Reviewer's report

Title: Attention Deficit/Hyperactivity Disorders with co-existing substance use disorder is characterized by early antisocial behaviour and poor cognitive skills

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Reviewer: Michelle Torok

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This is an interesting paper on the ways in which different compulsory care groups with, and without, ADHD or SUD are clinically different. Such research can usefully contribute to targeted treatment of these challenging, high-risk subgroups. A number of suggestions are provided below to help strengthen the manuscript.

Major Compulsory:

1. It is unclear whether the ADHD/psych outpatient group were a compulsory care group? If not, why have they been included in this paper when the point is to clinically characterise clients in compulsory care contexts?

2. In Methods, under ‘participants’, authors state they selected data on 120 male SUD clients without a known ADHD diagnosis. It is unclear whether these 120 form a sub-set of a larger sample, or whether there were only 120 SUD clients in involuntary treatment between 2004 - 2008. If these 120 are a sub-set or a larger sample, how were they chosen?

3. ADHD assessment section: The description of how ADHD was assesses is vague – there is no mention of what specific instruments were used to assess for ADHD, and whether only childhood ADHD was assessed for, or was adult ADHD also included? There appears to be a bit more information on the instrument (WURS) in the ‘measures’ section – this should be moved into the ADHD assessment section, and was this instrument used for both the ADHD/SUD and ADHD/psych groups?

4. The final paragraph in the ‘measures’ section simply states that ‘other neurodevelopmental disorders diagnoses were obtained’ – this is too vague. What were these disorders, how were they measured? In Table 3 it shows that depression/anxiety were measured, is this what ‘other neurodevelopmental disorders’ refers to? It would be better to just state that depression and anxiety were measured, and describe how they were measured. In Table 3, authors should present results for anxiety and depression separately as they are distinct disorders.

5. The implications of these findings are not discussed thoroughly enough, given that it was a stated aim of the study that providing a better understanding of the ADHD/SUD group will facilitate adjustment of treatment.

6. The authors fail to appropriately acknowledge that the ADHD/SUD and
SUD-only groups were not clinically significantly different (i.e. the p-value was above 0.05 for the overwhelming majority of indicators). These findings suggest that among those with a SUD, having a comorbid ADHD diagnosis does not really add to their clinical burden – a finding which suggests that both these group could receive similar clinical interventions to reduce their burden of harm. Parts of the ‘discussion’ need to be re-written to more accurately reflect the results.

Minor essential:
1. Page 1, paragraph 1, last line: “substance use disorder” needs to come before “SUD”
2. Figure 1: Says that there were 413 cases between 2004 – 2008, and then figure goes on to show how many were assessed for ADHD, and how many did not have an assessment. These numbers cannot add up to more than 413, however, in the “no psychological assessment” box, the numbers add up to 542. These numbers need to be recalculated.
3. Page 5, paragraph 2, under ‘Participants” – no Standard Deviation (SD) provided for means ages of ADHD/SUD group. Also, no mean age appears to be provided for SUD-only group.
4. In ‘procedure’ section (pg. 6): uses the abbreviation ‘DOK’, but it does not appear to have been explained anywhere what it stands for.
5. Page 13, paragraph 2, last line: misspelt ‘ADHD’ (says ‘ADH’)
6. Figure 3 should indicate where significant differences existed between ADHD/SUD and ADHD/psych groups
7. In discussion, the authors spend a lot of time talking about conduct disorder (CD), however, they have no measures of this disorder in this study. Instead, the authors should acknowledge that having no diagnosis of CD is a limitation of the study, given the growing literature shows that CD tends to account for more harm than ADHD per se.

Discretionary
1. Conduct disorder can be abbreviated to ‘CD’.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
There are no competing interests to declare.