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LETTER TO THE EDITOR

Importance of analysis of complex sample survey in a probabilistic study stratified by stages

To the Editor,

We read with interest the article “Associations between sleep duration and type 2 diabetes in Taiwanese adults: A population-based study”,¹ published in the journal. This study examined the association between sleep duration and the risk of type 2 diabetes mellitus in Taiwanese adults aged from 19 years to 64 years using data from the 2005–2008 Survey on Nutrition and Health in Taiwan. The results showed that people who sleep < 5 hours are twice as likely to have diabetes mellitus as those who sleep 7–8.9 hours. However, we noticed the statistical analysis did not take into account the stratified three-staged probability sampling design of the original study.

Disregarding the original sampling design can lead to underestimation of the standard errors of the odds ratios. For example, a Cuban study published in 2001 using data from the Second National Survey of Risk Factors and Chronic Non-communicable Conditions concluded that analysis methods that take into account the structure of the data and sampling design features yield results more in line with reality, obtaining better parameters and standard error estimates.² In another study during 2001, using as an example data from The National Health and Nutrition Examination Survey showed that the analysis of complex data is suitable to get national representativeness and the estimated standard errors are different in comparison to the estimates if analyzed as obtained by simple random sampling.³

In the Taiwanese study, several of the results, especially odds ratios, have confidence intervals whose lower boundary is very close to 1. As the original sampling design was not taken into account, there is a reasonable chance to

suspect the corrected confidence intervals would actually include the 1 value and therefore the association would not be significant anymore. We consider it is important to describe the results of the relationship between sleep duration and diabetes risk but this time using the analysis of complex samples to verify if there is a difference to the results shown by applying this technique.

References

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