

**Figure S5. The E-value is a function of the hazard ratio (HR) of the association of exposure (severe obstructive sleep apnea [OSA]) and outcome (incident cancer).**

The E-value represents the minimum strength of association, on the risk ratio scale, that an unmeasured confounder would need to have with both the treatment [exposure] and outcome to fully explain away a specific treatment [exposure]–outcome association, conditional on the measured covariates1. We used the formula which applies to a risk ratio greater than 1: E-value = RR + sqrt (RR X (RR-1)); CI = LL + sqrt (LL X (LL-1)) where RR = risk ratio and LL = lower limit of the CI. This formula can be used for HRs when the outcome is relatively rare (e.g., <15%) by the end of follow-up, which applicable for our study2. The marked dots reflect the correspondence between HR and the E-value for the particular exposure: severe OSA (apnea-hypopnea index >30) compared to no OSA - HR = 1.15; E-value = 1.56; severe nocturnal hypoxemia (spent >30% of sleep with SaO2<90% vs. not) - HR = 1.32; E-value = 1.97. The lowest possible E-value is 1 (that is, no unmeasured confounding is needed to explain away the observed association). The higher the E-value, the stronger the confounder associations must be to explain away the effect. Importantly, a small E-value does not mean that there is evidence for no effect; it implies only that the evidence for an effect is itself weak. However, weak evidence for an effect does not imply evidence that the effect is absent. The E-value results also do not guarantee that if a confounder with parameters of a particular strength existed, then it necessarily would explain away the effect, only that it is possible to construct scenarios in which it could 2. In the context of biomedical and social sciences research, effect sizes ≥2- or 3-fold occasionally occur but are not particularly common; a variable that affects both treatment and outcome each by 2- or 3-fold would likely be even less common1.

**References**

1. VanderWeele TJ, Ding P. Sensitivity Analysis in Observational Research: Introducing the E-Value. Ann Intern Med. 2017;167: 268-274.

2. Ding P, VanderWeele TJ. Sensitivity Analysis Without Assumptions. Epidemiology. 2016;27: 368-377.