Author's response to reviews

**Title:** Parent-reported sleep problems, symptom ratings, and serum ferritin levels in children with attention-deficit/hyperactivity disorder: a case control study

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**Author's response to reviews:** see over
Parent-reported sleep problems, symptom ratings, and serum ferritin levels in children with attention-deficit/hyperactivity disorder: a case control study

Response to the Editor comments:

1- Editing was performed.

2- We added “Written informed consent was obtained from the parents of children participating in the study.”

Response to the reviewers' comments:

Reviewer: Iris Rathwell

1- Parent-reported sleep problems was added to the title and abstract.

2- We changed the sentence.

3- The IQ was derived only for the ADHD group, the control group was screened for ADHD symptoms as we wrote that ”Sixty-two control normal healthy children free of ADHD criteria or significant learning disabilities were included from among the children of nursing staff and relatives of ADHD children. “, and it was established that they were typically developed by screening for any medical, neurological, or psychiatric disorders among them and they were doing well at their schools (we added "or significant learning disabilities"). We rewrote this paragraph.

4- We wrote categorical instead of qualitative and we added that "The data subjected to correlation analysis were normally distributed for parametric tests"

5.1- The IQ in this study was measured to proceed in the diagnosis of ADHD as if they found that the child is mentally handicapped they do not give him the diagnosis of ADHD and we will not be able to present the result of IQ in our results as not all the IQ levels were written in their medical records. Also, we will not be able to differentiate the control into relatives and non-relatives. The psychiatrist screened for ADHD in relatives and many studies that compared between children with ADHD and controls in regard to their sleep did not differentiate them into relatives and non-relatives. For example in Owens et al. "Parental and Self-report of Sleep in Children With Attention-Deficit/Hyperactivity Disorder" that was published in Arch Pediatr Adolesc Med. 2000;154:549-555. The control population was selected according to the following criteria:

The control population consisted of a sample of elementary school students, aged 5 through 10 years. These students represented a subset matched for sex and, as closely as possible, for age, from a sample
of 495 children who had participated in a larger community survey of sleep in healthy school-aged children enrolled in kindergarten to fourth grade in 3 public elementary schools in southern New England. Children were excluded from the control sample if their parents reported on an accompanying demographics questionnaire that the children had a diagnosed psychiatric condition, including ADHD, mental retardation, or significant learning disabilities, or used medications affecting sleep on a long-term basis. Children receiving special education services in the context of a regular classroom setting were not excluded from the study.

They did not measure the IQ for controls and did not ask whether they are relatives to ADHD patients or not.

5.2- Total sleep duration is the sum of nocturnal and diurnal sleep while sleep duration subscale is a subscale in the CSHQ which consists of 8 subscales as it is written in the methodology under Measure of sleep patterns and sleep problems that "The CSHQ consists of 33 sleep disturbance items and 3 items asking for information about bedtime, morning waking time, and daily total sleep duration

5.3- We re-wrote the paragraph.

6- We changed the sentence.

6.1- We added data on ADHD severity under Sample characteristics in Results. Children with average and low average IQ are not mentally handicapped and our answer to this point was previously mentioned under our answers to points 3 and 5.1 above.

Minor Revisions:
1. Corrected.

Reviewer: Samuele Cortese

Specific comments

Major compulsory revisions

Abstract
1- Corrected.

2- We added Egyptian children which means that we carried out this study to replicate findings in different geographic area and we added the relationship between sleep and ferritin levels.

3- We corrected the sentence.

Introduction
1- Corrected.
2. We cited the study and other meta-analysis.

Two important points are missing in the introduction:

1. The rationale is to replicate findings among Egyptian children with ADHD.
2. Corrected.

Oppositional defiant disorder was excluded as we wrote that we excluded co morbid psychiatric disorders in "participants" section.

The semi structured psychiatric interview is a medical sheet that includes questionns about personal history, complaint, perinatal history, developmental history, academic or behavioral problems, past history, family history, present mental state which contains questions about behavior, speech and language, attention and memory, quality of play, thought disorder, perceptual disorder, social interaction, parent child interaction, and previous investigations.

**Discussion:**

1. Corrected.
2. We added the association between obesity and ADHD.

**Reviewer: Omer Moghraby**

1. We changed the title.
2. The case-control study was done to detect significant difference in sleep problems between ADHD group and control group to proceed to detect the relationship between sleep disturbances, symptom ratings, and serum ferritin levels in ADHD group. We did not want to subject the controls to invasive blood sampling that was not needed to reach our aim.
3. The controls were free from ADHD symptoms and did not have significant learning disabilities as we added to our paragraph as this was the criteria that previous studies were used. For example, in Owens et al. "Parental and Self-report of Sleep in Children With Attention-Deficit/Hyperactivity Disorder" that was published in Arch Pediatr Adolesc Med. 2000;154:549-555. We explained this point in our answer to point 5.1 to Reviewer: Iris Rathwell.
4. We did not have hypothesis for which area that ferritin may have an impact on as a previous study revealed improvement in sleep problem after iron supplementation for low ferritin levels and another study found that low serum ferritin level was related to sleep/wake transition disorders.

**Background**

5. Corrected.
6- Corrected.
7- Corrected.
8- We added further researches to our background.
9- We wrote in Methods under "Measure of sleep patterns and sleep problems" that The CSHQ consists of 33 sleep disturbance items and The 33 sleep disturbance items are conceptually grouped into eight subscales: bedtime resistance (6 items), sleep onset delay (1 item), sleep duration (3 items), sleep anxiety (4 items), night wakings (3 items), parasomnias (7 items), sleep disordered breathing (3 items), and daytime sleepiness (8 items) and this explain why there are missing subscales as the parents missed to fill out these items that form these subscales especially the sleep onset delay subscale which consists of one item. We faced this missing data in several published research for us because we have high rate of illiteracy among parents and we give the questionnaire to the illiterate mother to be filled by the educated father who sometimes miss to fill some items.
10- The same answer for point 9.
11- Corrected.

**Discussion**

12- We added more literatures.
13- In our study, children with ferritin levels <30ng/mL had higher scores in all of sleep subscales and total score however this did not reach statistical significance which is <0.05 although some of them had marginal significance < or equal to 0.1 especially the total score which was 0.05 (some papers used < or equal to 0.05 as significance) and we explained this at the end of the second paragraph that could be due to the small sample size. There is a significant correlation between serum ferritin and global sleep disturbances (total score).
14- We added where future studies could be directed. We mentioned the limitation of the small sample size in the second paragraph when we explained why it did not reach statistical significance. The control cases were truly control as in previous studies that I mentioned one of them above (Owens et al. "Parental and Self-report of Sleep in Children With Attention-Deficit/Hyperactivity Disorder" that was published in Arch Pediatr Adolesc Med. 2000;154:549-555).