is that high levels of psychological distress and worsening of severity of symptoms of ASD have been documented during lockdown (Colizzi, 2020)
- ▶ Change in routine, loss of access to support structures, isolation
- ▶ Similarly, Covid-19 pandemic lockdown was associated with worsening of ADHD symptoms (Subley, 2021)
- ▶ Online learning vs classroom – engagement, lack of access to support structures, coping mechanisms such as recreational sport
- ▶ Psychiatric comorbidities: Anxiety, PTSD
- ▶ While some patients who struggled with social interaction found respite in isolation, implications for reintegration into social interactions with ending of lockdown?

# Social Media Influencers and Advocates? Valuable resource? Risk?



How to ADHD – Jessica McCabe

Theaspieworld – Daniel Jones

Women and ADHD Podcast – Katy Weber



# Further Impact of Social Media and Current Social Climate: ASD and ADHD: “Flavor of the month”?

Patients are presenting more and more frequently asking if they have ASD and/or ADHD.

May be difficult for clinicians as often have read around topic and done online self-diagnosis tests – may give “textbook” answers - difficult to know if have diagnosis or if suggestible from reading.

Increasing awareness and education may be improving patients’ insight and health-seeking behaviour leading to an increase in diagnosis – social media influencers and advocacy online

Social media influence – increasing popularity of discussion around “neurodivergence”

Dangers in that often social media presenters “lay people” who have self diagnosed themselves and/or others. Not qualified to give advice, may not accurately portray ASD and ADHD

Other diagnoses such as Borderline Personality Disorder may mimic some features of ADHD or ASD. “Neurodivergent” may be more socially desirable than “personality disorder”, skewing people’s acceptance of a diagnosis or leading to inaccurate portrayal on social media?



# So how does one manage diagnosis in self diagnosed patient?

- ▶ Patients may give biased history of symptoms if they are more invested in one diagnosis than another.
- ▶ Return to basics and look for how diagnoses may be different
- ▶ Clinical interview: The mental state examination – is your patient making good eye contact? are they picking up social cues? Were they late for their appointment as they got distracted on their phone, lost their car keys and misplaced appointment card and forgot appointment time?
- ▶ Beware own cognitive biases – do not discount what patient says just because they mention online tests or saw a youtube video.



# So how does one manage diagnosis in self diagnosed patient?

- ▶ Rating scales may be useful but NOT diagnostic – clinical interview is mainstay of diagnosis
- ▶ Rating scales useful for added richness of information when making diagnosis and tracking progress of symptoms over time
- ▶ Adult ADHD Self-report scale
- ▶ Vanderbilt parent and teacher ADHD rating scales;
- ▶ SNAP-IV parent/teacher
- ▶ Modified Checklist for Autism in Toddlers, Revised (M-CHAT-R 16-30months)
- ▶ Autistic Spectrum Quotient (ASQ) over 16yrs old
- ▶ Autism Spectrum Screening Questionnaire (ASSQ) – 7-16yrs parent/teacher



# So how does one manage diagnosis in self diagnosed patient?

- ▶ Psychoeducation is key
- ▶ Explain why agree/disagree with self diagnosis
- ▶ Manage expectations
- ▶ Do not assume patient knows all information as has researched topic
- ▶ Extra care may be needed to ensure correct knowledge and correct misinformation
- ▶ Screen for other comorbidity
- ▶ General principles of management



# General Management of ADHD

- ▶ Individualized management plan
- ▶ involve patient (as well as teacher and caregiver if a child patient)
- ▶ Screen for and manage co-morbidities
- ▶ Non-pharmacological:
  - ▶ Psychology – play therapy for children, may need to address poor self esteem, emotional regulation, behavioral therapy (goal setting, parents responses to child behavior but also coping skills and social skills in adults and children), CBT
  - ▶ Occupational therapy
  - ▶ School: tutoring, additional support, smaller classes etc
  - ▶ Lifestyle: Routine, adequate sleep, exercise
  - ▶ Small subset of children may benefit from dietary changes
  - ▶ Family support
  - ▶ Goes hand in hand with pharmacological management



# General Management of ADHD

- ▶ Pharmacological:
- ▶ Stimulants:
  - ▶ Methylphenidate
  - ▶ Lisdexamphetamine (age 13 years and up), dextroamphetamine
- ▶ Non-stimulant:
  - ▶ Atomoxetine, bupropion
  - ▶ TCA, SNRI, clonidine, risperidone
- ▶ Treat co-morbidities





# General Management of ASD

- Pharmacology not mainstay but used to treat co-morbidities, maybe be useful for behavioural disturbance – risperidone, aripiprazole
- Early intervention: academic support, occupational therapy
- Speech and language therapy
- Social Skills training
- Sensory integration
- Behavioral therapy, play therapy (floor time) CBT, coping skills communication skills, animal therapy
- Applied behavior analysis
- Alternative communication: Eg: picture books, sign language, symbol communication
- Family support
- No evidence for dietary modification

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# Challenges in Management

- ▶ Resource scarcity in LMICs
- ▶ Long waiting lists, geographical constraints, financial constraints, delay in presentation, views on therapy/trust in health workers – culture related
- ▶ Culture: “Western” and high income countries – most research and interventions – how does this apply to South Africa
- ▶ Language barrier – resources, rating scales
- ▶ Culturally appropriate behavior (eg: eye contact)
- ▶ Stigma
- ▶ Awareness in schools



# Scope for Social Media in Management

- ▶ Online resources, influencers - ? Scope for Health Care Professionals to be the influencer/educator online
- ▶ Online courses, training
- ▶ Online communication: emojis as symbols improving communication and socialization
- ▶ Apps focusing on organization, time management, mood tracking, planning
- ▶ Online community – may assist with social connectedness and reducing isolation however care to not negatively impact on face-to-face interactions
- ▶ Health Care Worker: Peer support, training, online consultations
- ▶ Need to consider how to manage misinformation, excessive use of social media “internet addiction” and how even to quantify what is addiction or harmful internet use, cyber-bullying – Ethics? Governance? Equity



Thank You



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