Reviewer's report

Title: The relationship between sleep and wake habits and academic performance in medical students: A cross-sectional study

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Reviewer: Royce Singleton

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Although the authors address most of the issues raised in my first review, some problems still remain. I see these as major compulsory revisions.

1. In the second paragraph of “Questionnaire,” the researchers report, “there was a good agreement between actigraphy and sleep diaries”; however, rather than report a measure of “agreement,” such as the correlation between actigraphy and diary bedtimes for the 30 students, they provide margins of error. I recommend instead that they report correlations between the actigraphy and sleep diary measures for bedtime, wake-up time, and sleep duration. This is a straightforward indicator of “agreement” between the two measures.

2. Although the researchers now have taken into account the problem of multicollinearity, their analysis is not very informative about the effects of sleep patterns on academic performance. Had they developed an integrative theory or causal model of the relationship between sleep patterns and grades, their analyses could reveal much more about the underlying relationships among the variables. For example, it is highly likely that one or more of the sleep measures is causally related to the “subjective feeling of obtaining sufficient sleep.” It is likely that the reason “total sleep time” and “weekend bedtime” are not significant in the multivariate analysis is that both of these variables affect (or cause) the “subjective feeling of obtaining enough sleep.” When all three variables are in the equation, only one variable remains statistically significant while controlling for the others. Suppose that the “subjective feeling” variable were regressed on TST and weekend bedtime (or weekday bedtime). If, say, TST was statistically significant, this would imply the following model:

TST -> subjective feeling of obtaining sufficient sleep -> grades

Because ESS and subjective feeling are likely to be highly correlated, this analysis essentially supports the following model:

TST -> daytime sleepiness -> grades

3. I recommend that the researchers present or derive a tentative causal model from their analysis, based on the regression of measures of sleepiness (subject feeling or ESS) on various sleep patterns. Of course, they again will have to consider possible multicollinearity among the predictors.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.