Habitual Sleep Deprivation is Associated with Type 2 Diabetes: What Comes First?

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Dear Editor,

I have read with care the article entitled: "Habitual Sleep Deprivation is Associated with Type 2 Diabetes: A Case-Control Study"[1] published in the November 2016 issue of the *Oman Medical Journal* and have some points I wish to highlight.

From the title of the article, I understand that sleep deprivation could be associated with type 2 diabetes. Therefore, I assumed that having diabetes could be a risk factor for sleep deprivation. This was proved when the authors reported that diabetic patients slept significantly shorter hours at night than non-diabetics control group by 0.4 hours. To compare the mean number of nocturnal sleep hours for the diabetic and control group patients (6.1±1.5 and 6.4±1.3, respectively), the authors should show us the results of *t*-test or F-test statistics. Instead, they categorized the hours of nocturnal sleep hours into below and above six hours without showing the number and percentage for cases and controls, and showed the chi-squared as a test of significance. That means the authors showed differences in mean hours but did not show their statistical significance and showed the statistical significance of a categorical variable of below six hours sleep without showing its results.

Secondly, the authors did not define the outcome and independent variables, or the predictors of the outcome variable. However, I assumed from Table 2 that being diabetic was the outcome variable. The authors stated that "there was 3.9 times more risk of developing diabetes if patients slept for < 6 hours at night (p = 0.039)". There are two errors here. First, the value 3.9 was under the beta column not the odds ratio (OR) in the table. Second, a case-control study does not prove any temporality.[2] This means we can never know what comes first, sleep deprivation or diabetes. This is especially true when patients were asked about their sleep over the past seven days. Similarly, they found that some lipid profile indicators were higher among patients with diabetes, which is a known diabetic complication.

Thirdly, besides the aforementioned statistical mismatch in Table 2 and the text explaining it, Table 3 showed no chi-squared, OR, or any test of significance.

Lastly, if the authors would like to test wrongly the effect of having fewer hours of sleep on being a diabetic, they should enter in their logistic model the low or high risk of obstructive sleep apnea variable as a strong confounder of sleep deprivation, and the subsequent development of diabetes.[3]

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