ADHD and Substance Use Disorders (SUD)

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Faculty Disclosure

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Some of the medications discussed may not be FDA approved in the manner in which they are discussed including diagnosis(es), combinations, age groups, dosing, or in context to other disorders (e.g., substance use disorders)
Overlap between ADHD and SUDs

SUD is a Risk Factor for ADHD: Illustrative Overlap of ADHD in Adults with SUD

Overall, 23% of adults with SUD have ADHD (N = 29 studies)*

Conduct disorder and severe mood dysregulation increases SUD risk in ADHD.

OR = odds ratio.

ADHD Symptoms are Directly Related to Higher Smoking Scores

FTQ = Fagerström Tolerance Questionnaire.

$t = 5.00, P < .001$
A More Complicated Course of SUD is Associated with ADHD

- More severe SUD
- Higher rates of other psychiatric comorbidities (eg, conduct/antisocial disorders)
- Less remission from SUD
- Longer course of SUD
- Lower retention in SUD treatment
### Long-Term Medication Treatment of ADHD Reduces Subsequent Substance Use Disorders

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Total: N</th>
<th>ADHD: N</th>
<th>Age</th>
<th>Main Findings Tx vs UnTx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinn et al. 2017</td>
<td>USA</td>
<td>146,000,000</td>
<td>2,993,887</td>
<td>15–42 yrs</td>
<td>Within group</td>
</tr>
<tr>
<td>Sundquist et al. 2015</td>
<td>Sweden</td>
<td>551,164</td>
<td>9,424</td>
<td>Mean 15 yrs</td>
<td>Between group</td>
</tr>
<tr>
<td>Chang et al. 2014</td>
<td>Sweden</td>
<td>38,753</td>
<td></td>
<td>8–46 yrs</td>
<td>Between group</td>
</tr>
<tr>
<td>Steinhausen et al. 2014</td>
<td>Denmark</td>
<td>20,742</td>
<td></td>
<td>11–20 yrs</td>
<td>Between &amp; Within groups</td>
</tr>
</tbody>
</table>

(from Boland et al, 2019 Submitted)
Early ADHD Treatment Reduces Marijuana Use

10 Cohorts of high school seniors 2005 to 2014 (N = 40,358; ~10% with ADHD).

*P < .001 vs controls.

Diagnostic Dilemmas in ADHD and SUD

- Overlap symptoms of SUD in ADHD
  - Intoxication or withdrawal
  - Neuropsychological deficits (transient/permanent)
  - SUD “traits” misinterpreted as ADHD (e.g., impulsive traits/risk-taking, harm avoidance)

- Other comorbidity (e.g., anxiety, disruptive disorders)

- Reliability of retrospective report

- Subthreshold ADHD vs full ADHD
  - Age-of-onset criteria (NOS)
  - Effected domains, inadequate number of symptoms

- Concerns of drug-seeking behavior/rationalization

- Use of rating scales for ADHD helpful (e.g., ASRS)

ASRS = Adult ADHD Self-Report Scale; NOS = not otherwise specified.

Current Heavy Alcohol Use Worsens ADHD Symptoms

AISRS Item Scores vs Presence or Absence of Alcohol Abuse* in Placebo Group

*Consumed ≥ 4 alcoholic drinks/day for women, or ≥ 5 drinks/day for men, within 24 hours (cumulative; drink = 1.5 oz liquor, 5 oz wine, 12 oz beer), or ≥ 3 drinks/day for ≥ 1 week (i.e., ≥ 7 consecutive days), during the double-blind treatment period (visit 3–14 [baseline to week 12]). P values were adjusted for multiple comparisons.

Appts = appointments; Conc = concentration; NS = not statistically significant.

Marijuana (MJ) and ADHD

- Most common “drug” used/misused in ADHD
- Second most common comorbidity in cannabis use disorder
- Associated with neuropsychological impairment
  - Acute effects
  - Chronic - persistent executive dysfunction if initiated early

Marijuana (MJ) and ADHD

- No evidence of more self medication versus non-ADHD

- Treatment of ADHD with MJ
  - Largely case reports
  - RCT of 30 adults with ADHD. Use of oromucosal THC:CBD
    - Primary outcome: No cognitive or activity improvement;
    - Secondary outcomes: Negative to trends to improvement

SUD in ADHD Adults Presenting for Treatment

The Complicated Relationship Between Attention Deficit/Hyperactivity Disorder and Substance Use Disorders

Courtney A. Zulauf¹, Susan E. Sprich², Steven A. Safren³ and Timothy E. Wilens¹, 4, 5

Abstract

Adolescents and young adults with substance use disorders (SUD) and attention deficit/hyperactivity disorder (ADHD) are increasingly presenting in clinical practice. The overlap and role of treatment for these co-occurring disorders remains unclear. A review of the literature was conducted to highlight and update recent research on the treatment of ADHD in high-risk populations. Structured therapies may be effective in treating adolescents and young adults with ADHD and SUD. Further controlled trials evaluating the sequence and effect of structured psychotherapies and/or ADHD pharmacotherapy on SUD relapse in these groups are warranted.

Keywords Adolescence – Substance use disorders – Attention deficit/hyperactivity disorder – Stimulants comorbidity – Cognitive-behavioral therapy

This article is part of the Topical Collection on Child and Adolescent Disorders

“...Structured therapies may be effective in treating adolescents and young adults with ADHD and SUD...”
MGH Study: Treatment of ADHD Improves Retention in Treatment

N=171 Treated ADHD
N=32 Untreated ADHD
Early Tx >> later Tx [90d]

Higher Dose MAS XR is Helpful in ADHD and Cocaine Use Disorder

13-week Randomized Controlled Trial
Diagnosis: Cocaine Use Disorder and ADHD
Treatment: CBT +/- MAS XR

N = 126. *P < .05.
CBT = cognitive-behavioral therapy; MAS = mixed amphetamine salts.
Atomoxetine Improves Outcome in Recently Abstinent Adults

12-week placebo-controlled study
N=147 subjects
Abstinent from 4–30 days

Findings: (ATX vs placebo)
• Improved ADHD Scores
• No differences in relapse rate
• Improved OCD scores
• Improved heavy drinking (shown)

FU study: Few side effects with alcohol

An event ratio of 0.737 indicates that, relative to patients treated with placebo, atomoxetine-treated patients experienced an approximately 26.3% greater reduction in the rate of heavy drinking. Separation between groups first occurred at day 55.

Stimulant Misuse and Diversion

- N > 100 studies; mostly survey studies in college students (80%)
- 10% to 20% prevalence of nonmedical use of stimulants
- 65% to 85% of stimulants diverted from “friends”
  - Majority not “scamming” local doctors
  - Not seen as potentially dangerous
- Motivation typically for concentration/alertness > getting “high”
- Appears to be occurring in SUD during academic decline
- High rates of full or subthreshold stimulant use disorder in misusers
- High rates of ADHD and neuropsychological dysfunction in stimulant misusers
- More misuse of immediate- vs extended-release stimulant preparations

Immediate-Release Stimulants are Preferred by College Students Who Misuse Prescription Stimulants

(n = 39; ~40% have a stimulant use disorder)

Intranasal Misuse of Stimulants is Linked to SUD in College Students (N=100)

Wilens et al. J Atten Disorders, 2020,
Strategies for ADHD and SUD

• In context to SUD, ADHD treatment should be considered
  – If misuse or less severe SUD, treat ADHD concomitantly
  – More severe SUD --> address SUD
  – If unable to address or recalcitrant SUD -> use CBT, nonstimulants, extended-release stimulants (may need higher dose), stay tuned for lower abuse liable stimulants

Wilens and Morrison, ADHD & SUD In ADHD in Children and Adults, Cambridge Press, 2015
Kaminski and Wilens, Overlap of ADHD and SUD, in Textbook of SUD, 2019 in press
Impact on Practice

• Since ADHD is a risk factor for cigarette smoking and SUD, teenagers and young adults with ADHD should be queried for both potential problems
• ADHD should be considered in adolescents and adults who smoke cigarettes and/or have SUD
• Treating ADHD helps protect against the onset of cigarette smoking, SUD, and SUD-related criminality
• Strategies exist for management of substance use and use disorder in ADHD
• Since stimulants can be misused, consider extended-release preparations in high risk groups