Reviewer's report

Title: Frequent nocturnal awakening in children: prevalence, risk factors, and associations with subjective sleep perception and daytime sleepiness

Version: 2 Date: 5 March 2014

Reviewer: Sarah Honaker

Reviewer's report:

This paper examines a variety of factors associated with frequent nocturnal awakenings (FNA) in a large cross-sectional sample of school-aged children in China. Prevalence of FNA was 9.8%, with slightly higher rates in boys and older children. Children with a variety of health conditions, a parental history of insomnia, child-reported psychosocial factors, bedtime resistance, poor sleep hygiene, and several sociodemographic variables were more likely to have frequent night wakings. Finally, FNA were associated with parent-reported insufficient sleep and daytime sleepiness. The study addresses an important area of inquiry, utilizing a very large sample size with an impressive response rate. There are some concerns that, if addressed, would add to the overall quality of the manuscript.

Major Compulsory Revisions

1. Previous studies have linked parental presence at bedtime to nightwakings and poor sleep more generally in this age group (e.g. Mindell et al. 2009). As such, this variable is important to include in a model of night wakings. Questions 3-5 of the CSHQ pertain to the construct of parental presence at bedtime.

2. Scores for the three scales of the Children's Psychosocial Screening Scale were used to assess “psychosocial condition.” While reliability of the measure was reported, there was no report of validity estimates, making it difficult to know what constructs this tool is actually measuring. This limitation should discussed.

3. Psychosocial functioning factors were entered into the regression model as predisposing factors for FNA but could also be conceptually considered potential outcomes of FNA. Indeed, experimental sleep restriction studies have demonstrated difficulties in emotion regulation and functioning. Please re-analyze these variables or provide justification for the decision to treat them as pre-disposing factors.

4. The 50th percentile on a measure was used as a cut-off for a number of variables, specifically daytime sleepiness, and the three subscales from the psychosocial scale. This cut-off may not be appropriate. For example, scoring above the 50th percentile on the CSHQ sleepiness subscale does not necessarily indicate that a child experiences daytime sleepiness. Consider a cut-off that is further above the mean, or provide justification for using the 50th percentile.

5. Please clarify the measurement of sleep quality. In examining the sleep quality
variable, what specific item from the CSHQ is used? The item described in the manuscript “How often does your child’s sleep quality is good enough?” does not appear similar to any CSHQ items.

6. In the discussion, paragraph 2, you presented a range of 4.0-6.6% for nightwakings found in prior studies. Several studies, however, have found prevalence rates above 10% (see articles listed under discretionary revisions).

Minor Essential Revisions
1. The English version of the CSHQ was not included – documents 1 and 2 are both the English version of The Children’s Psychosocial Screening Scale.
2. Measures, paragraph 3: the questions from the CSHQ are in quotation marks but not verbatim from the English version of the CSHQ. There is a CSHQ item about insufficient sleep (item 9; “Child sleeps too little.”)
3. Please clarify how the sleep/bedtime hygiene variables were measured and grouped (Measures, paragraph 13, Bedtime hygiene variables). For example, were parents asked to report on items such as caffeine after 6pm on a four-point scale (usually, often, occasionally, no) and then the researchers dichotomized this variable?
4. In the discussion, paragraph 2, it states that no gender differences in FNA were found in the current study. However in the results section, paragraph 1, you reported a significantly higher prevalence in males. It would be helpful to clarify that the gender finding was present but no longer significant after adjusting for other variables, and discuss why this might be. For example, are their gender differences in the health or psychosocial variables that better account for gender differences in FNA prevalence?
5. The title of Table III contains a “g” that may be an error.

Discretionary Revisions
1. The following constructs used in the manuscript might be better described by other terms:
   General people: population
   Bedtime hygiene: sleep hygiene
   Bedtime struggling behavior: bedtime resistance

2. In examining bedtime resistance, why not use the CSHQ bedtime scale, rather than responses from one item?
3. The following articles may provide helpful information for your literature review, and could be added at your discretion:


**Level of interest:** An article of importance in its field

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.