Reviewer’s report

Title: Challenges in Defining the Rates of ADHD Diagnosis and Treatment: Trends over the Last Decade

Version: 0 Date: 16 May 2017

Reviewer: Kevin Antshel

Reviewer's report:

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Thank you for the opportunity to review this manuscript. In this study, the authors investigated potential causes of the global trend of large increases in the prevalence and incidence of ADHD. ADHD prevalence and ADHD medication use both doubled between 2005-2014 with the male: female ADHD ratio decreasing in that same time period.

My comments below are intended to increase the potential of this work to have a broad and sustained impact upon the ADHD field.

1. Most fundamentally, the authors need to convince the reader (at least this reader) why yet another population-based study from a different country is needed. Nearly all of the data cited in the Introduction suggests that the prevalence rate and ADHD treatment engagement is increasing. What do these data add to the already existing voluminous literature on this topic? What is the innovativeness of this study?

2. The authors note that studies using different methodological approaches have cited various prevalence and incidence rates. The various methodological approaches vary due to, amongst other variables, the country in which the study was conducted. Thus, any study on this topic that only focuses on one country is naturally limited. This issue is related to the first issue and speaks to the perceived low level of innovation present in this study.

3. The authors stated goal to “better understand the reasons behind any significant changes in the number of cases of ADHD being diagnosed and pharmacologically treated” is important yet affected negatively by the extrapolation process. The extrapolation process accounts for roughly 25% of the cases. By extrapolating the cases, it is not possible to
discern which individual level variables (e.g., SES) are responsible for the significant changes in the number of cases of ADHD being diagnosed and pharmacologically treated.

4. The SES finding is one of the more novel findings and could be allocated more emphasis in the discussion. Presently, it has 2 sentences on page 14. Likewise, the disappearing of the large sex ratio typically observed in ADHD is interesting yet given little focus.

5. The possibility of overdiagnosis is refuted on page 15 using circular logic (diagnosis is made by experts over a period of 10 years). In the United States, most pediatricians do not adhere to AAP guidelines (see Jeff Epstein's work). These 'experts' are not adhering to practice parameters. The timing of the pediatricians becoming qualified to make ADHD diagnoses in Israel and the sharp increases in ADHD diagnoses is hard to overlook. How can the authors confidently state that overdiagnosis is not a factor? If the parents are more likely to seek out a diagnosis (due to reduced stigma), how can this not lead to overdiagnosis? Do the authors truly believe that 1 of every 4 adolescent males in Israel has ADHD and the associated functional impairments that come with ADHD? If yes, this represents a public health 'epidemic'.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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