Differential diagnosis and comorbidity in patients with ADHD

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ATTENTION DEFICIT HYPERACTIVITY DISORDER

Jamie Oliver

Michael Phelps

Paris Hilton

Justin Timberlake
Heritability in the Range of Schizophrenia and Height

ADHD Twin Studies


<table>
<thead>
<tr>
<th>Study</th>
<th>Heritability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hudziak 2000</td>
<td></td>
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<tr>
<td>Nadder 1998</td>
<td></td>
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<tr>
<td>Levy 1997</td>
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<td>Sherman 1997</td>
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<td>Silberg 1996</td>
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<td>Gjone 1996</td>
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<td>Thapar 1995</td>
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<td>Schmitz 1995</td>
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<td>Edelbrock 1992</td>
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<td>Gillis 1992</td>
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<td>Goodman 1989</td>
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<tr>
<td>Willerman 1973</td>
<td></td>
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<td></td>
<td>Schizophrenia</td>
</tr>
<tr>
<td></td>
<td>Height</td>
</tr>
</tbody>
</table>

1. Willerman 1973
2. Goodmen 1989
3. Hudziak 2000
5. Levy 1997
6. Sherman 1997
7. Silberg 1996
8. Gjone 1996
9. Thapar 1995
10. Schmitz 1995
11. Edelbrock 1992
12. Gillis 1992
14. Willerman 1973
• Core symptoms
  inattention
  impulsiveness
  over-activity
• In children ADHD is 3-5 times more common in boys than girls. In adults it is more closer to even, increasing in women and decreasing in men.

• The prevalence of ADHD in adults declines with age. Partly due to age related the client in the symptoms, tough some patients with ADHD in childhood meet fewer criteria as adults but have persistent symptoms - ADHD in partial remission under DSM 5.

• Over - activity in adulthood declines more than attention deficit. There is more anxiety, attention deficit, presents more as inability to fulfill the tasks. Problems with employment, finances, interpersonal relationships including workplace, partnerships, divorces and specially as comorbidity of psychiatric disorders (depression, anxiety, substance abuse, including smoking).

Unmanaged Childhood ADHD May Give Rise to Increasing Complications

- ADHD only
- Disruptive behavior
- Oppositional defiant disorder
- Learning delay
- Low self-esteem
- Poor social skills
- Challenging behavior
- School exclusion
- Substance abuse
- Mood Disorder
- Conduct disorder
- Lack of motivation
- Complex LD

Long term outcome without treatment

- Substance abuse: 25%
- Educational achievements: 7%
- Antisocial behaviour: 7%
- Social function: 15%
- Employment: 16%
- Self help: 19%
- Driving ability: 4%
- Use of mental health services: 2%
- Obesity: 5%

Increased Risk of Traffic Violations and Accidents
Findings from driving records obtained from the state department of motor vehicles

**p ≤0.01

Subjects Receiving Citation for Any Traffic Violation (%)

<table>
<thead>
<tr>
<th>Traffic Violation</th>
<th>ADHD (n=25)</th>
<th>Control (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speeding</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>Drunk Driving</td>
<td>30%</td>
<td>10%</td>
</tr>
<tr>
<td>License Suspended</td>
<td>20%</td>
<td>5%</td>
</tr>
<tr>
<td>Crashed as Driver</td>
<td>40%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Increased Risk for Employment Problems

- Individuals with ADHD are 3 times more likely to be fired from a job than individuals without ADHD

- ADHD patients change their jobs at a rate of 2–3 times within a 10-year period

- ADHD patients have lower work performance ratings than employees without ADHD

Other Consequences of ADHD

Outcomes of ADHD on Major Life Activities

Why Should Adult Mental Health Services be Interested in ADHD?

- ADHD is a common behavioural disorder associated with significant adult psychopathology, social and academic impairments and the risk for negative long–term outcomes\textsuperscript{1,2}

- ADHD symptoms persist into adult life and cause significant clinical impairments\textsuperscript{1}

- The main clinical issue is recognition of the disorder in adults and quantifying the load on adult psychopathology\textsuperscript{1}

- ADHD is a treatable condition\textsuperscript{1}

Treatment outcome

Key Principles

- ADHD in adults is no more difficult to diagnose and treat than other common mental health disorders \(^1\)

- ADHD in adults is a symptomatic disorder (not just about behaviour) \(^1,2\)

- ADHD in adults is often misdiagnosed for other common adult mental health disorders \(^1,2\)

- ADHD in adults is in most cases treatable \(^1\)

Assessment

- Psychiatric History
- Somatic history
- Screening for most common comorbid disorders
- Screening for special and general learning difficulties
- Family history
- Substance abuse
- Forensic history

Patients With ADHD Frequently Have Coexisting Disorders

Children & Adolescents

- 31% ADHD alone
- 11% Tic
- 40% Oppositional Defiant Disorder (ODD)
- 14% Conduct
- 4% Mood
- 34% Anxiety

Adults

- 14% ADHD alone
- 53% GAD
- 25% Cyclothymia
- 15% Panic Disorder
- 13% OCD
- 25% Dysthymia
- 34% Alcohol Abuse/Dependence
- 30% Drug Abuse

MTA cooperative: N=579.

Symptoms of ADHD

• Anxiety:¹
  Ceaseless thoughts, avoidance behaviour

• Depression:¹
  Unstable mood, impatience, irritability, initial insomnia, low self-esteem

• Personality disorder:¹
  Antisocial, borderline, emotionally unstable, poor social interactions, impulsive, adulthood instability trait-like quality

• Hypomania, bipolar II disorder, cyclothymia:²
  Differentiated by grandiosity, clear focus of thoughts, episodic, reduced need for sleep, psychosis

Overlapping Neurodevelopmental Disorders

- Dyslexia (overlapping genetic risk factors)\(^1\)
- Specific and general learning difficulties (overlapping genetic risk factors, inattention)\(^1\)
- Pervasive developmental disorder\(^1\)
- Dyspraxia\(^1\)
- Tic disorders/Tourette's disorder\(^1\)
- Speech problems\(^2\)
- Autism spectrum disorder\(^1\)

ADHD in population with substance abuse disorders and incarcerated population is about 25% - significantly higher than in general population.

Philipsen A, Heslinger B, tebartz van Elst. Attention Deficit Hyperactivity Disorder in Adulthood; Diagnosis, Etiology and Therapy. Dtsch Arztebl Int 2008; 105(17): 311-7
Medication for ADHD and criminality: Observational Swedish database analysis

1. Rate of Crime Over 4 Years in Swedish ADHD Subjects Aged >15 years (N=25,656)

<table>
<thead>
<tr>
<th>Subjects committing crime</th>
<th>Male ADHD Subjects</th>
<th>Female ADHD subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>36.6%</td>
<td>15.4%</td>
</tr>
<tr>
<td>General population</td>
<td>8.9%</td>
<td>2.2%</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Treatment</th>
<th>Men (N=16,087) Hazard Ratio (95%CI)</th>
<th>Women (N=9,569) Hazard Ratio (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All medications</td>
<td>0.68 (0.63–0.73)</td>
<td>0.59 (0.50–0.70)</td>
</tr>
<tr>
<td>Stimulants</td>
<td>0.66 (0.61–0.71)</td>
<td>N/A</td>
</tr>
<tr>
<td>Atomoxetine</td>
<td>0.76 (0.63–0.91)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Crimes occurred less often during medication periods (men 32% reduction, women 41% reduction); however, the observational nature of the data cannot confirm a causal relationship with ADHD medication and other factors co-occurring with medication may play a role.

High comorbidity of mental health disorders (80%):
• depression (40-60%),
• anxiety (20-60%)
• substance abuse disorders (50-60%).
DD:

Depression specially with cognitive disfunction but no continuity of symptoms.

Borderline personality disorder – high overlaping the symptoms:
• Impulsivity and emotional instability
• Anxiety offten followed by autoagressive/self-harming behaviour, suicidal ideation or PTSD.

Philipsen A, Heslinger B, tebartz van Elst. Attention Deficit Hyperactivity Disorder in Adulthood; Diagnosis, Etiology and Therapy. Dtsch Arztebl Int 2008; 105(17): 311-7
# ADHD and Depressive Mood Symptoms

<table>
<thead>
<tr>
<th>ADHD</th>
<th>Mood Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic mood instability</td>
<td>Mood instability only during episode</td>
</tr>
<tr>
<td>No anhedonia, no appetite disturbances</td>
<td>Neurovegetative symptoms present</td>
</tr>
<tr>
<td>Usually responds to control of symptoms</td>
<td>Episodes of depression, requiring separate treatment of depression</td>
</tr>
<tr>
<td>and improvement in level of function</td>
<td></td>
</tr>
</tbody>
</table>

# ADHD and Bipolar Disorder

<table>
<thead>
<tr>
<th>ADHD</th>
<th>Bipolar Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early childhood onset</td>
<td>Adolescent or adult onset</td>
</tr>
<tr>
<td>Trait-like, no change from pre-morbid state</td>
<td>Episodic course, change from pre-morbid state</td>
</tr>
<tr>
<td>Excitable, but not grandiose/elated</td>
<td>Grandiose/elated</td>
</tr>
<tr>
<td>Reports being unable to function</td>
<td>Reports high level function</td>
</tr>
<tr>
<td>Chronic low self-esteem</td>
<td>Episodes of depression</td>
</tr>
<tr>
<td>Usually possesses insight, complains of changeable moods</td>
<td>Trend to lack of insight</td>
</tr>
<tr>
<td>Difficulty sleeping</td>
<td>Reduced need for sleep</td>
</tr>
<tr>
<td>Complains of being unable to concentrate/focus</td>
<td>Subjective sense of sharpened mental abilities</td>
</tr>
<tr>
<td>Restless (fidgety, difficult being still)</td>
<td>Overactivity, often linked to unrealistic ideas/plans</td>
</tr>
</tbody>
</table>

Adult Self-Report Scale (ASRS-V1.1) Screener

This screener is intended for people aged 18 years or older

About the questionnaire

Are you living with Adult Attention-Deficit/Hyperactivity Disorder (ADHD)? Many adults have been living with ADHD and don’t recognise it.

The Adult Self-Report Scale Screener can be used as a starting point to help you recognise the signs/symptoms of ADHD, but it is not meant to replace consultation with a trained healthcare professional. An accurate diagnosis can only be made through a clinical evaluation.

Regardless of the questionnaire results, if you have concerns about diagnosis and treatment of ADHD, please discuss this with your physician.

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Today's Date</th>
</tr>
</thead>
</table>

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the circle that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.

1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done? Never | Rarely | Sometimes | Often | Very Often
2. How often do you have difficulty getting things in order when you have to do a task that requires organisation? Never | Rarely | Sometimes | Often | Very Often
3. How often do you have problems remembering appointments or obligations? Never | Rarely | Sometimes | Often | Very Often
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started? Never | Rarely | Sometimes | Often | Very Often
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time? Never | Rarely | Sometimes | Often | Very Often
6. How often do you feel overly active and compelled to do things, like you were driven by a motor? Never | Rarely | Sometimes | Often | Very Often

Add the number of checkmarks that appear in the darkly shaded area. Four (4) or more checkmarks indicate that your symptoms may be consistent with ADHD. Please give the completed questionnaire to your healthcare professional during your next appointment to discuss the results.
## ADHD and Anxiety

<table>
<thead>
<tr>
<th>ADHD</th>
<th>Anxiety Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceaseless mental activity¹</td>
<td>Anxious worrying (might look like obsessive thought processes [OCD])²</td>
</tr>
<tr>
<td>Motor restlessness¹</td>
<td>Nervous tension²</td>
</tr>
<tr>
<td>Family history of ADHD²</td>
<td>Family history of anxiety–depression²</td>
</tr>
<tr>
<td>Avoids frustrating situations: Shopping, social situations, queueing, travelling</td>
<td>Phobic avoidance³</td>
</tr>
<tr>
<td>Easily feeling overwhelmed³</td>
<td>Easily becoming anxious²</td>
</tr>
<tr>
<td>Forgetfulness²</td>
<td>Hypervigilant</td>
</tr>
<tr>
<td>No somatic symptoms¹</td>
<td>Somatic symptoms¹</td>
</tr>
<tr>
<td>Improved by stimulants⁴</td>
<td>Exacerbated by stimulants⁴</td>
</tr>
</tbody>
</table>

2. APA. DSM-IV-TR. APA 2000  
4. Ritalin SPC
# ADHD and Personality Disorder

<table>
<thead>
<tr>
<th>ADHD</th>
<th>Borderline Personality Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood/adolescent onset(^1)</td>
<td>Early adult/adolescent onset(^1)</td>
</tr>
<tr>
<td>Defined by impairment(^2)</td>
<td>Defined by impairment(^2)</td>
</tr>
<tr>
<td>Chronic-like trait(^1)</td>
<td>Chronic-like trait(^1)</td>
</tr>
<tr>
<td>Pervasive across situations(^1)</td>
<td>Pervasive across situations(^2)</td>
</tr>
<tr>
<td>Affective lability (can be severe)(^4)</td>
<td>Affective lability(^3)</td>
</tr>
<tr>
<td>Impulsive(^3)</td>
<td>Impulsive(^3)</td>
</tr>
<tr>
<td>Inattention(^3)</td>
<td>Frantic efforts to avoid real or imagined abandonment(^4)</td>
</tr>
<tr>
<td></td>
<td>Recurrent suicidal behaviour(^4)</td>
</tr>
</tbody>
</table>

Conclusions

• ADHD is a neurobiological condition characterised by persistent patterns of inattention and/or hyperactivity, impulsiveness, and impairment in executive functioning

• ADHD symptoms persist into adult life and cause significant clinical, social, economic, psychological, and functional impairment

• ADHD in adults is often associated with a number of comorbidities

• Diagnosis of ADHD in adults is a multifaceted process

• Clinicians should carefully consider comorbidities and medical rule-outs

• ADHD in adults is a treatable condition